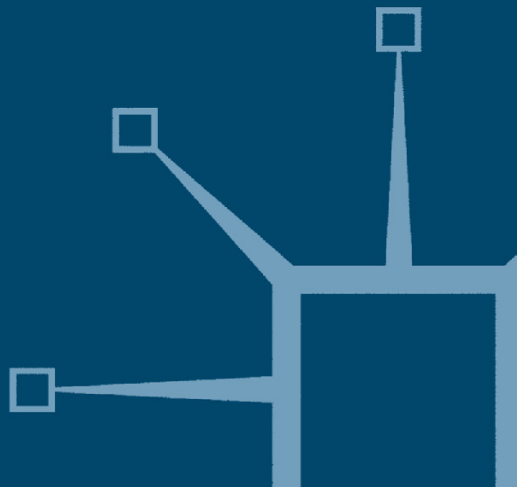# International Macroeconomics

Theory, Policy and Applications

Graham Bird

INTERNATIONAL MACROECONOMICS

Also by Graham Bird

CLASSICAL WRITINGS IN ECONOMICS: INTERNATIONAL DEBT,
 Vols I and II (*with N. Snowden*)
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International Macroeconomics

Theory, Policy and Applications

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Surrey Centre for International Economic Studies
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Second Edition

To my family

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Preface and Acknowledgements

This book is loosely based on lecture courses given at the University of Surrey in the United Kingdom and the Fletcher School of Law and Diplomacy, Tufts University, in the USA. It is designed to be used essentially as a text for an introductory one-term or one-semester undergraduate course in open-economy and world-economy macro-economics. It is written for people who prefer to avoid, where possible, mathematical and algebraic formulations. The book is relatively short and the arguments often terse. While readers are not faced by reading a weighty tome, therefore, they will have to concentrate quite hard on what they do read, and to think through the logic.

A number of people have helped with the preparation of this book. The following have offered constructive advice on certain chapters at different stages in their production; Heather Bird, Tony Killick, Paul Stevens, Tony Thirlwall and John Williamson. In particular, Victor Argy kindly commented in considerable detail on some of the chapters. The typing and general organisation of the manuscript has been undertaken by Julie Alcock and Liz Blakeway in a manner typical of their friendly and efficient approach to all aspects of their jobs. I am very grateful to them all.

The opportunity to teach open-economy macroeconomics in the USA resulted from an invitation to spend a year as Visiting Professor of International Economic Affairs at the Fletcher School. I am indebted to Benjamin J. Cohen for organising this, and for the chance it created for me to exchange views with him on many of the matters raised in this book.

Thanks are also owed to the Institute for International Economic Studies in Stockholm for offering me hospitality as a Visiting Scholar in the spring of 1986. Apart from providing a stimulating environment in which to work, the visit also allowed me to escape the rigours of being an Acting Head of a University Department for a few weeks and to write early drafts of a number of the chapters contained here. The Economic and Social Research Council financed the visit and I am therefore most grateful to them as well.

Last but by no means least I must acknowledge the ongoing debt I owe to my family, my wife Heather and my children, Alan, Anne and

Simon. They work on the basis that income is in fact a function of consumption and thereby provide the necessary and pressing incentive to keep writing. It is thus not entirely for reasons of intellectual pride that I hope this book finds a ready, and preferably large, market.

Guildford, Surrey   GRAHAM BIRD

Preface to the Second Edition

Although macroeconomics has changed quite a lot since the first edition of this book was written, the simple macroeconomic analysis of the open-economy which it contains remains relevant and helpful in explaining the world economy at the end of the 20th and the beginning of the 21st century. Given the growth in international macroeconomics as a sub-area of economics over the last few years and the publication of a number of advanced text books, there is a continuing, and even enhanced, need for a book which runs through the basic analysis in a fairly straightforward fashion. This book attempts to meet this need. Even at the simple level presented here, however, the analysis provides significant insights into the ways in which economies interact with one another at the global level, and an important part of this second edition is the application of the analysis.

In writing the new edition I have made minimal alterations to Parts I and II, which readers of the first edition seemed to find clear and concise. However, Part III, which looks at the applications of the analysis, has been radically rewritten and updated to accommodate recent global economic events. Fortunately these have illustrated just how useful the basic analysis is. Uncomplicated international macroeconomics goes a long way towards explaining what has been happening in the world economy since the 1980s.

The second edition is still aimed at a similar market to that of the first; namely students with some but not a lot of economics behind them. It is designed for economics majors towards the end of a first year or in the midst of a second year university course in macroeconomics. Furthermore it should be a useful text for non-specialist economists, for example those taking courses in international relations, who want to acquire an economics perspective, but who are looking for a source that presents the material in a reasonably user-friendly and non-technical way. In international macroeconomics it is easy to lose sight of the wood for the trees, and the second edition continues to discuss complicated issues in broad and straightforward terms which, at the same time, still manage to capture the essence of what is going on. The book remains brief, and I have resisted the temptation to succumb to 'second edition incrementalism'. Its aim is to provide a succinct and manageable treatment of

the issues covered, such that it can stand alone as a course text, or act as a supplementary source whether in context of more, or of less analytical courses.

Although most of the second edition continues to deal with economic theory, the theme of the book is that theory should be viewed as a means to an end rather than an end in itself. Theory is part of the economist's tool kit; it is what you can do with the theoretical tools that makes things interesting. The purpose of the theory is to gain a better understanding of how the world works. Theory generally becomes more palatable if it is viewed in this way. The intention has been to make this book palatable or even enjoyable.

The acknowledgements remain much as they were for the first edition. In addition, however, I am grateful to all the students who have told me that they found the first edition useful (and to those that did not for keeping quiet). It has been this positive response that has encouraged me to write a second edition. I am also grateful to Tim Farmiloe at Macmillan for his persistence in persuading me to bring out a new edition, and no less to Liz Blakeway who has administered the task. In the period since the first edition I have not resisted the temptation to succumb to 'family incrementalism' and my thanks therefore now go to Heather, Alan, Anne, Simon *and Tom* for providing me with the constant reminder that there are other things in life than economics. In order to be able to afford them, however, I am hoping that small books in international macroeconomics become the next mega craze.

1 Introduction

This book attempts to provide a non-mathematical introduction to the macroeconomic analysis of both the open economy and the world economy. Such analysis is appropriate for a number of reasons. First, all economies are, at least to some extent, open; they have trading and financial links with other economies. Second, what holds for a closed economy may not hold for an open one. Dropping the closed economy assumption from simple macroeconomic models is a strategic step which may even reverse the policy conclusions reached. Third, while it is important to see how the operation of an open economy differs from that of a closed one, it is also important to examine the operation of the world economy – or a substantial part of it – as a whole. Many macroeconomic problems are shared across countries and it is therefore relevant to ask whether these problems and their potential solutions should not be dealt with at a more aggregated level than that of individual countries. Furthermore, does it follow that what is right for an individual economy in isolation is right for the world economy?

Of course, none of this is very new. A great deal has been written over recent years – and indeed not so recent years – about open-economy macroeconomics, although perhaps rather less has been written on the macroeconomics of the world economy.[1] Much of what has been produced, however, has been quite mathematical and technical. Yet the issues raised are sufficiently important to warrant dissemination to and discussion by a wider audience which, while it may be happy to look at diagrams and to follow some elementary analysis, feels uncomfortable with too many formulae and equations. The purpose of this book is to provide just such an exposition. Of course, the simplification of theory has costs as well as benefits. The principal cost is a loss of analytical precision and rigour, although there can be legitimate debate over just how high a cost this is.

The book's purpose is not only to work through a certain amount of economic theory, but also to relate the theory to problems of macroeconomic management and policy formulation at both the individual and world-economy level. Theory is then not presented for its own sake, but rather as a means of assisting in the realisation of basic macroeconomic policy targets. As such, it is hoped that the

contents will be of some interest to policy-makers as well as to students of economics.

The book presumes some basic understanding of macroeconomics (essentially *IS–LM* analysis) but does not require any significant mathematical capability.[2] It could be used for first- or second-year undergraduates either as a course text in its own right or as a supplement to other more conventional macroeconomics textbooks. It could also be used as a complementary source on courses which provide a more descriptive and institutionally based treatment of international financial economics.

The book is written in a rather terse style and there is a noticeable absence of subtlety. The reasons for this are first, the desire to avoid the book becoming over long and to explain the basic ideas in international macroeconomics as crisply and efficiently as possible. With more comprehensive textbooks it is often possible to lose sight of the wood for the trees. Besides, with long chapters it is sometimes difficult to keep the momentum going. Second, it is hoped that readers will be encouraged to read the book actively rather than passively; in other words, they will have to work carefully through the arguments and may have to dip into other textbooks in macroeconomics to fill gaps in their existing knowledge which is taken for granted here.

The layout of the book is as follows. Part I examines the macro theory of the open economy. Chapter 2 sets up a basic open-economy model which, in essence, simply augments *IS–LM* with a balance of payments component. Chapter 3 decomposes this model and focuses on the current and capital accounts of the balance of payments. Chapter 4 examines the various approaches to analysing the balance of payments and the causes of payments problems, while Chapter 5 looks at the theory of exchange-rate determination.

Having amassed these analytical building blocks, Part II examines macroeconomic stabilisation policy in the context of an open economy. Chapter 6 concentrates on monetary and fiscal policy, with Chapter 7 focusing more narrowly on exchange-rate policy. Chapter 8 moves away from the perspective of the national economy and examines certain aspects of managing the global economy.

International macroeconomics remains in a rather strange condition. Simple models which focus on the short run and which largely put to one side many of the recent 'advances' in macroeconomic theory such as rational expectations, efficient markets, and intertemporal optimisation, remain remarkably resilient at explaining

Part I
Theory

Part I
Theory

2 An Open-Economy Macroeconomic Model

INTRODUCTION

One of the principal trends in economics over recent years has been to place considerable emphasis on the need to examine the various interlinkages that exist between economies, and to move away from models which concentrate on the operation of closed systems. Of course, this is not to argue that conventional macro analysis ignores such interlinkages, indeed many of the older textbooks in macroeconomics and international economics include discussion of concepts such as the foreign trade multiplier. But the presentation of this and related material as 'open-economy macroeconomics' is a more recent phenomenon.

The purpose of this chapter is very modest. It is simply to investigate in a fairly unrefined fashion the major implications for macroeconomic analysis of opening up an economy and allowing for trade and capital flows.

Closed-economy macroeconomics tends to focus on the principal domestic behavioural relationships such as the consumption function, the investment function and the demand for money function and then proceeds to build these into an overall model of income determination; open-economy macroeconomics considers, in addition, import and export functions, and capital movements, and then examines how the process of income determination changes as a result of these additions.

FROM SIMPLE CLOSED- TO SIMPLE OPEN-ECONOMY MODELS

Most students of economics are familiar with the standard closed-economy models as represented by the Keynesian cross diagram, the equivalence of actual saving and investment, and, at a rather more sophisticated level, the *IS–LM* framework.[1] For a closed economy the reduced form for income determination is derived as follows:

$$Y = C + I$$

$$C = a + cY$$

$$I = \bar{I}$$

$$Y = a + cY + \bar{I}$$

$$Y(1 - c) = a + \bar{I}$$

$$Y = \frac{a + \bar{I}}{1 - c}$$

where Y is national income, C is consumption, c is the marginal propensity to consume, 'a' is a constant component of consumption and I is private investment.

In the case of an open economy, where there are imports (M) and exports (X), the reduced form is modified in the following fashion:

$$Y = C + I + X - M$$

$$M = mY$$

$$X = \bar{X}$$

$$Y = a + cY + \bar{I} + \bar{X} - mY$$

$$Y(1 - c + m) = a + \bar{I} + \bar{X}$$

$$Y = \frac{a + \bar{I} + \bar{X}}{1 - c + m}$$

As compared with a closed economy, the multiplier for the open economy has an additional term in the form of the marginal propensity to import (m), and is:

$$\frac{1}{1 - c + m}$$

What we discover is that the open economy has an extra source of expenditure injection, namely exports, into, and an extra leakage, namely imports, from the circular flow of income.

Implicit in the above analysis are the assumptions of constant prices, idle capacity and a passive monetary sector. Income can therefore respond in real terms to increases in expenditure without prices (including exchange rates) or interest rates changing.

Another key feature of this model is that, largely because of these assumptions, it is through changes in income, and induced changes in imports, that changes in the balance of payments on current account occur. The opening up of the economy also requires us to amend the conventional national income accounting identities of the closed economy. Thus instead of:

$$Y = C + I$$

$$S = Y - C$$

and $I = S$

we get, with an open economy:

$$Y = C + I + X - M$$

$$Y - C = I + X - M$$

$$S = Y - C$$

$$S + M = I + X$$

and $X - M = S - I$

Withdrawals still equal injections, but withdrawals now include both saving and imports, and injections include both investment and exports. Similarly the balance of payments may be seen as reflecting the difference between domestic saving and domestic investment.

The analysis may be further refined by decomposing domestic saving into private saving and public saving, with the latter reflecting an excess of taxation (T) over and above government expenditure (G). The accounting identity then suggests that, once we can explain variations in domestic private and public savings, as well as in domestic investment, we can also explain variations in the current account of the balance of payments. Unfortunately, domestic
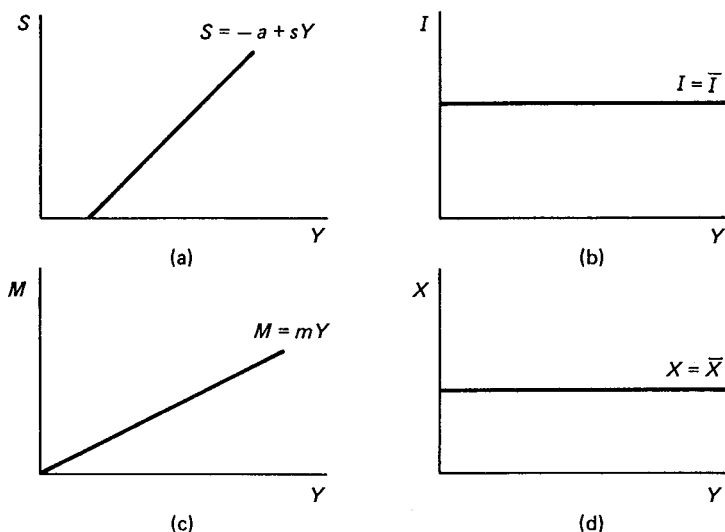
Figure 2.1

saving and investment have proved to be quite difficult to explain, with simple theories often failing to fit the facts.

The basic relationships discussed above affecting saving, investment, imports and exports are represented graphically in Figures 2.1a, 2.1b, 2.1c and 2.1d. These relationships can be combined to give Figure 2.2. As this figure has been drawn, point A shows a situation where there is equality between domestic saving and investment and therefore perfect balance between imports and exports.

From a situation such as point A, equilibrium may be disturbed if either the S – I or the X – M relationship shifts. Let us assume, for example, that autonomous expenditure falls. $S - I$ then shifts to the left to $(S - I)^*$ and a new equilibrium is created at point B in Figure 2.3, where there has been a fall in the level of income, and the creation of excess domestic saving as well as a payments surplus. The fall in income has been brought about by the multiplier process and is the means by which saving and imports decline. The fall will continue until leakages, i.e. $S + M$ have fallen by the same amount as the initial fall in injections.

If, on the other hand, $S - I$ had shifted downwards to the right, Y would have increased until the excess of domestic investment over domestic saving equalled the excess of imports over exports.
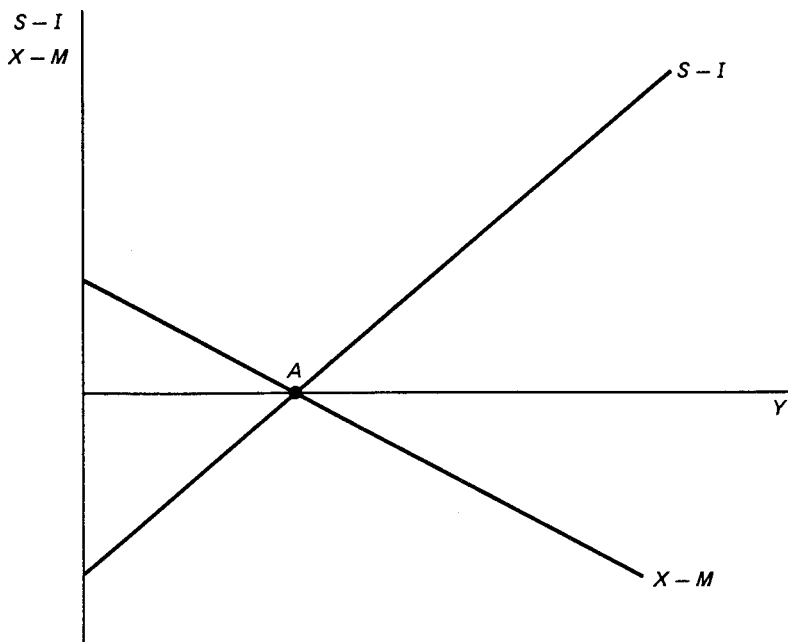
Figure 2.2

What have we established so far? We have seen that simple Keynesian analysis, which concentrates on the real sector of the economy, may easily be modified to allow for international trade with exports constituting an extra injection into the circular flow of income, and imports constituting an extra leakage from it. However, although the inclusion of trade clearly makes for more realism, the model still suffers from a number of deficiencies. Two important ones are, first, that there is no direct reference to the monetary sector, and second, that there is no reference to the capital account of the balance of payments. Shifts in the *S–I* schedule could, however, be associated with changes with the rate of interest. A standard presumption is that increasing interest rates will lead to greater savings, as people respond to the larger incentive to defer current consumption, and lower investment, as fewer projects now appear profitable. In these circumstances (*S–I*) will shift upwards and the current account of the balance of payments will strengthen at the same time as national income falls. However, the monetary sector and the
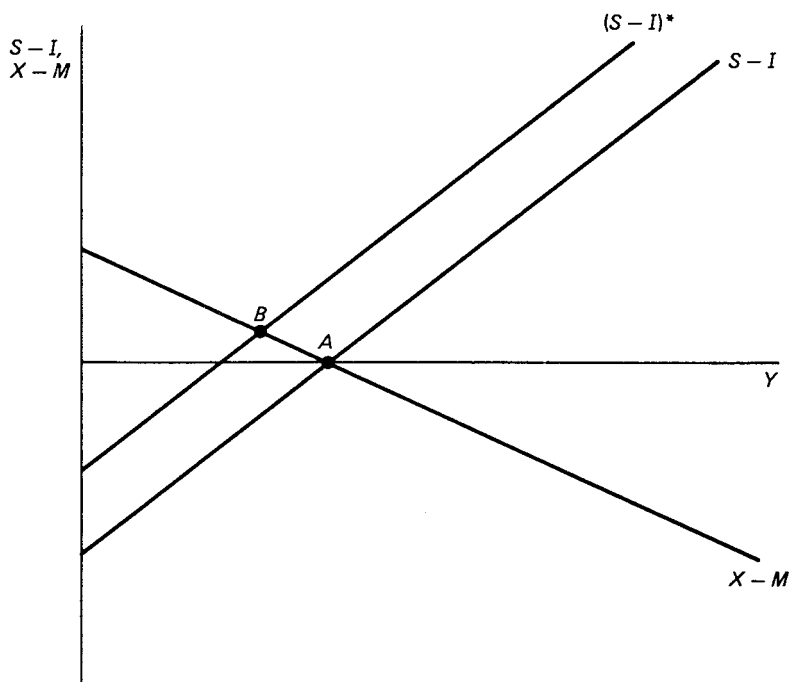
Figure 2.3

capital account are better accommodated by presenting an open economy version of the *IS–LM* model.

IS–LM AND THE OPEN ECONOMY

Figure 2.4 illustrates a conventional *IS–LM* model. *IS* shows the combinations of national income and interest rate which give equilibrium in the real sector of the economy (with planned investment equal to planned saving). *LM* shows the combinations which give equilibrium in the monetary sector with the demand for money equal to the supply of money. Point E therefore shows a combination of income and interest rate at which there is simultaneously real and monetary sector equilibrium.

The *IS–LM* diagram is decomposed into its constituent parts in Figure 2.5. The investment (part (i)) and savings (part (ii)) schedules go to make up *IS*, and the transactions (part (iii)) and
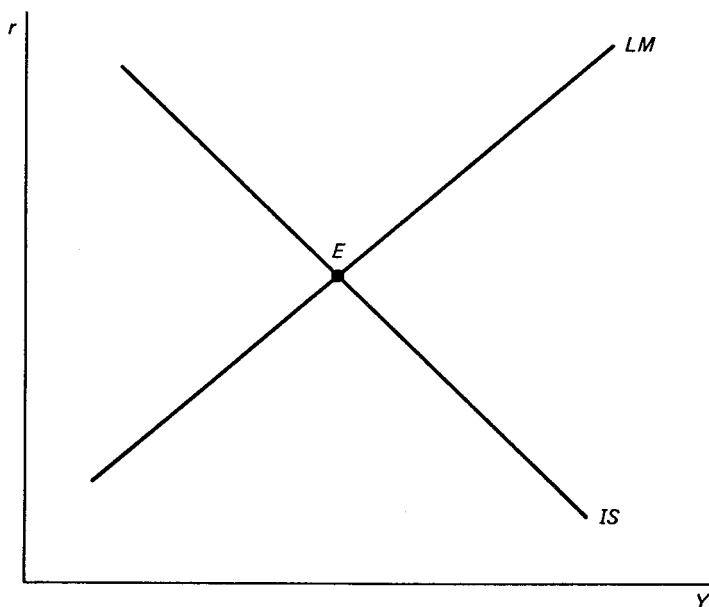
Figure 2.4

speculative (part (iv)) demands for money, in conjunction with the supply of money (*MS*), go to make up *LM*.

It is now relatively easy to build on Figure 2.5 in order to introduce imports, exports and non-accommodating capital flows into the model. Figure 2.5 part (v) represents the balance of payments on current account which is shown as being a function of the level of income. Part (vi) represents the non-accommodating part of the capital account with the assumption being made, at this stage, that capital flows are a function of the differential between domestic and world interest rates. Holding the world rate constant, a rise in the domestic rate of interest generates an extra inflow of capital while a fall reduces the inflow or encourages an outflow. Where the capital flow function cuts the vertical axis of part (vi) of the diagram, the domestic rate of interest is equal to the world rate and there are no new capital flows either inwards or outwards.

Criticisms may be made of this basic model. These relate in part to aspects, such as prices, which are ignored, and in part to relationships that are included such as the nature of capital movements. However, putting the problems to one side for the moment and
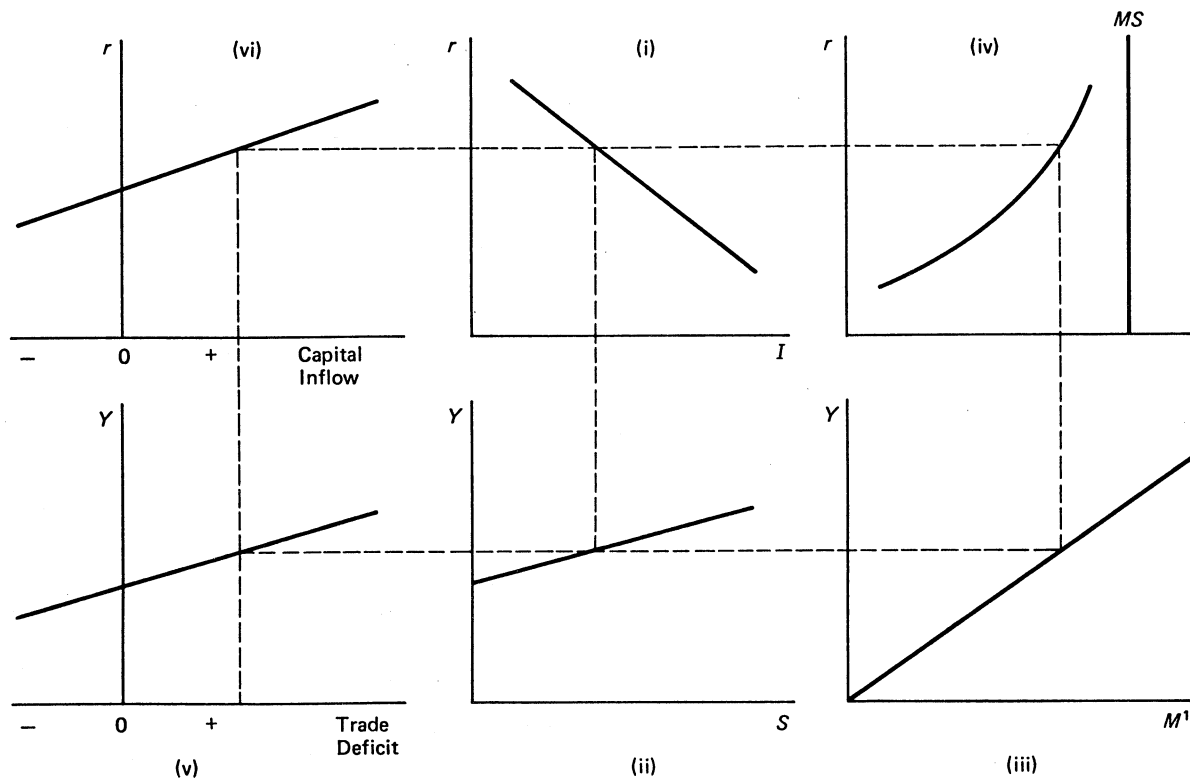
Figure 2.5
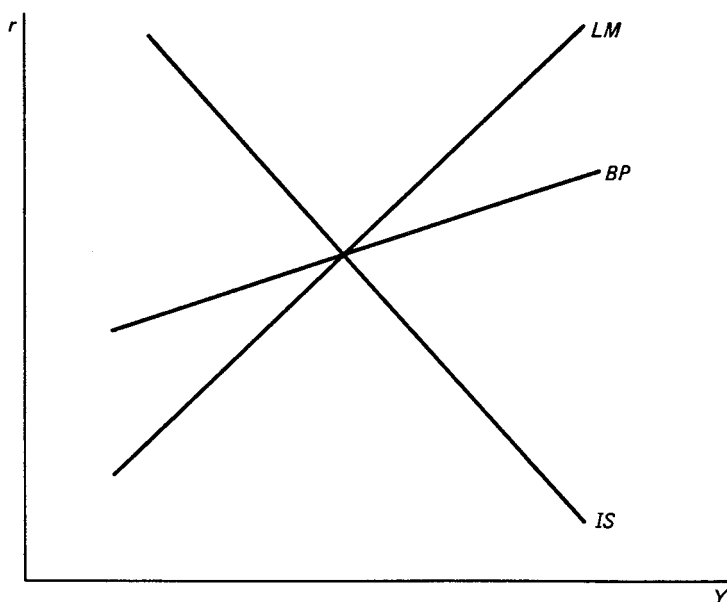
Figure 2.6

accepting the model at face value, it demonstrates a number of things. First, it shows how the level of income and rate of interest will have implications for the current and capital accounts of the balance of payments. Second, it shows how a combination of income level and interest rate which is an equilibrium one from the point of view of the domestic economy may fail to bring about balance of payments equilibrium. Third, but leading on from this, the model shows just how narrow is the closed economy definition of macroeconomic equilibrium.

These aspects of the model are again revealed if we now combine the six components of Figure 2.5 to give Figure 2.6, which is simply an *IS–LM* diagram augmented by a balance of payments relationship. The theory behind this relationship is that, as income rises so imports also rise, and, with exports constant, the balance of payments on current account 'deteriorates'. In order to maintain overall payments equilibrium an offsetting capital inflow needs to be generated by raising the domestic rate of interest. The *BP* line in Figure 2.6 therefore has an upward slope, with its slope depending on the value of the marginal propensity to import and the degree of capital

mobility. The higher is the former and the lower the latter, the steeper will be BP.

Chapters 3 and 4 look in more depth at the trade schedules and the theory of capital movements which underpin the above model, while the section of this chapter on 'Prices in the Open-Economy Model' says something about the inclusion of prices into the analysis. However, before moving on to this we need to say a little more about the concept of the foreign trade or open economy multiplier, and about the fact that with open economies economic developments in one economy can, at least to some extent, be transmitted to others.

THE FOREIGN TRADE OR OPEN-ECONOMY MULTIPLIER

We have already noted how the nature of the expenditure multiplier will change as we move from a closed to an open economy. We discovered that the significance of openness for the value of the multiplier depends on the size of the marginal propensity to import.

To reinforce our earlier analysis, the foreign trade multiplier may be derived in a slightly different fashion. Thus:

$$S + M = I + X$$

$$\Delta S + \Delta M = \Delta I + \Delta X$$

$$\Delta S = s\Delta Y$$

$$\Delta M = m\Delta Y$$

therefore

$$s\Delta Y + m\Delta Y = \Delta I + \Delta X$$

$$\Delta Y(s + m) = \Delta I + \Delta X$$

$$\Delta Y = \frac{\Delta I + \Delta X}{s + m}$$

and
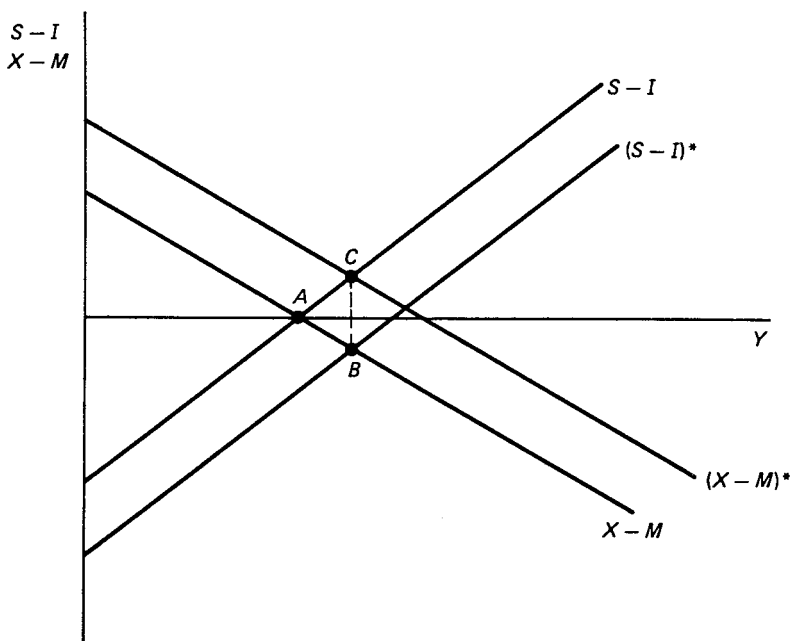
Figure 2.7

$$\frac{\Delta Y}{\Delta I + \Delta X} = \frac{1}{s + m}$$

Certain features of this analysis may be drawn out:

(i) Provided that the value of the multiplier exceeds 1.0, an autonomous increase in exports will increase income by an amount greater than the initial increase in exports.

(ii) The value of the foreign trade or open economy multiplier depends on the values of the marginal propensities to save and to import. The higher the values of these leakages the lower will be the value of the multiplier.

(iii) Just as there is a 'paradox of thrift' in the context of the closed economy, so, in an open economy, an increase in the propensity to import may fail to generate an equivalent increase in actual imports.[2]

(iv) An autonomous change in exports will not lead to an equiva-

lent change in the balance of payments since it will induce a
change in income and thereby a change in imports. The balance
of payments will strengthen by only a proportion of any given
increase in exports.

(v) From the viewpoint of one specific economy, an autonomous
change in domestic expenditure will, to some degree, spill
overseas. At the same time, changes in expenditure which have
their origin overseas will have an effect on the domestic econo-
my.

(vi) A change in any component of autonomous expenditure will
have the same effect on income but will have different effects
on the balance of payments. Starting from point A in Figure 2.7
an increase in investment, and therefore a rightward shift in
$S - I$, leads to a deficit in the balance of payments (point B),
whereas an increase in exports, and therefore a rightward shift
in $X - M$, leads to a surplus (point C).

Two key features associated with the analysis of the open-econo-
my multiplier are first, that changes in the current account of the
balance of payments are shown to be significantly influenced by
changes in the level of national income. And second, that economic
disturbances can, in principle, be easily transmitted between
economies.

THE TRANSMISSION OF CHANGES IN ECONOMIC
ACTIVITY BETWEEN ECONOMIES

The process through which fluctuations in economic activity may
be transmitted between countries may be illustrated by means of
a simple general example. Let us assume that we live in a two-
country world. Now imagine that there is an autonomous increase
in expenditure in country A. Income in country A therefore expands
and this induces a rise in imports from country B. A rise in country
A's imports is the same thing as a rise in country B's exports, and
this leads to an increase in income in country B by a multiple of the
increase in exports, depending on the value of country B's multi-
plier. The increase in income induces a rise in country B's demand
for imports, or, in other words, country A's exports. As a result
country A's income increases and so on.

This example illustrates the fact that where national economies
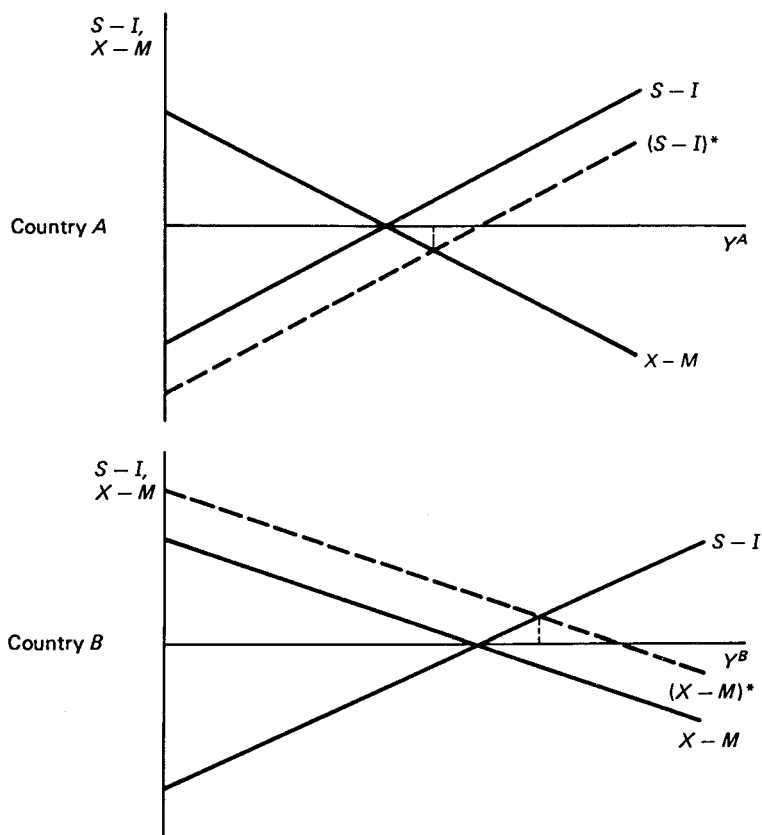
Figure 2.8

are linked to one another by trade, changes in one country's national income will have repercussions for the national incomes of trading partners, which, in turn, will feed back on the national income of the country where the initial change in expenditure occurred. It is by this sort of mechanism that booms and slumps are transmitted between economies.[3]

The mechanism may be illustrated by using the diagrams introduced earlier. In Figure 2.8, a rightward shift in $S - I$ in country A leads to an increase in income and a trade deficit. In country B exports rise and $X - M$ shifts to the right. Income increases and the balance of payments on current account moves into surplus. However, the rise in income induces an increase in imports such that

country A's exports increase and its $X - M$ schedule shifts to the right. Eventually the situation will settle down with each country's rise in income depending on the value of the open economy multipliers in the two countries.

It would appear at first sight that we have unearthed a powerful mechanism by which fluctuations in economic activity are transmitted around the world. However, its strength rests crucially on a number of factors. First, the chain of reactions outlined above does not continue indefinitely since the value of the marginal propensity to import is less than one and the value of the marginal propensity to save is greater than zero. Second, the smaller is the marginal propensity to import of the country where the disturbance is initiated, the less will be the extent to which it spills overseas and the greater the extent to which it is bottled up in the initiating country. Third, the larger is the marginal propensity to save, the smaller will be the value of the multiplier and the smaller, therefore, will be the change in income associated with any autonomous change in expenditure.

These factors may combine to limit the potency of the transmission mechanism. Returning to the above example, a high marginal propensity to save in country A will limit the extent to which income rises in response to the increase in autonomous expenditure, while a low marginal propensity to import will limit the extent to which the expansion spills over to country B. In country B a high marginal propensity to save will again keep the value of the multiplier down and a low marginal propensity to import will minimise any feedback effect on country A.

The strength of the transmission mechanism is, of course, also exaggerated by concentrating on a two-country world. In a world with many countries and a fairly even spread of import sources, the effects of expansion or contraction in one country will be more widely dispersed. Also, if the initiating country is small, the repercussions on other economies are likely to be similarly small.

SOME RESERVATIONS ABOUT THE SIMPLE
OPEN-ECONOMY MODEL

It would be unwise to expect too much of the simple model we have constructed so far and it may therefore be sensible to itemise some reservations about it. We have already noted that it embodies very simple foreign trade functions and concentrates on changes in income
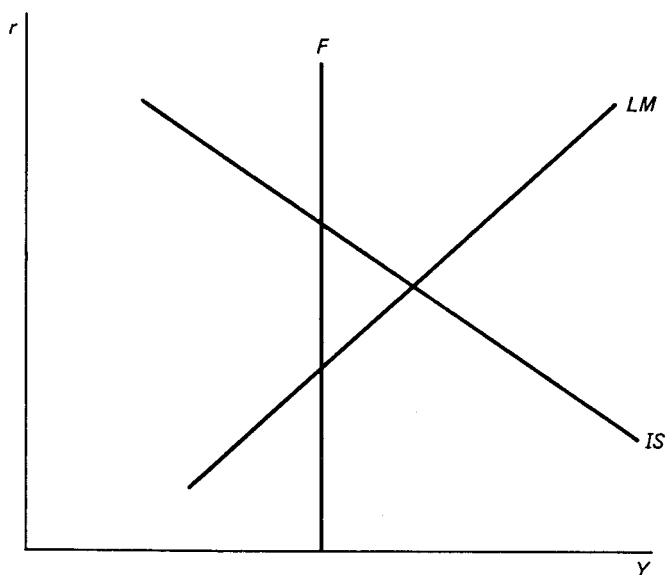
Figure 2.9

without saying anything about prices in general or exchange rates in particular.

To these deficiencies we may now add the following. First, in the real world transmission effects may occur not only through trade flows but also through the financial sector with rising interest rates, for example, having global consequences. They may also occur through changes in the prices of key traded goods such as oil. Second, the size of the trade effects will depend on the structure of a country's trading relationships. Some countries may not benefit from expansion elsewhere if they produce goods which have low income elasticities of demand. Third, the existence of multinational enterprises may distort the above analysis if a proportion of export earnings is repatriated. Fourth, the effects of falling income on import demand following a decline in export earnings may be offset by decumulating reserves or by borrowing.

During the course of this book something more will be said about most of these deficiencies of the basic model. In the next section we turn to say a little about incorporating prices into the analysis.

PRICES IN THE OPEN-ECONOMY MODEL

The analysis up to now has assumed constant prices. How restrictive an assumption this is depends on how rapid inflation actually is. With relatively low rates of inflation constant price analysis may not be too unrealistic. Even so, it is relatively easy to incorporate prices into the open-economy model.

The simplest, and not necessarily least appropriate way of doing this is to change the specification of the *LM*, *IS* and *BP* relationships so as to allow them to be affected by the price level. At the same time it is also necessary to identify the process through which inflation is generated. Again, a simple solution is to assume that changes in the price level within an economy depend on the difference between aggregate monetary demand and the full employment level of real output.

Diagrammatically, if *IS* and *LM* intersect to the right of this full employment level of output, shown by line *F* in Figure 2.9, the price level will rise, with the rate of increase depending on the extent of excess demand. The rise in prices will increase the nominal demand for money or, what comes to the same thing, reduce its real supply. *LM* will therefore shift leftwards. Meanwhile, if consumption and saving are related to the value of real cash balances, inflation which erodes the value of real balances will reduce consumption, increase saving, and shift *IS* to the left. *IS* may also shift to the left if inflation has an adverse effect on business expectations and reduces investment.

The location of the *BP* schedule may also be influenced by inflation. An increase in a country's price level, relative to that of its competitors, implies an appreciation in the real exchange rate. This, in turn, will tend to reduce exports, increase imports and cause a capital outflow in expectation of a nominal devaluation designed to restore the old real rate. To offset these effects on the balance of payments a higher rate of interest will have to be offered. Inflation thus causes *BP* to shift upwards. The loss of competitiveness will also reduce overall expenditure and will shift *IS* further to the left. The model will eventually attain a form of quasi equilibrium where *IS* and *LM* intersect somewhere along *F*, for in these circumstances prices will cease rising and the *IS*, *LM* and *BP* schedules cease shifting.

Of course, each of the effects of inflation discussed above as well as the inflationary process itself may be analysed in much greater

detail. But for our purposes the benefits probably do not warrant the extra costs in time and space. The important points for us to grasp are the manner in which inflation may be incorporated into the model and the assumptions underpinning the particular fashion in which inflation is incorporated. Clearly, different models relating to the causes and effects of inflation are possible. More sophisticated analysis would need to examine these alternatives.[4]

One aspect of the inflationary process in the context of an open economy which it is important for us to note at this stage, is that domestic inflation may be affected by what is happening abroad as well as by the level of domestic demand. Both foreign demand and cost pressures may have a role to play in this regard. In the case of cost-induced inflation from abroad *IS*, *LM* (and possibly even *BP*) may shift even though there is no excess domestic monetary demand. We shall return to say more about inflation in the open economy and the world economy later in the book.

CONCLUDING REMARKS

The purpose of this chapter has been to show how simple analysis of the closed economy may easily be modified to incorporate a country's dealings with the rest of the world. The discussion has even revealed how, albeit at an unrefined level, inflation may be included into the model. However, as with most simple models, as many questions have been raised as have been answered. One key question relates to the nature of the balance of payments schedule that has been introduced. The next chapter investigates the analysis underpinning this schedule by looking at both its current and capital account components.

3 Trade Functions and Capital Movements

INTRODUCTION

Following on from the analysis in the previous chapter we now examine in more detail the import and export functions introduced there. We also say a little more about the way in which capital movements may be treated in an open economy model.

THE IMPORT FUNCTION

Up to now we have assumed that the import function has the form:

$$M = mY$$

This clearly implies a rather simple and unsophisticated relationship which begs a series of questions. These fall into essentially two categories. The first includes questions about the nature of the relationship between imports and income. The second includes questions about other determinants of import demand.

Looking initially at the nature of the relationship between imports and income, the above function suggests that imports will be zero if income is zero. However, it may be claimed either that there will be a positive level of imports even with zero income or that income will have to be significantly in excess of zero before any imports will occur. In any event, there will be a constant term in the import function. In the former case, the sign of this constant will be positive and in the latter case negative. A change in the constant term, whatever its sign, will alter the equilibrium level of income and the balance of trade, though the balance of trade will alter by less than the autonomous change in imports.

More realistically then the import function may be presented as:

$$M = z + mY$$

This function, however, still makes certain implicit assumptions. First, it is assumed that the marginal propensity to import (m) is

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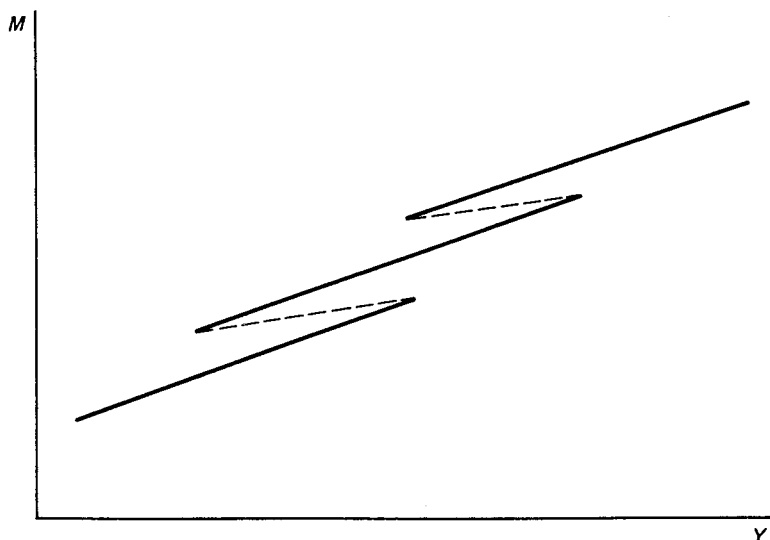
Figure 3.1

constant and the import function, therefore, linear. In fact, it is quite likely that the value of *m* will vary as the level of income varies. For example, as a country develops it may become more diversified in the range of goods it produces. The substitution of domestic for foreign production will cause both the marginal and average propensity to import (*M/Y*) to fall. Furthermore, the way in which imports change as income changes may depend on the types of goods imported. Where, for example, a country is unable to produce much of its own staple foodstuff there will be a minimum level below which imports will not fall. At the same time, an increase in income may not result in much increase in the demand for imported food. This may, instead, be much more responsive to changes in the size of population.

Second, the way in which the import function has been drawn in Chapter 2 implies reversibility. The same level of imports will always be associated with the same level of income. In fact there may be impaired reversibility and a 'ratchet effect' may exist. Imports may indeed rise as income rises, but then fail to fall back to their original level as income falls back to its original level. As Figure 3.1 illustrates, this ratchet effect may be reinterpreted as a shift upwards in the import function.

Third, imports may not simply be related to the *level* of income, but also to the *rate of change* of income. Where income expands rapidly it may be more difficult to meet this increasing demand from domestic supply since bottlenecks occur, and there may be greater incentive to buy goods from abroad. A steadier increase in demand may result in a smaller increase in imports.

All the above points, although challenging the basic simplicity of our original import function, still accept that income is the prime determinant of imports. But is this the case?

First, it needs to be recognised that, from national income accounting, income is equivalent to output and to expenditure. But which of these concepts is more relevant when discussing imports? Much depends again on the nature of imports. If these are intermediate goods, then the output concept is appropriate. For final goods, however, expenditure is more relevant. A change in the composition of expenditure could take place which, while not initially affecting the level of output and income, does affect the demand for imports. If consumption has a higher import content than government expenditure, a switch in expenditure away from the government and towards private consumption will raise imports (and eventually reduce the equilibrium value of income). Even this analysis is at too high a level of aggregation. Different types of government and consumer expenditure will have different import contents.

Second, it is unrealistic to assume that import demand will be unaffected by relative prices. In fact demand theory clearly predicts that import demand will tend to rise as the price of imports falls, relative to that of home produced goods. Of course, this assumes that imports can be substituted for home produced goods. The degree of substitutability will affect the price elasticity of demand. Where home produced goods and imports are not substitutable the price elasticity of demand for imports will be correspondingly low. It also needs to be remembered that the relative price of imports may change not only because producers alter the prices they charge, but also because tariffs or exchange rates change. At the same time, however, the imposition or removal of tariffs,or alterations in the exchange rate, need not necessarily lead to changes in the relative price of imports if producers are prepared to alter their prices in order to compensate for such changes.

Third,while price clearly has an important bearing on import demand, it is only one element in the overall terms of sale. Other elements include waiting time (or perhaps more accurately antici-

pated waiting time), the availability (and price) of trade credit, sales effort, after sales service, and quality. Changes in these non-price elements may have an important impact on the demand for imports. Indeed, some observers feel that non-price competition in international markets is more important than conventional price competition.

To some extent the relative terms of sale will be affected by the pressure of demand within a country, i.e. the level of aggregate demand relative to domestic aggregate supply. With high demand pressure prices may rise, queues lengthen and imports increase. Again we see that it is not just the level of aggregate demand that is significant in attempting to explain import demand.

Before leaving the import function we need to note that, while the factors discussed above may shape the *demand* for imports, the *actual* level of imports may not be the same as this. Quantitative restrictions on imports and time lags in supply may keep actual imports below the level demanded.[1]

THE EXPORT FUNCTION

In the open-economy model built in the previous chapter it was assumed that exports could be treated as being given, i.e.

$$X = \overline{X}$$

Although, at first sight, this seems to be a grossly oversimplifying assumption there is a certain internal logic to it. For if we recognise that one country's exports are other countries' imports and assume that imports are a function of income, and further assume that one country has no influence over income in other countries, then it does indeed follow that a country has no control over the demand for its exports.

More realistically, while there may certainly be exogenous influences at work, there can be little doubt that countries do exert some influence over the demand for their exports, as well as over the extent to which the demand is met.

Again bearing in mind that the exports of one country represent the imports of others, it seems reasonable to assume that the same factors that determine imports will also determine exports. The price of exports expressed in terms of foreign currency, the terms of sale,

as described earlier, and the quality of goods will all exert an influence over the demand for exports.

However, actual exports depend not only on the demand for them but also on their supply. This will, in part, depend on the price expressed in terms of the relevant home currency, but it may also depend on the internal pressure of demand in the exporting country; although the precise nature of this relationship is rather ambiguous. On one side, a high level of domestic demand may serve to direct resources away from the export sector towards the home market, while also causing prices to rise and queues to lengthen which discriminates against exports. On the other side, buoyant domestic demand may be necessary to encourage exports, and, to the extent that firms enjoy decreasing costs, rising domestic demand may increase price competitiveness. This suggests that much will depend on the nature of the cost curves which exporting firms face, and the nature of the price setting mechanism, which will, in turn, be influenced by the market structure in which firms operate. For firms in imperfect markets a fall in demand need not lead to a fall in price even where short-run marginal costs rise as output rises.[2]

The above discussion suggests ways in which our earlier treatment of the current account of the balance of payments may be made somewhat more realistic. Indeed, by interpreting income to be nominal income it is possible to include the effects of domestically generated inflation on the trade balance. This will now move into deficit as either real income or the price level rises. Changes in the other determinants listed above will tend to shift the balance of payments (*BP*) schedule either upwards or downwards, depending on whether there is a deterioration or an improvement in the current account.

Before moving on to examine the capital account and capital movements, it needs to be recognised that not all components of the current account will respond to the sorts of influences listed so far. In as much as the current account also includes interest payments on previous borrowing, the state of the current account will depend on the volume of such borrowing and on the level of interest rates. The larger the borrowing in the past and the higher the interest rate, the less strong will be the current account. As a result of this element, the current account which is normally seen as a *flow* account, may be seen as being influenced by *stocks* as well – principally the stock of debt. The distinction between stocks and flows is perhaps more relevant when discussing the capital account.

THE CAPITAL ACCOUNT: FLOW OR STOCK THEORY?

The model presented in Chapter 2 suggests that a differential be-
tween the rate of interest on offer in one country and the rest of the
world results in a permanent capital flow. Domestic interest-rate
policy can, in these circumstances, be used to nullify the effects of
current account disequilibria on the balance of payments overall. The
key question is whether such a flow model provides an accurate
description of the way in which capital movements actually occur.
There are strong reasons for arguing that it does not. After all, much
analysis of domestic investment suggests that a change in interest
rates works by altering the desired capital stock which, given the
resulting discrepancy between the actual and desired stock, then sets
off a process of capital stock adjustment, i. e. investment or disinvest-
ment.[3]

Similarly, analysis of the demand for money and portfolio models
show how, starting from a situation of portfolio balance, an alteration
in interest rates will disturb this situation of equilibrium and encour-
age wealth holders to reorganise their portfolios. However, once the
reorganization and a new equilibrium have been achieved no further
capital movements will occur.[4]

It may be useful to dwell on such models for a little longer. The
models essentially assume that while people are looking for a high
return on their assets, they also want to avoid risk. Risk averters will
have to be offered higher and higher expected returns if they are to
be enticed to take on more and more risk. In models of the demand
for money these factors have been used to explain why people hold a
combination of money (assumed to have zero return but zero risk)
and bonds (assumed to have a relatively high return but also a
relatively high risk in terms of the variability of the return). Such a
model is illustrated by Figure 3.2. An increase in the rate of interest
from r^1 to r^2 may there be seen to encourage the wealth-holder to
alter the balance of the portfolio away from money and towards
bonds, though this represents the outcome of conflicting pressures
with the substitution effect encouraging a movement into higher
yielding assets but the income effect saying that, with a higher yield
on existing bond holdings, the wealth-holder can afford to go for
reduced risk and more security. Whichever of these effects domi-
nates, the impact of the change in the interest rate is set within the
context of a stock adjustment model.
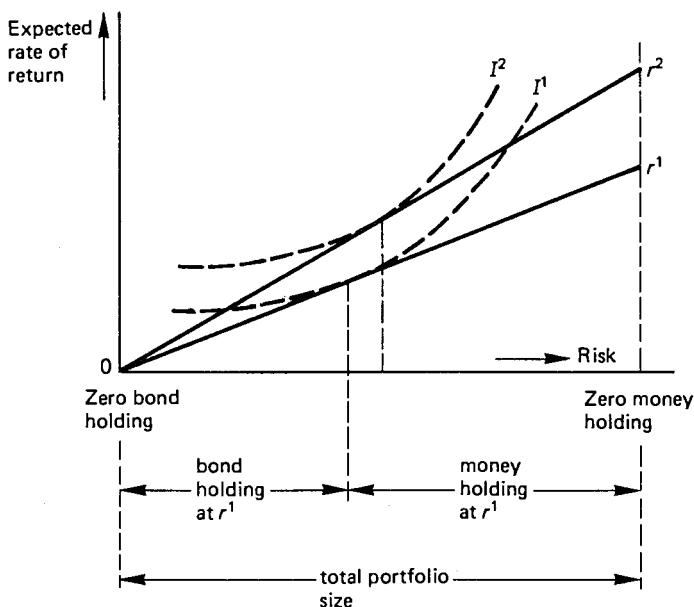
Figure 3.2

Given their preferences between return and risk, as shown by the configuration of indifference curves, wealth-holders are in essence searching for an efficient portfolio of assets. If it is possible to get a larger return with no extra risk, or to reduce risk with no fall in return, the portfolio is inefficient and wealth-holders will alter the distribution of their wealth holding between assets. The above analysis suggests that an efficient portfolio will be a diversified one.

Let us examine the rationale of portfolio diversification in more detail,but for the time being still retain the assumption that there are only two assets. In Figure 3.3. point *A* shows the combination of return and risk associated with holding *all* wealth in asset *A*, while point *B* shows the combination associated with holding *only* asset *B*. But what happens if *both* assets are held? If the outcomes associated with the assets are perfectly positively correlated then a portfolio incorporating both of them will give a linear combination of the expected return and risk of each asset, as shown by the line *AB*. But not all assets will fare in the same way. The outcomes of holding assets *A* and *B* may be independent of one another or may even be negatively correlated. If this is the case, the collective risk of a
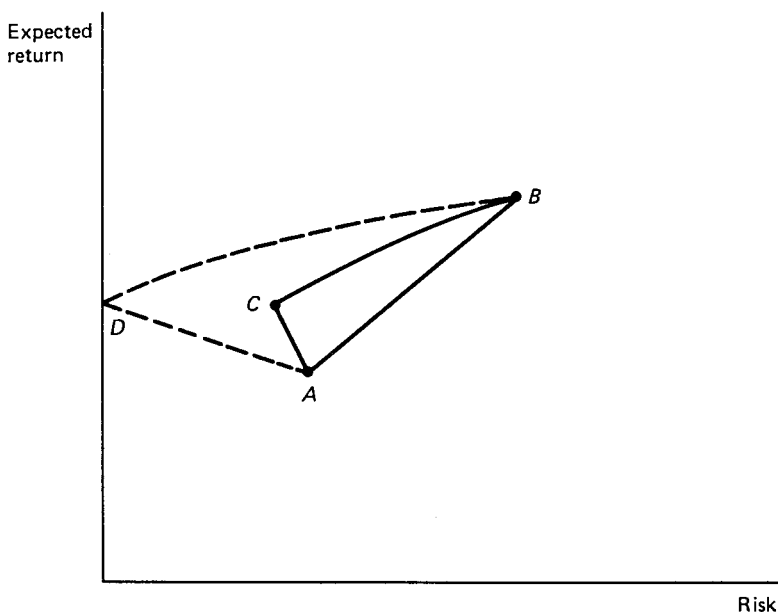
Figure 3.3

diversified portfolio will be smaller than the average risk of each individual asset. The 'opportunities frontier', or the combinations of risk and return from a diversified portfolio, may take the shape *ACB*, with *CB* being the efficient portion of the frontier and *AC* the inefficient portion. If outcomes are *perfectly* negatively correlated, it would be possible to reduce the risk to zero and the frontier would become *ADB* with *DB* being the efficient portion.

Figure 3.4 illustrates the case where they are many assets. There will now be a set of return/risk combinations available, with these being bounded by an efficiency frontier. The boundary will be convex from above if the outcomes associated with different assets are imperfectly correlated.

To discover a position of portfolio balance, we need only combine this efficiency frontier with the wealth-holder's indifference curves between risk and return, as is done in Figure 3.5. Changes in either preferences or the efficiency frontier will disturb the initial equilibrium and alter the way in which the portfolio is distributed between different assets.

Although the above analysis has conventionally been presented to
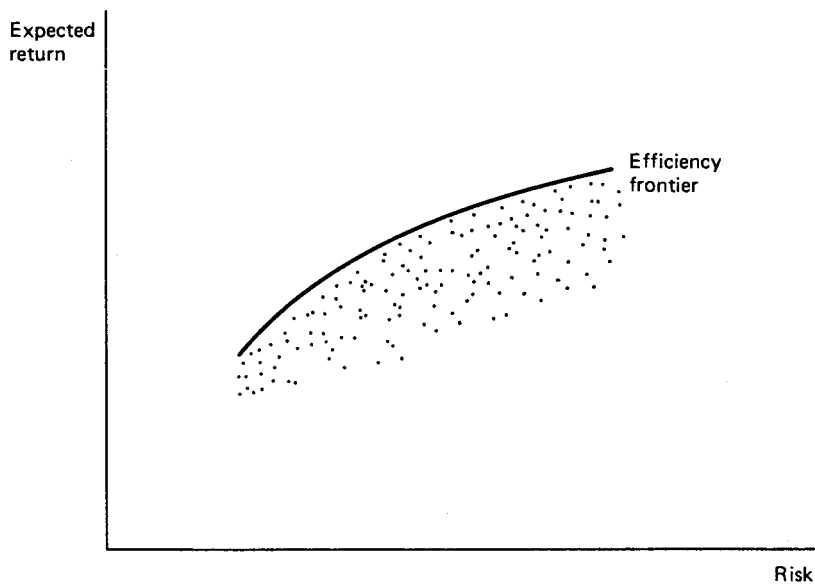
Figure 3.4
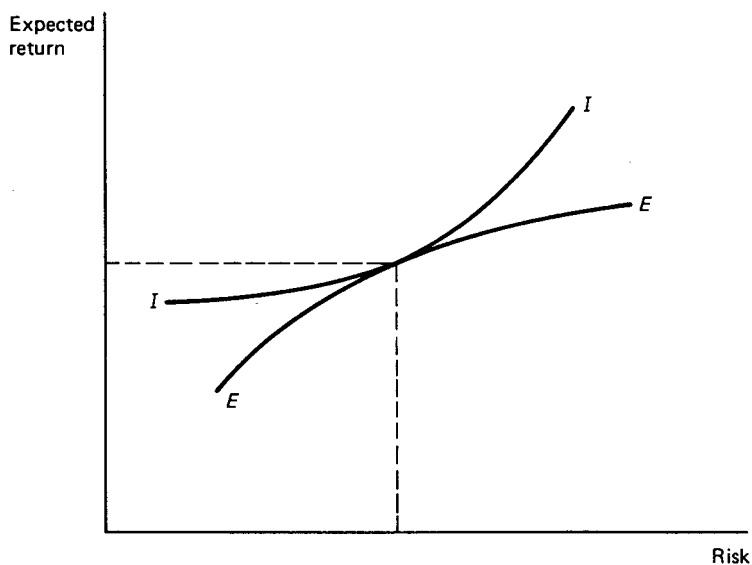
Figure 3.5

illustrate portfolio selection in the context of domestic capital markets, there is relatively little difficulty in applying it in an international context. Wealth-holders will still be concerned about return and risk. The only difference is that there will now be additional factors influencing these concepts. In particular, lending in an international environment implies the need for country risk analysis and an assessment of creditworthiness. Will the borrower be able and willing to repay? Here it is possible that an increase in interest rates in one country may be seen as so increasing the risk of default that expected returns fall and capital flows out not in. Furthermore, there is an additional risk associated with swapping between currencies when exchange rates are flexible and unpredictable. Although, to an extent, such risk may be eliminated by forward transactions to buy and sell currencies, the reduction in risk can only be bought at a price and this will reduce the expected return. On top of this, wealth-holders may simply not regard assets in different countries as close substitutes for one another and may therefore not respond greatly to changes in the interest rates on offer in different countries.

The discussion in this section reveals considerable shortcomings in the flow model of capital movements presented in Chapter 2. It transpires that a country cannot assume that raising its interest rate will bring about a permanent capital inflow. Where risks, from whatever source, are seen as being high, these may have a dominant effect – even though the theory of portfolio selection suggests that inclusion of a relatively high risk asset may reduce the overall risk of a portfolio if the risk of this asset is inversely related with the risks of other assets in the portfolio. Moreover, even if an increase in the interest rate does generate a capital inflow, this effect is likely to be temporary and to occur merely for as long as it takes for people to adjust their portfolios. In order to generate a permanent inflow, the stock theory suggests that it will be necessary to increase interest rates persistently.

The implication of this is that the *BP* schedule introduced in the previous chapter will become steeper over time with a rising interest rate being required to offset a given current account deficit. How steep the *BP* schedule is over different time periods will depend on how quickly stock disequilibrium is corrected. Starting off from a situation where there is excess demand for a country's assets because of a rise in the interest rate, quick adjustment will lead to a relatively large but temporary inflow whereas slow adjustment will lead to a smaller but more drawn out inflow. The size of the related flow will

diminish exponentially as in each period a given proportion of a diminishing shortfall between desired and actual holdings is eliminated.

Where the time-lag in adjusting portfolios is fairly long, it may be legitimate from a policy point of view to regard the related capital movements as if they are quasi flows. In this case the normal state of affairs would be one of disequilibrium with the system always moving towards, though not necessarily reaching, equilibrium.

There is, however, another way in which the flow model may still prove to be of some use within the context of a stock adjustment framework. Where the stock of wealth increases over time, and where the marginal additions to wealth are distributed across assets in the same proportions as these assets bear to the total portfolio, anything that encourages a wealth holder to increase current holdings of a particular asset will imply that the demand for that asset will grow more rapidly than it would otherwise have done. This is the so-called portfolio growth effect. In this way a change in interest rates may have a permanent affect on capital flows.

It needs to be remembered in this analysis that while the effect of changing interest rates on the capital account may be temporary, the effect on the current account, in terms of the related servicing obligations, may last for much longer. A short-term strengthening of the capital account may therefore be bought at the expense of a longer term deterioration in the current account.

Even if we accept the flow model as described earlier, there are reasons to believe that a permanent capital inflow will not be associated with an increase in interest rates. This is because the capital inflow will itself tend to close the interest-rate differential and thereby erode the incentive for further capital inflows. In a perfect capital market the interest-rate differential will indeed disappear and capital flows cease. With an imperfect market the capital inflow may stop before the interest differential is eliminated. On reflection then even the conventional flow model may not really be a flow model.

The strong reservations concerning the flow model of capital movements that have been itemised in this chapter need to be firmly borne in mind in the subsequent analysis of stabilisation policy in the context of an open economy. At best the model appears to be only relevant in the context of short-run stabilisation policy. Of course, the relevant question from a policy point of view is how long is the short run?

4 Balance of Payments Theory

INTRODUCTION

The purpose of this chapter is to build on the model of the open economy constructed and refined in previous chapters. Contained in the model described there is the core of a general theory of the balance of payments or of the exchange rate.

In an environment of fixed exchange rates, underlying forces which serve to shift the *IS* schedule, the *LM* schedule or the *BP* schedule will be reflected by balance of payments disequilibria. Where exchange rates are flexible, on the other hand, the same forces will instead be reflected by changes in the exchange rate.

More specifically, the model developed in Chapter 2 shows how disturbances emanating from either the real side of the economy, affecting consumption, investment, government expenditure and foreign trade, or from the monetary side, affecting the supply of and demand for money, may influence a country's balance of payments or its exchange rate.

The purpose of this chapter is to extend the insights that the basic model provides into the determination of the balance of payments under the assumption of fixed exchange rates. The next chapter then goes on to examine the theory of exchange-rate determination in an environment of floating rates.

A BASIC MODEL OF THE BALANCE OF PAYMENTS

The basic model for analysing the balance of payments from which we start is illustrated in Figure 4.1. Point *A* in this figure illustrates a situation of overall balance of payments equilibrium in the sense that any disequilibria in the current and capital accounts cancel each other out. It needs to be noted, however, that this is a rather narrow definition of payments equilibrium. First, it implies that governments are indifferent about the composition of the balance of payments, being quite content, for example, to run a large current account deficit for as long as this is matched by an equivalent capital account
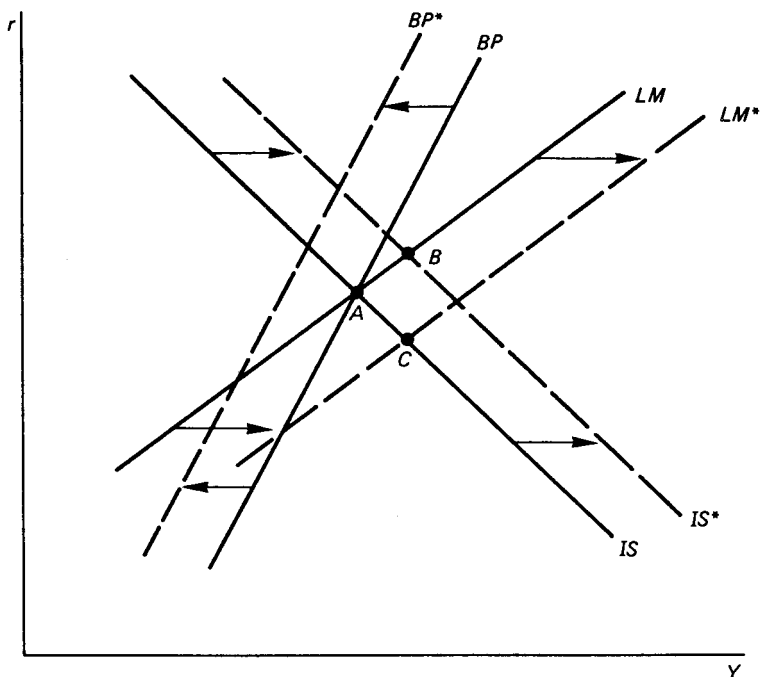
Figure 4.1

surplus. Second, it implies that governments are largely unconcerned about the level of employment and unemployment since this does not feature in the figure. In practice, if point A coincides with mass unemployment then it may be unrealistic to interpret such a point as representing a situation of policy equilibrium.

Having recognised that Figure 4.1 rests on a number of restrictive assumptions, it does clearly show how a balance of payments deficit will result from anything which causes the *IS* or *LM* schedules to shift to the right, giving us points *B* and *C* respectively in Figure 4.1, or from anything which causes the *BP* schedule to shift upwards and to the left. Similarly, a balance of payments surplus will result from factors causing *IS* and *LM* to shift to the left, or *BP* to shift downwards and to the right, as illustrated by points *X*, *Y* and *Z* respectively in Figure 4.2.

The remainder of this chapter is structured around analysing shifts in each of these schedules. However, before proceeding, we need to recognise that, for the most part, unemployment and inflation are
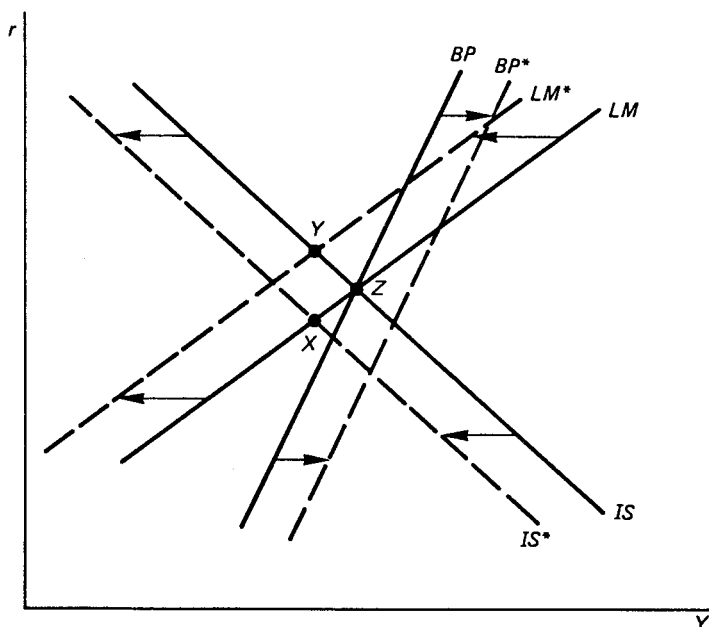
Figure 4.2

ignored in the analysis. Those interested may refer back to the section on 'Prices in the Open Economy Model' in Chapter 2 where there was some attempt formally to include such considerations into the analysis by making use of the *IS–LM–BP–FE* model.[1]

SHIFTS IN *IS*: THE ABSORPTION APPROACH

Examination of the basic model shows how an increase in domestic expenditure, shifting *IS* rightwards, will tend to weaken the balance of payments. The overall move into deficit represents the outcome of two opposing forces. First, the increase in expenditure induces an increase in imports and a deterioration in the current account (assuming that a movement into deficit or towards a larger deficit may legitimately be regarded as a deterioration).[2] Second, the increase in income also induces an increase in the demand for money. With a given money supply, the rate of interest rises and this generates a capital inflow and an improvement in the capital account.

Let us concentrate on the current account. The effect of changes in domestic expenditure on the current account are conventionally analysed within the context of the absorption approach to the balance of payments. This may be conveniently described by using the income–expenditure equation for an open economy introduced in Chapter 2, i.e.:

$$Y = C + I + G + X - M \tag{1}$$

This equation may be reorganised as follows:

$$M + Y = C + I + G + X \tag{2}$$

The left-hand side (LHS) shows the total resources available to an economy as a result of domestic production and importing. The right-hand side (RHS) shows total expenditure, both from domestic and foreign sources. The equation may, however, be further reformulated to be:

$$X - M = Y - (C + I + G) \tag{3}$$

In this case the LHS provides a statement of the balance of payments, while the RHS shows how this depends on the difference between domestic output (Y) and domestic expenditure or absorption ($C + I + G$).

Starting off from a situation of payments equilibrium, an increase in domestic absorption relative to domestic output results in a payments deficit. More generally:

$$\triangle BP = \triangle Y - \triangle A \tag{4}$$

where $\triangle BP$ is the change in the balance of payments, $\triangle Y$ is the change in domestic output and $\triangle A$ is the change in domestic absorption ($C + I + G$).

Part of the problem with this approach to analysing the balance of payments is that Y and A are not independent of one another. If Y changes, this may induce a change in A, such that:

$$\triangle A = c \triangle Y \tag{5}$$

where c is the marginal propensity to spend. Of course, absorption

may also change for reasons unconnected with changes in Y, so that the above expression may be more realistically presented as:

$$\triangle A = c \triangle Y + \triangle Z \tag{6}$$

where $\triangle Z$ relates to changes in these other influences. Combining equations (4) and (6) gives us:

$$\triangle BP = \triangle Y - (c \triangle Y + \triangle Z) \tag{7}$$

and:

$$\triangle BP = \triangle Y - c \triangle Y - \triangle Z \tag{8}$$

According to this expression the balance of payments will change if there are changes in domestic output and income (though the effects of such changes will be partially offset by induced changes in domestic expenditure), changes in the marginal propensity to spend from domestic income, or changes in autonomous expenditure. Changes in expenditure could in turn, and for example, result from changes in investment associated with changing expectations about the future, or from changes in government expenditure associated with changing political objectives.

SHIFTS IN *LM*: THE MONETARY APPROACH

The monetary sector is largely ignored in the absorption approach to the balance of payments, although it may be included on the basic assumption that money supply policy is used to stabilise interest rates. However, the monetary sector forms the centre pin of the monetary approach which explains variations in the overall balance of payments exclusively in terms of domestic monetary disequilibria. Here it is rightward shifts in *LM* resulting essentially from increases in the supply of domestic credit which cause payments deficits. Not only does the monetary expansion cause nominal income and therefore the level of imports to rise, it also causes a fall in the rate of interest and therefore a capital outflow.

The monetary approach holds that there is a perfect correlation between the balance of payments and imbalances between the domestic demand and supply of money. If the demand exceeds

supply, then this will be reflected in a payments surplus as the excess demand is met by an accumulation of reserves and a related expansion in money supply. If supply exceeds demand, then this will be reflected in a payments deficit as the excess supply spreads abroad through an increase in the demand for foreign exchange and a decumulation in reserves.

The transmission mechanism through which domestic monetary disequilibria are translated into balance of payments disequilibria depends on the responses of households and firms to having either deficient or excess money balances. In the case of excess balances, for example, the key question is, 'on what are these spent?' Essentially there are four alternatives: domestic real assets, foreign real assets, domestic financial assets, or foreign financial assets.

If excess balances are spent on domestic real assets, goods prices will tend to rise. The demand for home produced goods will thus fall and that for goods produced abroad will rise. The current account will therefore weaken. If spent on foreign real assets, the demand for imports will rise directly. If spent on domestic financial assets, domestic asset prices will rise and the interest rate fall. The fall in the interest rate will cause both a capital outflow and an increase in domestic expenditure which will weaken the current account. If spent on foreign financial assets, there will be a direct capital outflow. Whatever way is chosen to dispose of excess money balances it appears that the balance of payments weakens, with excess supply in the domestic money market being converted into excess demand in both goods and asset markets.

Although the description provided so far gives a reasonable flavour of the monetary approach we should perhaps be rather more precise about its principal features, about the underlying monetary model, and about the principal assumptions upon which it rests.

The principal features of the monetary approach are as follows. First, imbalances in the balance of payments are seen as reflecting a *stock* imbalance between the demand and supply of money. As such, the monetary approach contrasts with the absorption approach which emphasises the relevance of expenditure *flows*.

Second, the balance of payments alters in order to compensate for, and to eliminate this domestic monetary stock imbalance. Payments disequilibria are therefore short-term and self-correcting phenomena within the context of the monetary approach. Once the stock disequilibrium causing the payments imbalance has been removed, changes in reserves, which reflect the nature of the payments imbal-
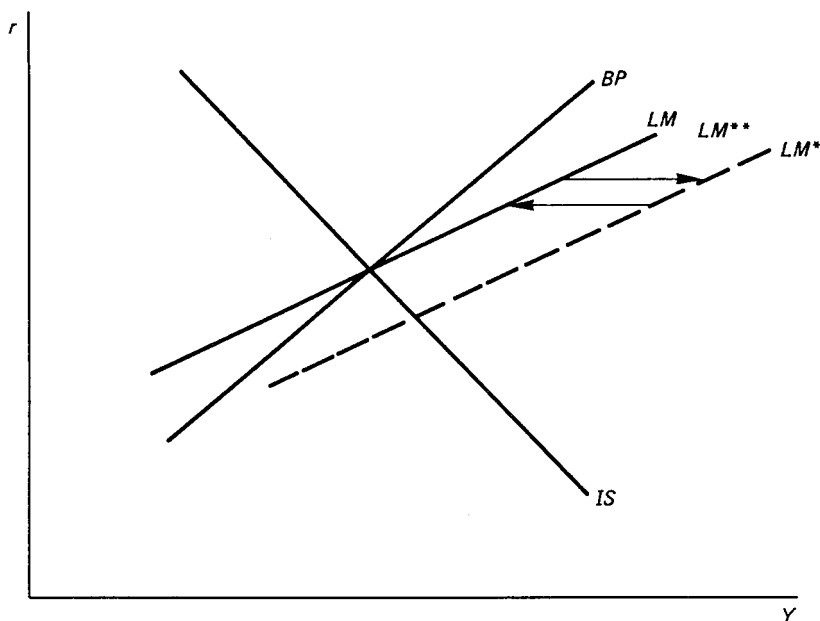
Figure 4.3

ance, cease. Again, in this regard the monetary approach differs from the flow-based absorption approach. Diagrammatically a rightward shift in *LM* connected with an increase in domestic credit leads to a fall in the reserve-related component of the money supply and a leftward shift in *LM* back to its original position (see Figure 4.3).

Third, and again in contrast with the absorption approach, the monetary approach moves attention away from the current account and towards the balance of payments as a whole, incorporating the capital account.

Fourth, the policy implications of the monetary approach are either to do nothing and allow the self-correcting mechanisms outlined above to operate, or to eliminate the underlying domestic monetary disequilibrium. Of course, the process of self-correction may take some time. The final feature of the monetary approach is that the analysis is essentially long run. Short-run problems are ignored.

The key features of the monetary approach listed above emerge fairly clearly from the underlying monetary model. This may be summarised by the following group of equations:

$$M^d = kPY \tag{9}$$

$$P = \bar{E}P^* \tag{10}$$

$$M^s = D + R \tag{11}$$

$$M^d = M^s \tag{12}$$

$$R = M^d - D \tag{13}$$

$$\text{and } \triangle R = \triangle M^d - \triangle D \tag{14}$$

$$\text{and } \triangle R = \triangle B \tag{15}$$

where M^d is the demand for money, k is the demand for money coefficient, P^* is the world price level, $\bar{E}$ is the fixed price of foreign currency per unit of domestic currency, D is domestic credit, R is the quantity of international reserves and B is the balance of payments.

The assumptions underlying this model are, first, that there are fixed nominal exchange rates (equation 10). Second, that the economy is at its natural rate of unemployment (reflected by Y in equation 9). Third, that the demand for money is a stable function of nominal income, with the main motive for holding money being its role as a medium of exchange (equation 9). Fourth, that, certainly in the long run, changing the money supply has no effect on real variables in the economy. Fifth, that an individual country's price level and interest rate converges towards world levels because there is a high elasticity of substitution between goods and assets in different countries (equation 10). And sixth, that changes in the money supply connected with changes in reserves are not sterilised, or offset, by the domestic monetary authorities. In effect, in the monetary model the authorities cannot control the supply of money but only its composition. If they increase the supply of domestic credit this will be offset by a fall in reserves.

On the basis of the monetary model P^* and E are given, and together determine the domestic price level (P). Y is at the level consistent with the natural rate of employment given an implicit production function. The demand for money can therefore be calculated. The difference between the demand for money and the supply of domestic credit (D) equals the level of reserves. If the demand for money rises by more than the supply of domestic credit, the excess

demand will be met by an inflow of money (in the form of reserves) from abroad. This inflow continues, however, only for as long as the excess demand for money persists. It is through changes in reserves that equilibrium in the domestic monetary sector is maintained. One of the apparent attractions of the monetary approach is its simplicity. What we appear to have is a unicausal explanation of the balance of payments. However, appearances can be deceptive. A number of questions need to be asked of the monetary model.

First, is the demand for money adequately described? If changes in the supply of domestic credit are offset by changes in the efficiency with which money is used, as proxied by the velocity of circulation, then there may be little or no impact on the balance of payments. Moreover, if money is demanded as a medium of exchange, why should an increase in the demand for money be associated with a fall in the level of spending, as a leftward shift in a vertical *LM* schedule would seem to imply?

Second, by what mechanism does the demand for money and supply of domestic credit change? The domestic price level is given by the world price level and the fixed exchange rate. The level of income is outside the control of the monetary authorities and the demand coefficient (k) is assumed to be unaffected by changes in the rate of interest. Meanwhile, the supply of domestic credit is treated as exogenous with no analysis of what induces it to change. More realistically, it is surely the case that monetary disequilibria can be caused by non-monetary factors.

Third, is the focus on the long run not misplaced? The focus of policy is almost always on the short run. The monetary approach tends, therefore, to skate over the interesting and relevant question of the short-run adjustment path towards equilibrium.

Fourth, is it not unrealistic to assume that policy-makers will be indifferent about the composition of the balance of payments? All the evidence is that considerable stress is placed on the importance of the current account as a means of servicing and eventually repaying loans.

Fifth, is it reasonable to assume that there will be no sterilisation of the effects of reserve changes? After all, the authorities have the means for such sterilisation through open-market policy and are likely to have the incentive directly one drops the assumption of permanent full employment.[3]

Finally, do domestic prices actually adjust to world levels, or, in other words, does purchasing power parity hold? More will be said
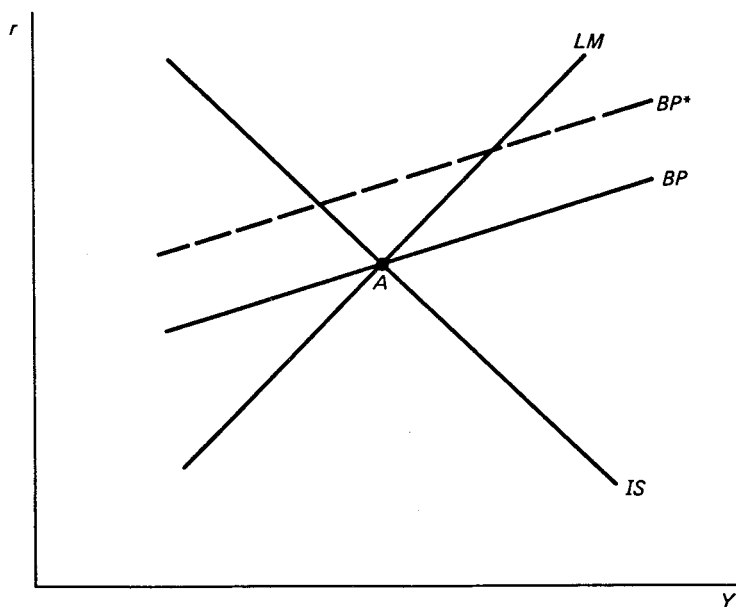
Figure 4.4

about this in the next chapter, but for the moment we can note that there is considerable evidence to suggest that it does not, at least in the short run.

Let us then move on to examine the remaining element in our analysis of the balance of payments, namely shifts in the *BP* schedule.

SHIFTS IN *BP*: THE STRUCTURAL APPROACH

A shift in the *BP* schedule will occur where, for any specific level of income, a different rate of interest is now required in order to ensure balance of payments equilibrium, or, where for any specific rate of interest, a different level of income is now required. In Figure 4.4 an upward shift in the *BP* schedule means that the combination of income and interest rate shown by point *A* now co-exists with a payments deficit.

But what lies behind such shifts in *BP*? Basically the location of *BP* will be affected by anything that influences the balance of payments

except the level of national income and the rate of interest. For example, changes in competitiveness, resulting from the various aspects of the terms of sales described in Chapter 3 (apart from the cost of trade credit which will be affected by changes in the rate of interest) will be significant, as will be factors which alter the credit-worthiness of countries as borrowers and the willingness of countries to lend at certain interest rates.

More specifically, factors which alter the relative price of imports or exports will shift *BP*, such as productivity changes and changes in efficiency which affect unit costs, or the introduction or elimination of import tariffs or export subsidies. Or, as we shall see in Chapter 7, the location of *BP* will also be affected by changes in the exchange rate, although in this chapter we are assuming fixed exchange rates.

It is within the context of shifts in the *BP* schedule that it is possible to accommodate a structural explanation of the balance of payments. The structural approach accentuates the importance of the types of goods produced and the efficiency with which they are produced. In a dynamic setting, countries which produce and export goods which have a relatively low income elasticity of demand, and, at the same time, do not produce but import goods which have a relatively high income elasticity of demand, will tend to encounter a secular deterioration in their balance of payments.

At the same time, a low level of product diversification combined with low price elasticities of demand and supply may, in certain circumstances, also cause considerable balance of payments instability about the trend. Another element of the structural explanation is that it focuses on the importance of changes in output as opposed to changes in expenditure. It represents a supply side approach to the balance of payments and in this regard may be seen as contrasting with the emphasis placed on demand which is a feature of both the absorption and monetary approaches.

SYNTHESISING THE APPROACHES: TOWARDS A GENERAL THEORY

Although the absorption, monetary and structural approaches to the balance of payments have frequently been presented by their advocates as offering competing and mutually exclusive explanations, their discussion within the context of the *IS–LM–BP* model reveals that, in fact, they complement one another. Although they lay
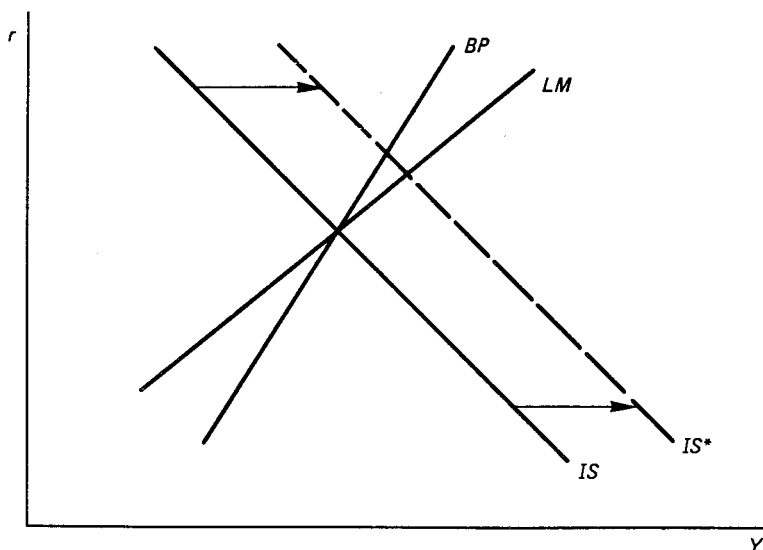
Figure 4.5

emphasis on different aspects of the model, they are not inconsistent.

A general theory of the balance of payments recognises that payments disequilibria may result from shifts in *IS*, shifts in *LM*, shifts in *BP*, or a combination of shifts in all three schedules. Indeed, more broadly, a general theory allows for the fact that shifts in the schedules may be interrelated. For example, to the extent that expansionary fiscal policy is financed by an increase in domestic credit creation, *LM* as well as *IS* will shift to the right. The size of the relative shifts, as well as the shapes of the schedules, will determine the extent to which the current and capital accounts alter. Figures 4.5 and 4.6 illustrate two possibilities. In Figure 4.5 the rightward shift in *IS*, reflecting an increase in some element of expenditure, is unaccompanied by any shift in *LM*. The deterioration in the overall balance of payments reflects the outcome of the rise in income, which causes a deterioration in the current account, and the rise in the rate of interest which causes an improvement (capital inflow) in the capital account. Had *LM*, been steeper than *BP*, the capital account effect would have dominated and the overall balance of payments would have moved into surplus.

In Figure 4.6 the rightward shift in *IS* is now accompanied by a rightward shift in *LM*, reflecting an increase in domestic credit
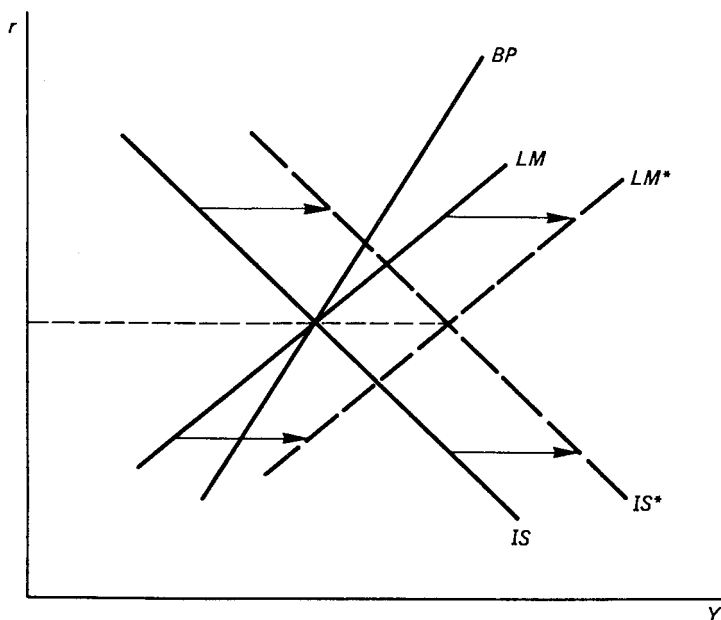
Figure 4.6

creation, which is sufficiently large that the rate of interest remains constant. In this case the deterioration in the balance of payments is more marked, since the increase in income, and therefore the current account deficit, is larger and there is no capital inflow.

Moving from the specific to the general, a moment's thought reveals that by making different assumptions about what causes *IS*, *LM* and *BP* to shift, and about the shapes of the schedules, it is possible to accommodate all the theories of the balance of payments outlined in this chapter.

Another way of integrating the theories is merely to recognise that payments disequilibria reflect an imbalance between aggregate demand and aggregate supply. Payments deficits reflect excess aggregate demand which may result either from an increase in aggregate demand or from a fall in aggregate supply.

We have seen that the same basic model allows us to present each of the three approaches as special cases of a more general theory. We have also seen that in the case of Figure 4.6 the theories may be interdependent. Let us now see if we can take further this idea of interdependency between the theories.

First, the absorption approach does not deny that excess credit creation will cause excess aggregate demand and payments deficits. Even the nature of the transmission mechanism is not in dispute although the elasticity of substitution between money and other assets may be. Nor, as we have seen, is the absorption approach purely a current-account model. It can tell us something about the rate of interest and therefore about the capital account.

Second, while emphasising the significance of credit creation, the monetary approach does not explain why credit is created. Again, the absorption and structural approaches may be used to look behind credit creation at the forces which cause credit to grow. Furthermore, to the extent that the absorption and structural approaches allow us to analyse the processes by which income and output change, they also allow us to talk about forces which influence the demand for money, and this is, of course, central to the monetary approach.

Third, policies directed towards changing the level and composition of domestic expenditure and which fall within the purview of the absorption approach, as well as policies directed towards changing the rate of interest – which may themselves alter the level and composition of expenditure – and fall within the purview of the monetary approach, may have important repercussions on the structure of the economy and thereby on its balance of payments.

What we end up with is a balance of payments theory that is general in a number of ways. But what happens if exchange rates are flexible, is the analysis sufficiently general to allow us to use it to explain variations in exchange rates? It is to this question that we turn in the next chapter.

5 Theories of Exchange-Rate Determination

INTRODUCTION

The general theory of the balance of payments constructed in the previous chapter may, with little difficulty, be modified to become a general theory of exchange-rate determination. With flexible exchange rates, a position of equilibrium as represented by a point of intersection between *IS* and *LM*, which lies off the *BP* schedule will result in a change in the exchange rate. Where equilibrium occurs below *BP*, giving a payments deficit, the exchange rate will depreciate. Where it occurs above *BP* giving a payments surplus the exchange rate will appreciate.

Taking the case of a deficit, the size of the required exchange-rate depreciation depends on how responsive imports and exports are to the relative price changes to which depreciation gives rise and on whether depreciation has any impact on the capital account. However, depreciation will not only shift the *BP* schedule downwards, allowing payments equilibrium to be achieved at a lower rate of interest for any given level of income or at a higher level of income for any given rate of interest, but, by changing the level of expenditure, it will also shift the location of *IS*. For example, to the extent that depreciation has an expansionary effect on expenditure *IS* will shift to the right.

The various forces that may cause the exchange rate to change are illustrated in Figures 5.1, 5.2, and 5.3. Starting from an initial point of payments equilibrium, as shown in Figure 5.1, *IS* shifts rightwards causing a balance of payments deficit, a depreciation in the exchange rate, and, in this case, a further rightward shift in *IS*.

In Figure 5.2 it is *LM* which shifts to the right and brings about a depreciation in the exchange rate. In this case the depreciation is larger than in the case of the rightward shift in *IS* since, whereas a rightward shift in *IS* causes the rate of interest to rise, a rightward shift in *LM* causes the rate of interest to fall. In the latter case both the current and capital accounts deteriorate, whereas in the former
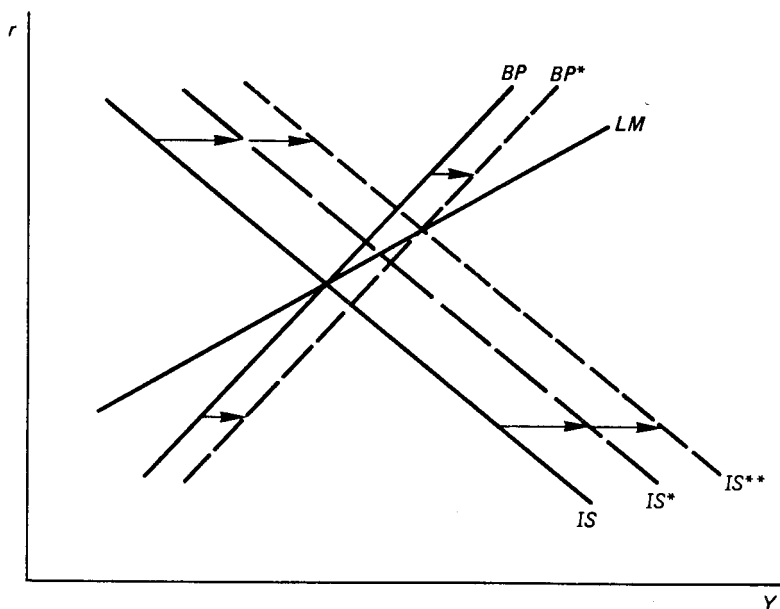
Figure 5.1

case the deterioration in the current account is partially offset by a
strengthening in the capital account.

Figure 5.3 illustrates the case where structural factors cause the
balance of payments to weaken, such that a combination of income
and interest rate which previously gave payments equilibrium now
combine to give a deficit. Again, according to the model, the ex-
change rate will depreciate until the deficit is eliminated, though to
the extent that the depreciation causes *IS* to shift to the right the *BP*
schedule will not have to shift down to its previous location. Where
BP is steeper than *LM*, as in Figure 5.3, *BP* will shift below its old
location since the effect of the rightward shift in *IS* on the current
account dominates that on the capital account. However, in the case
of Figure 5.4 where *BP* is less steep than *LM*, revealing a relatively
high mobility of capital, the strength of the effect of an increase in the
rate of interest on the capital account induced by the rightward shift
in *IS* means that *BP* only needs to shift part of the way back to its old
location.

What we discover is that the same forces that cause variations in
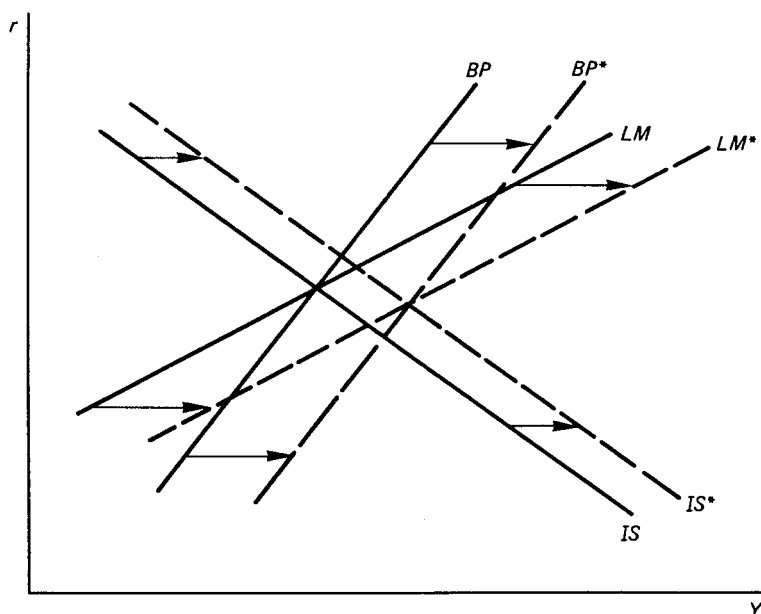
Figure 5.2

the balance of payments and reserves (the quantity variables) under fixed exchange rates, cause variations in the exchange rate (the price variable) under flexible exchange rates.

Against this background the remainder of this chapter investigates further the factors that cause exchange rates to vary.[1]

STRUCTURAL AND ABSORPTION FACTORS: SHIFTS IN *IS* AND *BP*

The structural explanation of exchange-rate movements focuses on the changing pattern of demand for and supply of goods in different countries, resulting from, for example, changing tastes, different or varying income elasticities of demand, changing costs of production and technological progress, and resource discoveries. This approach identifies 'real' factors and current-account disequilibria as being the principal source of exchange-rate changes. However, if the approach is reinterpreted as looking at the differing patterns of saving and
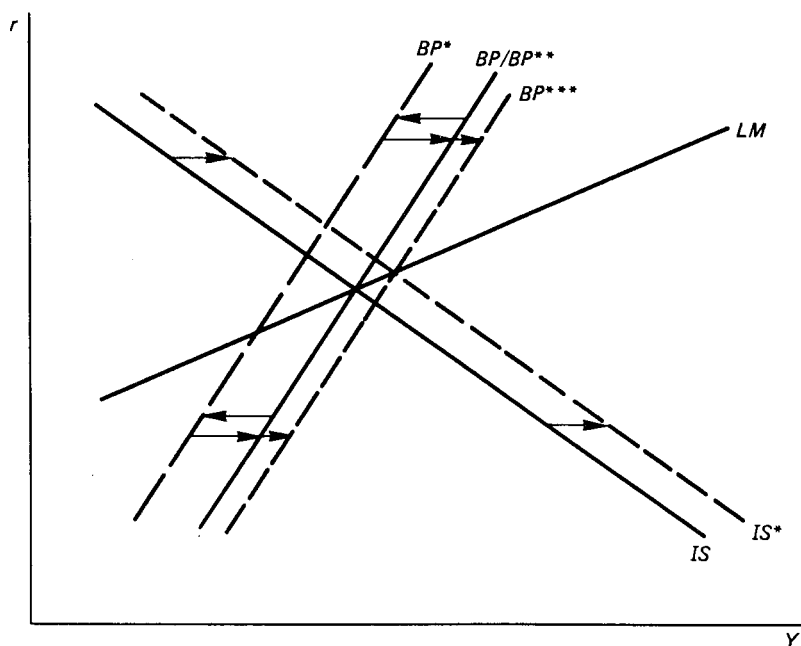
Figure 5.3

investment across countries, then it clearly has a corrolary in the capital account through which excess saving in some countries is transmitted to other countries with excess investment.

The absorption approach also focuses on the real economy and real variables. Here excess domestic absorption relative to domestic output results in exchange depreciation and excess output relative to absorption results in appreciation. Again the emphasis is on the flow of goods and services and therefore on the current account as the main source of exchange-rate changes. The capital account can be incorporated into such an approach since disequilibrium in the real sector of the economy will have implications for the financial sector and for interest rates, and changes in these will affect capital flows. For example, whereas an increase in government expenditure which is financed by borrowing will increase the interest rate and will induce a capital inflow, an increase financed by extra credit creation will have no equivalent effect.[2]

However, while the capital account can be integrated into the absorption approach, capital movements are viewed as being only a
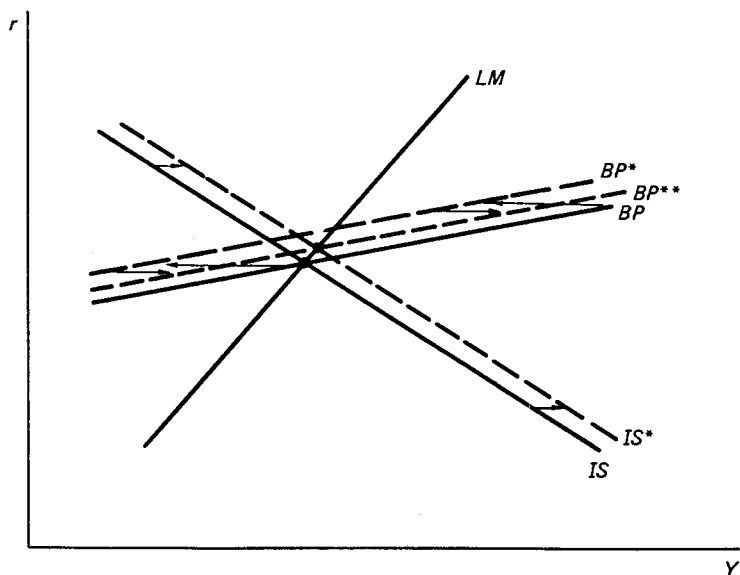
Figure 5.4

secondary influence on the exchange rate. The current account remains the centre of attention.

What predictions about the behaviour of exchange rates follow on from such explanations of their determination? First, the impact of shifts in currency demand or supply schedules on the exchange rate will depend on a range of foreign trade elasticities. If these are low, a shift in one of the schedules may clearly be associated with a significant movement in the exchange rate. Alternatively, if elasticities are relatively high smaller changes in exchange rates will be needed to restore balance of payments equilibrium. Moreover, if elasticities are lower in the short run than they are in the long run, an exchange rate may initially 'overshoot' on its path towards its new long-run equilibrium. Such overshooting may make rates appear rather volatile. Second, the structural and absorption approaches to exchange-rate determination do not predict extreme volatility, largely because the factors that are viewed as causing the underlying changes in the demand for and supply of goods and services themselves only change slowly. Furthermore, analysis of changes in demand and supply side determinants, and of foreign trade elasticities, would allow both the direction and size of exchange-rate changes to be anticipated.

Yet a key aspect of exchange-rate movements since the move over to generalised floating in 1973 has been their volatility and unpredictability. Approaches based exclusively on the real sectors of economies and on the current account may therefore leave something to be desired.

THE MONETARY APPROACH: SHIFTS IN *LM*

Mirroring the monetary approach to the balance of payments there has also evolved a monetary explanation of exchange-rate changes. This approach incorporates a number of features.

First, an exchange rate is seen as the relative price of two monies. From this observation it follows that exchange-rate changes can be explained by changes in the relative demand for and supply of monies. For example, taking the sterling/dollar exchange rate, if the supply of sterling is increased relative to the demand for it at the same time as monetary sector equilibrium is maintained in the United States, then the price of sterling in terms of dollars will fall, i.e. sterling will depreciate against the dollar.

Second, exchange-rate changes are seen as arising from *stock* disequilibria in the monetary sector, even though these stock disequilibria may be temporarily translated into an excess *flow* demand or *flow* supply of goods and services.

Third, the effects of excess domestic money supply growth on domestic prices is brought in via the concept of purchasing power parity (PPP).[3]

The various elements of the monetary approach may be illustrated by the following set of equations, where letters with the superscript* refer to values in (say) the US and letters without superscripts refer to values in (say) the UK. The demand for money coefficient k is assumed to be the same in both countries. Then,

$$M = kPY \tag{16}$$

$$M^* = kP^*Y^* \tag{17}$$

$$P^* = E\,P \text{ and } E = \frac{P^*}{P} \tag{18}$$

$$\text{therefore } E = \frac{M^*/kY^*}{M/kY} \tag{19}$$

$$= \frac{M^*kY}{MkY^*} \qquad (20)$$

It follows that starting from a given rate, an increase in the UK money supply will result in a sterling depreciation which completely offsets the effect that the induced increase in the UK price level has on both the UK and US balance of payments. There is no import leakage with floating rates and no change in reserves.

As with monetary explanations of many economic phenomena perhaps the principal appeal of this approach is its apparent simplicity. It seems to offer an unambiguous and unicausal explanation of exchange-rate changes. But again, appearances can be deceptive. As with the monetary approach to the balance of payments it rests on a number of restrictive assumptions about the exogeneity of the money supply, the stability of the demand for money and the invariance of output. Furthermore, the PPP doctrine has a number of deficiencies.

PURCHASING POWER PARITY (PPP)

Since PPP is such an important element in seeking to explain exchange-rate movements, we ought to say rather more about it.

Basically it comes in two versions. 'Absolute' PPP suggests that price *levels* expressed in a common currency will be equalised throughout the world. 'Relative' PPP, on the other hand, argues merely that nominal exchange rates will alter in such a way as to maintain equilibrium real exchange rates in the light of differential inflation.

Even in its softer relative version, PPP rests on a number of restrictive assumptions. First, it is assumed that there is a high degree of substitutability between goods in different countries, so that if prices rise in one part of the world purchasers will immediately switch into relatively cheaper sources of supply and away from relatively expensive sources.

Second, it is assumed that there are no barriers to trade which impede buying from the cheapest source.

Third, it is implicitly assumed that all goods are traded. Although arbitrage may well tend to equalise the prices of substitutable traded goods, this will not be the case with non-traded goods. Price levels overall may therefore not move in step because of different trends in

non-traded goods prices. As a result, higher prices overall may not necessarily lead to exchange-rate depreciation. Where the rate of productivity growth is faster in the traded goods than in the non-traded goods sector, it is quite possible that a rising price level will go hand in hand with an appreciating exchange rate. PPP is thus more likely to hold for neutral monetary disturbances which affect all prices alike than for relative price changes associated with real structural change.[4]

Fourth, PPP suggests that it is an increase in the money supply which causes the exchange rate to depreciate and the price level to rise. But in practice it may be the rise in the price level which causes the exchange rate to depreciate.

Fifth, PPP may be more a feature of long-run equilibrium than a theory of exchange-rate determination. Certainly there is plenty of evidence to suggest that it does not hold in the short run.

Sixth, in the simple PPP theorem interest rates and wealth effects are largely put to one side, although in the real world these may be important. An increase in the domestic money supply resulting in a depreciation in the exchange rate, a strengthening in the current account and the accumulation of domestically owned claims on foreigners will raise interest payments from abroad. The new equilibrium trade balance will have to reflect this and the new equilibrium real exchange rate may be different from the old one.

Seventh, to ignore changes in other factors emanating from both the demand side and the supply side of the economy, which will alter the real equilibrium exchange rate, and to concentrate instead on differential inflation rates as the prime cause of movements in the nominal rate may be regarded as a somewhat exclusive explanation of the exchange rate.

Although the monetary approach emphasises the key role of the stock of money it is still consistent with a largely current-account explanation of exchange-rate changes, with an excess supply of money being reflected in an excess demand for goods. However, money may be demanded as an asset as well as a medium of exchange. Focusing on the asset demand for money shifts attention towards the capital account as the source of exchange-rate changes.

THE ASSET MARKET APPROACH

In a sense the asset market approach to exchange-rate determination is an extension and sophistication of the monetary approach. It suggests that it is the interaction between the stocks of monies as assets and the preferences of asset-holders that dominates the determination of exchange rates.

The principal factors influencing the demand for different monies as assets are, first, relative interest rates and, second, expected movements in exchange rates. Demand for any particular currency will strengthen as the interest-rate differential in its favour widens and as the size of the expected appreciation increases.

Given these determinants, and that in equilibrium the world's stock of monies has to be willingly held, what condition will ensure such asset stock equilibrium? Assuming that holders regard assets in different countries as perfect substitutes the condition is that:

$$ER^e - ER^a = i^* - i$$

where ER^e is the expected exchange rate, ER^a is the actual exchange rate, i^* is the foreign interest rate and i is the home interest rate. In words, the expected exchange-rate change equals the interest-rate differential. If the interest rate in one country is below that on offer abroad, holders of the currency will need to feel that the value of the currency will rise sufficiently to compensate them for the interest-rate disadvantage to which they are exposed. The system will always tend towards this condition even if it does not hold initially, although lack of substitutability between assets and transactions costs may mean that an inequality between expected exchange-rate changes and interest-rate differentials persists. If the anticipated appreciation does not compensate for the interest-rate disadvantage, the currency will normally be sold and the actual exchange rate (ER^a) will tend to depreciate until the difference between this rate and the expected future rate (ER^e), i.e. the expected appreciation, is big enough.

In the context of the asset market approach, changing the stock of different assets affects interest-rate differentials and thereby expected exchange-rate changes. But what is the relationship between expected future movements in exchange rates and current movements in the spot rate? If the rate is expected to appreciate in the future this will increase the current demand for the currency and the spot rate

will therefore rise. It will continue to rise for as long as appreciation is expected. The spot rate will rise by the full extent of the expected appreciation.

EXPECTATIONS AND EXCHANGE RATES

Expectations are then a central part of the asset market approach. But how are they formed? This is a question of some general interest not only with respect to the analysis of exchange rates.[5] There are a number of possibilities. First, it may simply be expected that the current rate will persist. Second, past changes in the exchange rate may lead to the expectation that future changes in the same direction will occur either at the same rate or at a faster or slower rate.

Third, dealers may have a notion of what is the 'normal' rate and will expect the rate to move towards it. They would then expect any movement away from the normal rate to be reversed.

The first two methods by which expectations are formed rely exclusively on examining the past performance of the exchange rate. But is this rational? An alternative assumption is that the market will use all the information that is available to it at the time that the expectation is formed. This will include historical information but will also include current and anticipated future developments. Since 'news' is continually becoming available expectations will be continually modified in the light of fresh information. Moreover, if news is unpredictable and volatile so will be exchange rates. To argue that exchange rates are determined by expectations and that exchange-rate volatility reflects the volatility of expectations may be accurate but gets us no further in providing an explanation upon which predictions can be based.

OVERSHOOTING

One attempt to provide a more formal explanation of exchange-rate volatility, and of the fact that PPP does not appear to hold in the short run, suggests that different prices adjust to disequilibria at different speeds. More specifically it is suggested that while asset prices adjust instantaneously goods prices adjust only slowly.

Having made this key assumption, let us further assume that an economy is in equilibrium in terms of the asset stock equilibrium

condition discussed earlier. Now assume that there is an unforeseen increase in the domestic money supply. This results in an immediate fall in the domestic rate of interest (since asset prices rise instantaneously) and a *gradual* increase in the price level (since goods prices rise only slowly). However, since a rise in the price level will be expected, so will be the exchange depreciation required to restore purchasing power parity in the long run. The combination of low interest rate and expected exchange-rate depreciation will lead to an immediate capital outflow and an immediate depreciation. In order to restore asset stock equilibrium in circumstances where the domestic interest rate is below the world level an expected exchange-rate appreciation is necessary. But since the new long-run nominal equilibrium exchange rate is lower than it was before the money supply was increased, it follows that such an expectation will only be formed if the exchange rate initially falls below, or overshoots, its new long-run equilibrium.

As goods prices gradually rise and nominal income rises the nominal demand for money will rise, as will the nominal interest rate. The negative interest-rate differential will close and the required expected exchange-rate appreciation will therefore be less. Eventually, and with no further shocks to the system, the new set of equilibrium values will be reached with the ultimate fall in the nominal exchange rate just offsetting the increase in prices. For a time during the adjustment process the interest rate, prices and the exchange rate will all be rising – a combination of phenomena inconsistent with many other models of exchange-rate determination including PPP. In this model of exchange-rate overshooting PPP holds only in the long run.

The analysis of overshooting may be more formally presented by making use of the model introduced in the section on '*IS–LM* and the Open Economy' in Chapter 2. Starting from point *A* in Figure 5.5 let us assume that there is an unforeseen increase in the money supply with the result that *LM* shifts to the right to *LM**. Although this creates excess demand in the goods market, prices do not immediately rise. However, asset prices do rise and the rate of interest falls. With this fall in the interest rate and the devaluation which is expected in order to offset the anticipated eventual increase in the price level, the exchange rate immediately depreciates and *BP* shifts to *BP**. As goods prices do begin to rise and the demand for money increases so *LM* shifts back towards its old location. The rate of interest rises and the exchange rate appreciates. At the end of the adjustment process the real exchange rate is restored to its original
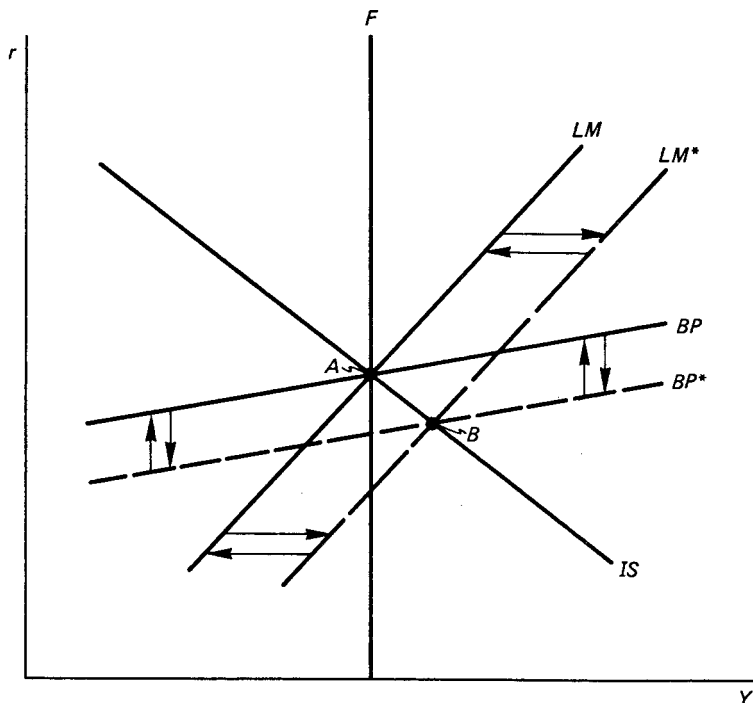
Figure 5.5

level with the nominal devaluation being just sufficient to offset the increase in the price level, as indeed PPP predicts. During the process the nominal rate depreciates by more than this amount, as shown by point *B* in Figure 5.5. In other words, the exchange rate overshoots, and PPP does not hold in the short run.

How does the analysis differ if the initial shock comes from a change in fiscal rather than monetary policy? Let us first of all assume that the *LM* schedule is vertical – an essentially monetarist assumption. Now a rightward shift in *IS* causes a rise in the rate of interest but no excess demand for goods and therefore no increase in prices, delayed or otherwise. The rise in the rate of interest causes a capital inflow and an appreciation in the exchange rate. Indeed, it is through this appreciation that the demand for exports and import substitutes is crowded out thus making room for the extra government expenditure. Since sticky goods prices are not an effective constraint on the adjustment process, the movement in the exchange rate up to its new

and higher equilibrium real value occurs immediately and there is no overshooting. Nor does PPP hold since, with no further change in fiscal policy, the equilibrium real exchange rate permanently alters.

Of course, other scenarios are possible if different assumptions are made about the shape of LM.[6]

FORWARD MARKETS

The asset market approach to exchange-rate determination has some interesting implications for the relationship between the spot market and the forward market. Forward markets in foreign exchange enable traders and investors to sell the risk associated with exchange-rate variations. They can therefore fix the parameters of any deal by covering forward and securing a 'closed' rather than an 'open' position. However, they will get a less good rate of exchange in the forward market than they would do in the current spot market; there will be a forward discount. Eliminating their risk is not costless.

Arbitrage will tend to ensure that the forward discount on a currency's exchange rate equals the interest-rate differential between the two countries involved, a state of affairs called closed or covered interest-rate parity. Again, looking at it on the basis of the asset market approach, if interest rates are higher in the USA than in the UK, UK investors will be tempted to switch sterling into dollars and to make loans in the USA rather than in the UK, entering into future contracts to sell a specified amount of dollars in exchange for sterling at the forward exchange rate which will involve a lower sterling price for dollars than the current spot rate. Making loans in the USA will be preferred for as long as the forward discount on dollars does not offset the interest-rate advantage in the USA. But the impact of the transactions will be to lower the US interest rate, raise the UK interest rate and cause the price of dollars on the forward market to depreciate, until interest rate parity is achieved.

The interesting thing is that the condition for asset stock equilibrium states that the expected change in the exchange rate equals the interest-rate differential. It follows, therefore, that the forward discount (or premium) on a currency equals the expected spot market depreciation (or appreciation), or, what comes to the same thing, the forward rate is equal to the expected future spot rate. Expectations may, of course, not be fulfilled and the spot rate in three months time may not actually equal the value predicted on the basis of the forward

rate, since extra news will become available in the intervening time which will affect the spot rate. In circumstances where investors do not regard assets in different countries as perfect substitutes for one another, i.e. where there is imperfect capital mobility, or where there are significant transactions costs, neither interest rate parity nor the asset stock equilibrium condition will hold.

Of course, if one group of transactors is selling risk in the forward foreign exchange market another group must be taking it on. These are the 'speculators' who set out to make profits through variations in the spot price of currencies. If they sell a currency forward, their hope is that they will be able to buy it in three months' time (or whatever the length of the forward contract is) more cheaply. Speculation involves holding an open or uncovered position. As more traders wish to sell a currency forward so the forward rate will drop. The forward discount is the incentive needed to persuade speculators to take on the risk of buying the currency forward. Where the forward discount required to clear the forward market exceeds the interest-rate differential speculators are in effect being offered a 'risk premium'.[7]

SYNTHESISING THE APPROACHES: SOME TENTATIVE CONCLUSIONS

So what does determine exchange rates? Although the asset market approach undoubtedly provides certain insights by drawing attention to the importance of the capital account, stock adjustments and expectations, it has a number of limitations. First, assets in different countries are surely unlikely to be regarded as perfect substitutes. Expected exchange-rate changes will not correspond exactly to interest-rate differentials, covered interest parity will not hold and currencies will carry risk premia (portfolio balance models of the exchange rate have been developed which attempt to deal with this weakness). Second, asset prices may not adjust instantaneously, instead they themselves may be sticky. Third, goods prices may adjust more rapidly than is assumed by the theory, or there may be asymmetries in the speed of adjustment with prices moving more quickly upwards than downwards. Fourth, if goods prices do not respond to financial stock disequilibria it may be that real output does. It may therefore be real income that changes rather than prices. Recognising the possibility that output may change brings into consideration a whole range of 'real' factors affecting the level of ca-

pacity utilisation and aggregate supply as potential determinants of exchange rates – the real economy has perhaps been too readily ignored in recent exchange-rate models.[8] Again leading on from this, and fifth, it seems unwise to ignore either the current or the capital account – not least because the two are interrelated. For example, an increase in investment which influences domestic absorption and the current account will increase the volume of assets in an economy and may therefore affect the capital account via the asset market mechanism. Or again an increase in government expenditure – another component of domestic absorption – unmatched by increased taxation leads to an increase in assets and liabilities. The implications for overall expenditure depend on the responses of those acquiring the extra assets and liabilities. These may not be symmetrical.

What one is left with is a feeling that monetary models of the exchange rate beg as many questions as they answer. Indeed, they may be seen as failing to answer the really fundamental questions or as providing at best only an approximate answer. What is needed is an explanation which accommodates all the various real and financial variables which seem likely to exert some influence over the exchange rate. In the absence of such a model it is unwise to base exchange-rate policy exclusively on any one of the existing models, which both in terms of their theoretical underpinning and empirical support seem to be lacking.

The basics of such a synthesising model might be as follows. Exchange-rate changes are caused by something disturbing what is an initial state of macroequilibrium. The disturbance may emanate from the demand side or the supply side of the economy, or from outside the economy, and it may reflect financial or real changes, i.e. it may occur as a result of a change in any factor that helped to determine the initial equilibrium. The response to disequilibrium may be reflected by changes not only in the exchange rate but in other macroeconomic variables as well, but these are likely to interact with the exchange rate. Short-run changes in the variables affected may differ from long-run changes if, as seems likely, they adjust at different speeds. Adjustment speeds and indeed the scope for adjustment in particular macroeconomic variables may differ both within and between countries – for example, there may be more real wage resistance in some countries than in others. Furthermore, the level of capacity utilisation will be important, full employment cannot simply be assumed. The extent to which different variables change will depend on a range of supply factors as well as demand factors such as price and income elasticities and elasticities of substitution between
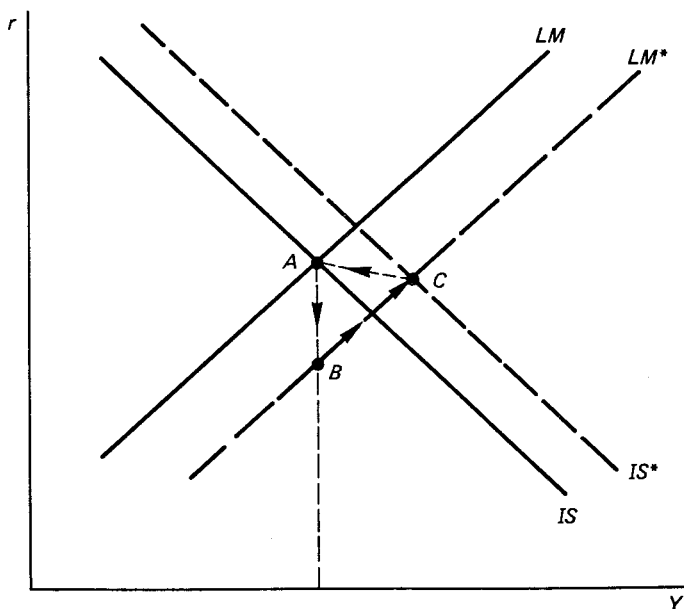
Figure 5.6

money, goods and assets. In what ways, for instance, will people choose to dispose of excess cash balances, and what will influence their choice?

One helpful way of disentangling the various influences on the exchange rate is to differentiate between their importance over different time periods. In the shortest of short runs output and prices may be relatively fixed and the exchange rate will be dominated by changing expectations, by speculative runs and by uncertainty. Extending the period slightly may allow asset market factors to become more important as the changing composition of portfolios becomes important. Moving into the medium term the exchange rate may be influenced by, and may in turn influence, real output, expenditure, prices, and the current account. Meanwhile, viewed from a long-term perspective, the maintenance of PPP may have some relevance – though it needs to be recognised that the long-run stationary state may never be attained, with the long run in fact comprising a series of short-run situations which may approach but never reach long-run equilibrium.

This process of adjustment is illustrated in Figure 5.6. Here an

initial state of equilibrium (point *A*) is disturbed by an increase in the money supply. With rigidities in real output and goods prices, the exchange rate initially overshoots to a level represented by point *B*. In the medium term, the depreciation in the exchange rate induces an increase in expenditure and a rightward shift in *IS* to point *C*. In the long run, prices and wages rise such that *IS* and *LM* return to their original locations. We are therefore back to point *A*. In the long run, nothing real has happened. Prices have risen and the nominal exchange rate has depreciated to compensate for this.

Part II
Policy

6 Stabilisation Policy in an Open Economy

INTRODUCTION

The question to be tackled in this chapter relates to how macroeconomic policies may be organised to achieve their principal objectives. An approved way of approaching this question is, first, to describe the targets that the policy-making authorities are setting out to achieve, second, to describe the policy instruments through which attempts are made to realise these targets, and third, to analyse how the instruments may be combined in the most efficient fashion.

What emerges is that very much depends on the macroeconomic environment in which policy is being formulated. Different answers are derived according to the degree of exchange-rate flexibility and capital mobility. We attempt in this chapter to work our way through the approach outlined above and to reach conclusions on the basis of different sets of assumptions.

TARGETS

One way of summarising targets is to say that the authorities hope to achieve both internal and external balance within the economy. This, of course, immediately begs the question of what is meant by internal and external balance. Candidates for internal balance include full employment, price stability, economic growth, a specific distribution of income and an acceptable physical environment.

A list of this nature, however, generates a series of questions. What do we mean by the terms used, and is it always reasonable to assume that economic welfare is negatively related to unemployment and inflation and positively relatively to economic growth and (say) the degree of income equality? There are notorious difficulties associated with defining unemployment, inflation, economic growth, income distribution, and the quality of the environment. It is also possible to make out an argument that on occasions unemployment and inflation may be good things and economic growth and income equality bad things.[1]

Problems do not come to an end even if agreement can be reached on definitions and on what is good and what is bad. For now we need to recognise that there may be trade-offs between different internal targets. Coming closer to realising one may involve moving further away from realising another. We need to allow for such incompatibilities and to formulate a list of priorities, attaching different weights to different policy objectives.

The problems are no fewer when we turn to external balance. Starting with a definition that there is external balance when there is equilibrium in the foreign exchange market, it has to be acknowledged that this implies that the authorities are indifferent as to the composition of the balance of payments. It implies more specifically that they do not have any target for the current account. Moreover, if instead it is assumed that they do set out to achieve equilibrium in the current account, this may at first sight seem to neglect the fact that a current-account deficit may imply a net inflow of goods and services which, in the short run at least, raises the domestic standard of living. The problem with deficits lies in financing them rather than in the deficits themselves.

Combining internal and external objectives into a single welfare function leads to yet further problems because it is quite likely that to get closer to internal balance implies moving further away from external balance and vice versa.

Having pointed to some of the problems involved with discussing targets we shall ignore most of them in what follows and will make the simplifying assumption that governments possess fixed policy targets of full employment and overall balance of payments equilibrium. However, we need to bear in mind the simplifying nature of this assumption.[2]

INSTRUMENTS

Given that we have now defined the government's policy targets, the next question is whether there is a mechanism that will automatically bring them about or whether the government will need to undertake some positive policy action. Much depends here on the underlying macroeconomic model that is assumed to operate. Under classical macroeconomic analysis both full employment and payments equilibrium are assured through Say's Law and the gold standard mechan-

ism respectively.[3] Under a Keynesian model, on the other hand, it is quite possible, and indeed likely, that macroeconomic equilibrium, defined as a point where both planned investment in the economy is equal to planned saving and the demand for money is equal to the supply of money, will coincide with unemployment and payments imbalance.

In a new classical framework the economy will tend to equilibrate at the 'natural' rate of unemployment and output, while new Keynesians envisage a role for stabilisation policy at least in the short run. In the context of the balance of payments, and for an economy with good access to international capital markets, a current account deficit is sustainable and is not a problem. It simply reflects a national preference for current consumption and an intertemporal redistribution of consumption towards the present and away from the future. Future saving will then correct the current account deficit and generate the resources necessary to repay the external debt that has been accumulated. In this context current account deficits enhance national welfare, allowing countries to choose when they consume and when they save. Of course not all countries have equivalent access to international capital. For those that are liquidity-constrained current account deficits will be unsustainable and policy action will be needed. But what policy instruments are available to the authorities in trying to reach their targets?

Again, and as was the case with targets, there are problems in discussing instruments. First, there is the problem of classification. For example, is the rate of interest a policy instrument or is it the supply of money? Second, there is the problem of the level of aggregation to be used. Is fiscal policy one instrument or should it be broken down into the level of government expenditure, the structure of government expenditure, the level of taxation, the structure of taxation and so on. Third, there is the problem of whether the government can actually control its policy instruments and whether the instruments are effective. There may be a range of technical, political, legal and institutional problems in actually implementing policy. Such instances occur where policies to control the money supply are frustrated by induced changes in the velocity of circulation, or where changes in monetary and fiscal policy only have their impact after a long, variable and differential lag. Finally, instruments may be interrelated and not independent.
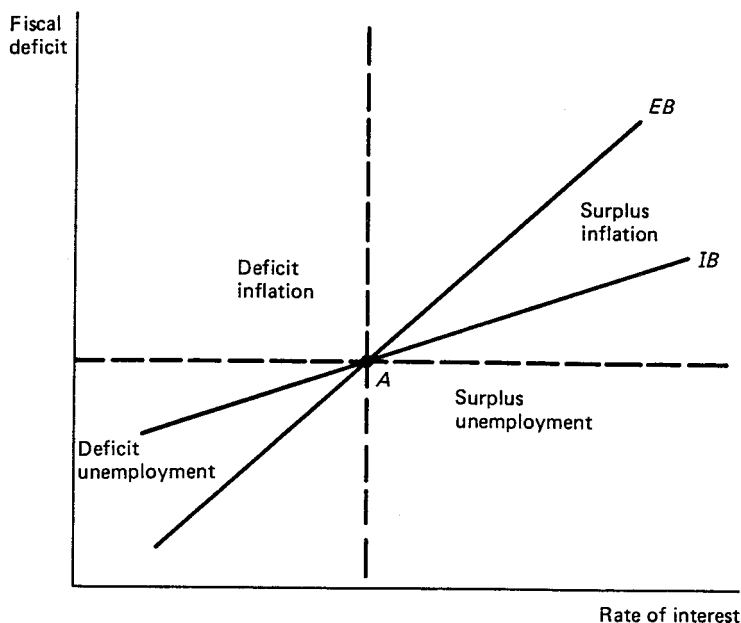
Figure 6.1

A certain fiscal stance is, for example, likely to have monetary repercussions.

As will be seen later, the analysis of stabilisation policy tends to ignore, or at least understate, these problems, and therefore gives an artificial impression of the ease with which policy may be implemented. In the real world life is rather more complicated than the model suggests.

MATCHING TARGETS AND INSTRUMENTS

In trying to provide some ground rules for the formation of stabilisation policy, the 'Tinbergen rule' has established that in order to achieve a certain number of targets simultaneously governments need an equivalent number of effective and independent instruments.[4] In a slightly weaker form the rule states that there should be at least as many instruments as targets, although in these circumstances there is no unique policy solution.

A MODEL OF THE ASSIGNMENT PROBLEM

In addition to having enough instruments, it is also argued that each instrument should be directed towards the target upon which it has relatively greatest impact. In other words, policies have to be used efficiently. This idea Mundell called 'the principle of effective market classification'.[5]

With this principle in mind, the design of stabilisation policy may be discussed in the context of Figure 6.1. According to this figure there are two targets, full employment (or internal balance, *IB*) and balance of payments equilibrium (or external balance, *EB*) and two instruments, monetary policy, as reflected by the rate of interest, and fiscal policy, as reflected by the size of the fiscal deficit. *IB* shows the combinations of interest rate and fiscal deficit that give full employment. It slopes upwards to the right since an increase in the rate of interest has a deflationary effect on the economy unless it is matched by an increase in the fiscal deficit. Above *IB* inflation occurs because, for any given interest rate the fiscal deficit is larger than that required to give full employment, or, for any given deficit, the rate of interest is lower. Below IB there is unemployment.

EB shows the combinations of interest-rate and fiscal deficit that give balance of payments equilibrium. It too slopes upwards to the right since an increasing fiscal deficit, which causes the current account to deteriorate, has to be matched by an increase in the rate of interest in order to generate an offsetting capital inflow. Above *EB*, for any given rate of interest the fiscal deficit is too large to give payments equilibrium and there is a payments deficit. Similarly, for any given fiscal deficit the rate of interest is too low. Below *EB* there will be a payments surplus. Because of the additional impact that monetary policy has on the balance of payments *EB* is assumed to be steeper than *IB*.

Point *A*, where *IB* and *EB* intersect, dictates the stance of fiscal policy and monetary policy required to hit simultaneously the twin targets of full employment and payments equilibrium.

A number of features of this figure are noteworthy. First, along either the horizontal or vertical lines through *A* it is necessary to alter only one policy instrument. If we are on the horizontal line fiscal policy is appropriate but monetary policy is inappropriate. If we are on the vertical line then it is fiscal policy that is inappropriate and has to be changed.

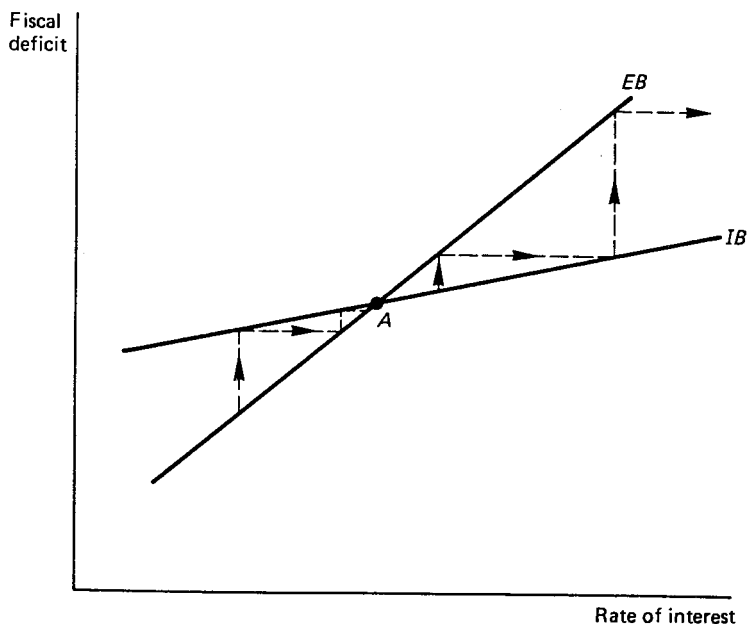Second, in other areas of the figure both instruments are inappro-

Figure 6.2

priate and will need to be changed. In the top left-hand quarter both
fiscal and monetary policy need to he contractionary. In the bottom
right-hand quarter they both need to he expansionary. In the top
right-hand quarter fiscal policy needs to be contractionary but
monetary policy expansionary. While in the bottom left-hand quar-
ter fiscal policy has to be expansionary and monetary policy con-
tractionary.

   Third, as shown by Figure 6.2, starting from a position other than
point *A*, the sequential use of fiscal policy to achieve full employ-
ment and monetary policy to achieve payments equilibrium will
move the economy towards point *A*. Using fiscal policy for external
balance and monetary policy for internal balance will, however,
move the economy away from point *A*. The principle of effective
market classification seems to imply that fiscal policy is best direc-
ted at hitting the internal target and monetary policy at hitting the
external one. The model implies that compliance with this principle
ensures that full internal and external balance can relatively easily
be attained.

CRITICISMS OF THE MODEL

The above analysis, for all its apparent ease and simplicity, rests on a number of restrictive assumptions. These need to be spelt out.

First, the model is based on capital *flows*. Once an interest-rate differential has been opened up it is assumed that capital will continue to move into the country where the interest rate has risen. With a stock adjustment model, on the other hand, the capital movement will be temporary. Indeed, in the long run an increase in interest rates may cause the balance of payments to deteriorate as higher ongoing debt service payments weaken the current account and as worries about credit worthiness reduce the inflow of new capital.

Second, it is assumed that an increase in interest rates in one country will not generate a competitive reaction abroad and will therefore create a differential. In the real world, changes in interest rate policy in one country may induce changes elsewhere.

Third, it is assumed that *EB* slopes upwards to the right. If fiscal expansion in fact leads to an increase in the demand for money and an increase in the rate of interest, then the stance of monetary policy required depends on the relative strengths of the effects of fiscal policy on the current and capital accounts. If the current account weakens by less than the capital account strengthens, expansionary fiscal policy will have to be matched by expansionary monetary policy and *EB* will slope downwards from left to right.

Fourth, the impact of fiscal policy is assumed to be perfectly proxied by the size of the fiscal deficit. Balanced budget analysis shows that the size of the budget is also important, as is the composition of the budget as between government expenditure on goods and transfers and as between direct and indirect taxation.[6]

Fifth, the model allows current-account deficits to be permanently financed. In the real world, the elimination of the deficit on the current account will almost certainly be required eventually.

Sixth, as noted earlier, the model is based on fixed targets. No allowance is made for a more broadly based welfare function with flexible targets and trade-offs between targets. In the real world, governments may respond asymmetrically to different states of disequilibrium, not perhaps being equally concerned about unemployment and inflation, or payments surpluses and deficits.

Seventh, the model assumes an elementary explanation of inflation and unemployment in terms of the level of aggregate demand
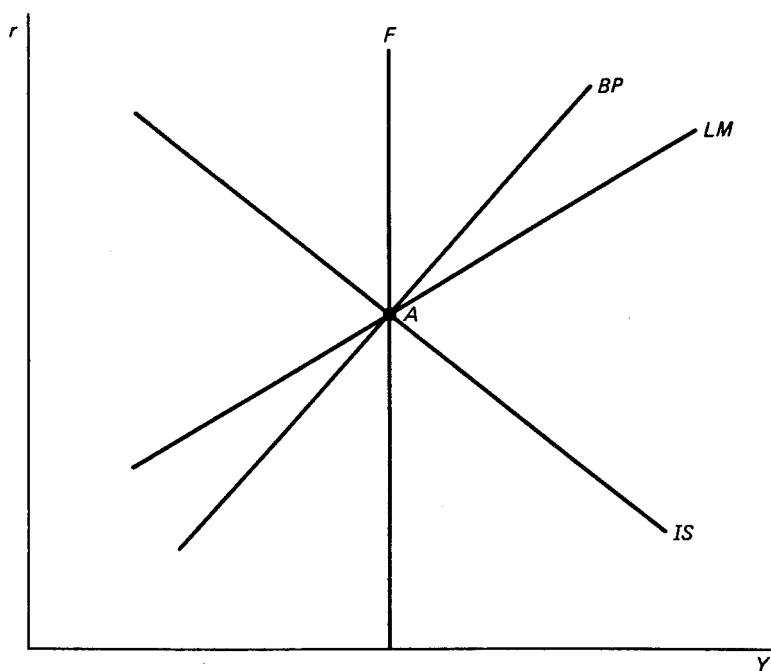
Figure 6.3

relative to aggregate supply. Inflation reflects excess demand,
unemployment deficient demand.[7]

Eighth, the model assumes that policy may be used to fine tune
the economy. Policy is seen as flexible and fluid. In the real world,
it may be much more inflexible than the model suggests. Policy
may be constrained in various ways ignored by the model.

Finally, the prescriptions that emerge from the model rest heavily
on the assumption that exchange rates are fixed. In such an environ-
ment an attempt to raise output by monetary expansion will be self-
defeating as the falling interest rate causes a capital outflow and a
fall in the domestic money supply. Meanwhile, expansionary fiscal
policy will induce an increase in the rate of interest and a capital
inflow which will endorse the fiscal expansion. With flexible
exchange rates, on the other hand, monetary expansion will result in
exchange-rate depreciation, an improvement in the current account
and further expansion, whereas fiscal expansion may cause the
exchange rate to appreciate, which has a contractionary effect on
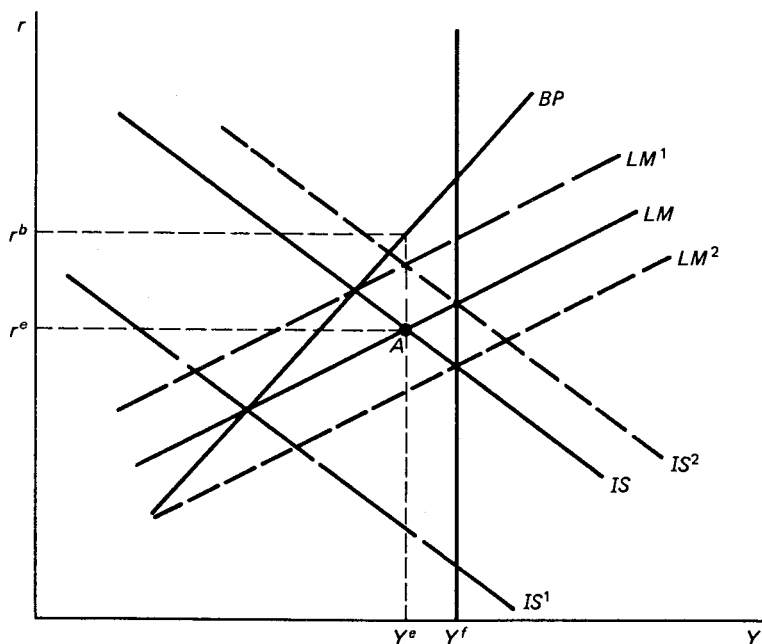
Figure 6.4

aggregate demand. In these circumstances monetary policy seems
to be better suited than fiscal policy to achieving internal balance,
and the prescription emerging from the fixed exchange-rate model
is reversed.

POLICY ANALYSIS WITHIN THE *IS–LM–BP* MODEL: WITH FIXED EXCHANGE RATES

The analysis undertaken above may be reinterpreted in terms of the
IS–LM–BP model constructed in Chapter 2. The object of the policy
exercise is to achieve a situation as represented by point *A* in Figure
6.3, where the economy is in macroeconomic equilibrium at a point
which coincides with both full employment and payments equilib-
rium.

But what if the economy is not in this happy state of affairs? Say
it is at point *A* in Figure 6.4 where there is unemployment (Y^e is to

Figure 6.5

the left of Y^f) and a payments deficit (r^e is below r^b). The question
is, 'how should policy be modified'?

Where the prior policy objective is to obtain payments equilib-
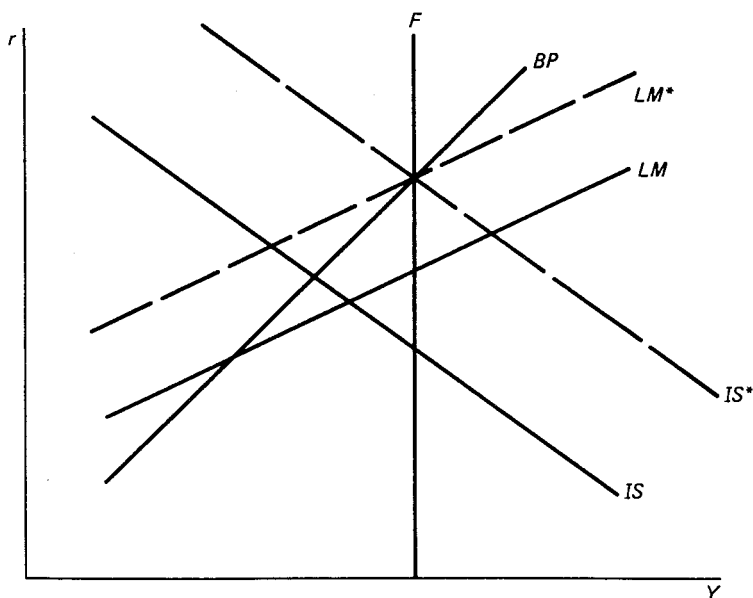rium, restrictive monetary policy, which in any case will tend to be
caused by the reduction in the money supply associated with the
payments deficit, will be more efficient than restrictive fiscal policy
in terms of minimising lost output; compare the respective reduc-
tions in Y involved with a leftward shift in LM to LM^1 and a left-
ward shift in IS to IS^1. Where, on the other hand, the prior objective
is full employment, then expansionary fiscal policy is preferable to
expansionary monetary policy on the grounds that it minimises the
related payments deficit; compare the rightward shift in IS, to IS^2,
with the rightward shift in LM, to LM^2.[8]

In fact, as noted above, policy-makers will want to achieve both
targets simultaneously. This desire may be fulfilled by using the
appropriate blend of fiscal and monetary policy. In the circum-
stances described previously the appropriate blend is fiscal expan-
sion, directed at removing unemployment, and monetary contrac-
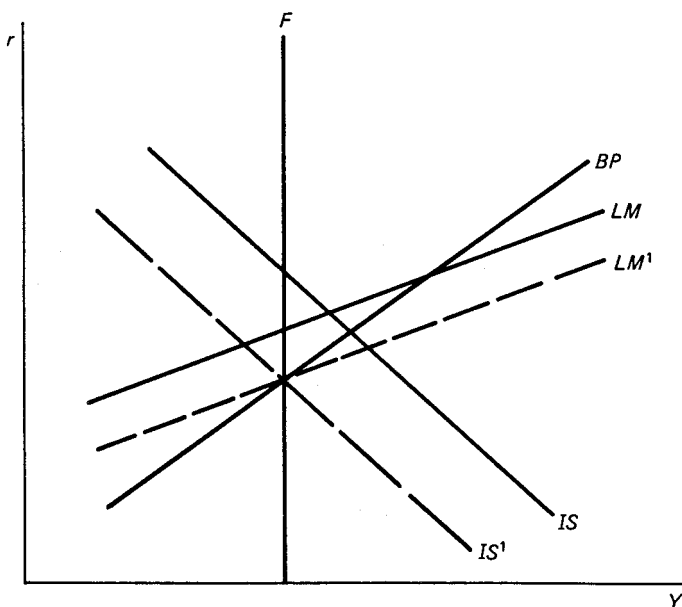
Figure 6.6

tion, directed at correcting the balance of payments deficit. Figure 6.5 illustrates this assignment of policies.

Let us examine a different starting point. The economy is experiencing inflation and a payments surplus. This is illustrated in Figure 6.6. Here the appropriate policy mix, assuming fixed exchange rates, is monetary expansion (LM to LM^1) and fiscal contraction (IS to IS^1). In fact there will be pressures which automatically push in these directions. The payments surplus will increase the domestic money supply, although against this inflation will increase the nominal demand for money. Meanwhile, inflation will also erode real balances thus causing increased saving and reduced expenditure. Finally, inflation will also cause the real exchange rate to appreciate, if there is no change in the nominal rate, and this appreciation will tend to shift IS to the left.

The two economic situations discussed above require a balancing of either fiscal expansion with monetary contraction or monetary expansion with fiscal contraction. As established earlier, situations do exist where instruments are called upon to work in the same

Figure 6.7

direction. In the case of unemployment and a payments surplus, illustrated in Figure 6.7, the appropriate policy mix involves both fiscal and monetary expansion. With inflation and a payments deficit, uniformly contractionary policy is required.

Furthermore, there may be cases where only one instrument needs to be used. These will occur where either *IS* or *LM* intersect the point where *BP* and *F* cross. If *IS* goes through such a point then only *LM* has to be shifted, whereas if *LM* goes through it only *IS* has to shift.

Neat as this presentation of the policy mix is, it is subject to a number of weaknesses and limitations. Many of these relate to the problems associated with the *IS–LM* model itself and need not detain us here.[9] Another weakness relates to the way in which the *BP* schedule has been drawn, again this need not detain us since we have discussed the issue in Chapter 2. What we can comment on is the assumption of the model that only *IS* and *LM* may be shifted, i.e. the only policy instruments are fiscal and monetary policy. Full employment output is taken as given. There is therefore no analysis of aggregate supply and no presumption that the authorities may be

able to shift the location of F.[10] Perhaps even more central to our analysis, we have assumed up to now that *BP* cannot be shifted. We have done this by assuming fixed exchange rates. However, we need to recognise that, even with fixed exchange rates, the authorities may still be able to shift *BP* by other policies which work on the current or capital accounts. Any policies that raise competitiveness or frustrate imports through controls will increase exports relative to imports, while policies designed to enhance creditworthiness will tend to increase capital inflows at given interest rates. Where the authorities can use such policies they now possess more than two instruments with which to achieve their two basic targets. Either they can decide to abandon one of their other instruments in order to restore the two instrument case, or they can select from a wider range of policy mixes.

The most conventional way of shifting *BP*, however, is to alter the exchange rate, and it is to an examination of how the repercussions of fiscal and monetary policy change when exchange rates are fully flexible that we turn in the next section.

POLICY ANALYSIS WITHIN THE *IS–LM–BP* MODEL: WITH FLEXIBLE EXCHANGE RATES

Having seen how the *IS–LM–BP* model may be used to analyse stabilisation policy in the context of fixed exchange rates, let us now move on to examine how things change if we have flexible rates. On the basis of our earlier discussions we should be able to show how the original prescriptions, confirmed in the previous section, break down with flexible exchange rates.

To make the analysis easier let us assume, first, that domestic prices are constant so that movements in the nominal exchange rate imply similar movements in the real rate. Second, that expectations do not have a role in explaining exchange-rate movements. Third, that adjustment is instantaneous, meaning that holdings of international reserves are constant and that the domestic money supply only changes because of changes in domestic credit creation. Fourth, that there is no attempt by the authorities to manage the exchange rate. And fifth, that capital is mobile and that capital movements are in the nature of flows.

Against the background of these assumptions let us see how fiscal policy might operate.
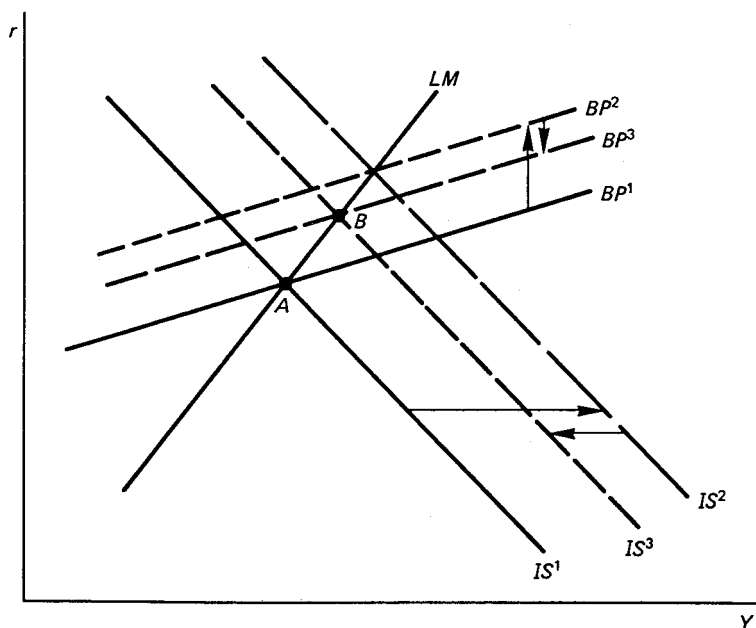
Figure 6.8

FISCAL POLICY

Let us start with Figure 6.8 and assume that the economy is initially
located at point *A*. Fiscal expansion causes IS^1 to shift to the right
to IS^2. As a result the rate of interest increases, there is a capital
inflow and the exchange rate appreciates. i.e. *BP* shifts upwards to
BP^2. However, the exchange rate appreciation, because of its
adverse affect on the trade balance, causes *IS* to shift back to IS^3. At
the final equilibrium, point *B*, both the level of income and the rate
of interest have risen. The precise impact of the rightward shift in *IS*
may be seen to depend on the shape of *LM* and the sensitivity of
capital flows to interest rates, since these factors influence the
extent to which the balance of payments (BoP) moves into surplus
and the extent therefore of the exchange-rate appreciation.

Remember that with fixed exchange rates and capital mobility,
the capital inflow would have resulted not in an exchange-rate
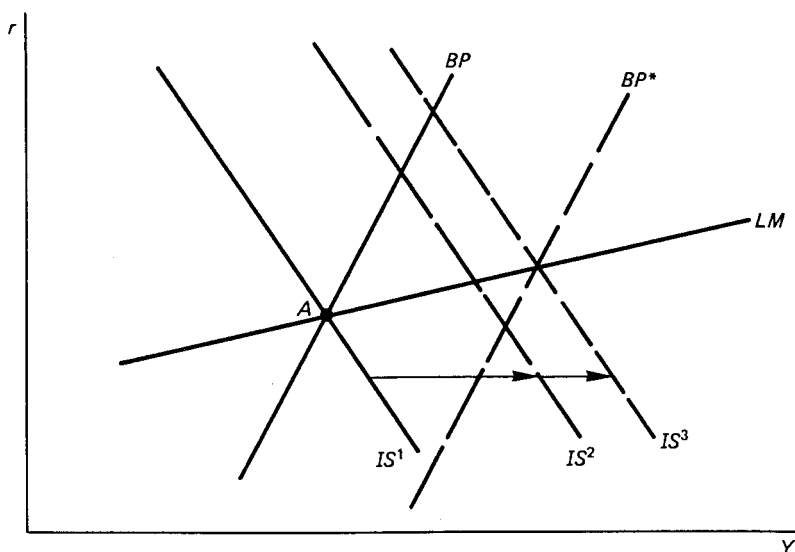appreciation but rather an increase in the money supply and a right-

Figure 6.9

ward shift in *LM*. In this case the increase in income would have been greater and the increase in the interest rate less.

The conclusion seems to emerge that with capital mobility the effect of fiscal policy on output and employment is less where exchange rates are flexible than where they are fixed, since an appreciation in the exchange rate is induced which has a dampening influence on demand.

But let us pursue this question further by assuming that *BP* is steeper, i.e. there is a lower degree of capital mobility, and that *LM* is flatter, such that *LM* is less steep than *BP*. This state of affairs is illustrated in Figure 6.9.

From the initial situation of equilibrium, point *A*, fiscal expansion shifts IS^1 to the right to IS^2. The rate of interest rises, although not as much as before because *LM* is less steep, and the BoP moves into deficit instead of into surplus. As a result, the exchange rate depreciates and *BP* shifts downwards. The depreciation causes a further rightward shift in *IS* to IS^3.

In this case fiscal policy seems to be a potent weapon for raising output and employment with the effect of the fiscal expansion on the current account dominating its effect on the capital account.

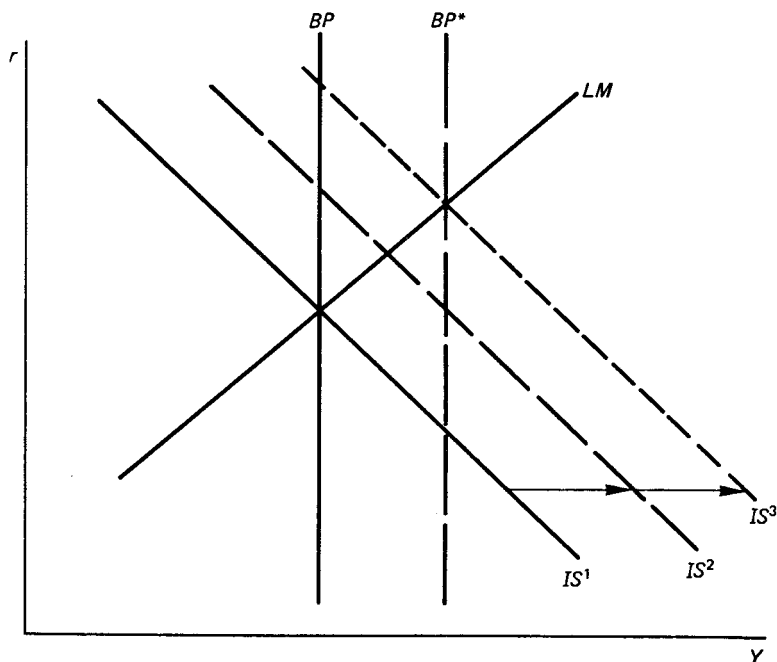As a general rule it would appear that the steeper *LM*, and the

Figure 6.10

larger the increase in the rate of interest associated with a given fiscal expansion; and the flatter *BP*, and the more interest elastic are capital flows; the more muted are the effects of fiscal policy. Whereas the flatter *LM*, and the smaller the increase in the rate of interest; and the steeper *BP* and the less interest rate elastic are capital flows, the more powerful is the effect of fiscal policy on income and employment. The general rule may be further illustrated by looking at the two extreme cases of zero and perfect capital mobility.

In the case of *zero capital mobility*, illustrated in Figure 6.10, fiscal policy again has a potent effect on income and employment, since a rightward shift in *IS* leads to exchange-rate depreciation – there is no effect, by assumption, on the capital account – and a further rightward shift in *IS*.

In the case of *perfect capital mobility*, the rightward shift in *IS* and the resulting rise in interest rates generates a capital inflow which is sufficiently great as to cause the exchange rate to appreciate just enough to reduce expenditure on exports and import substi-
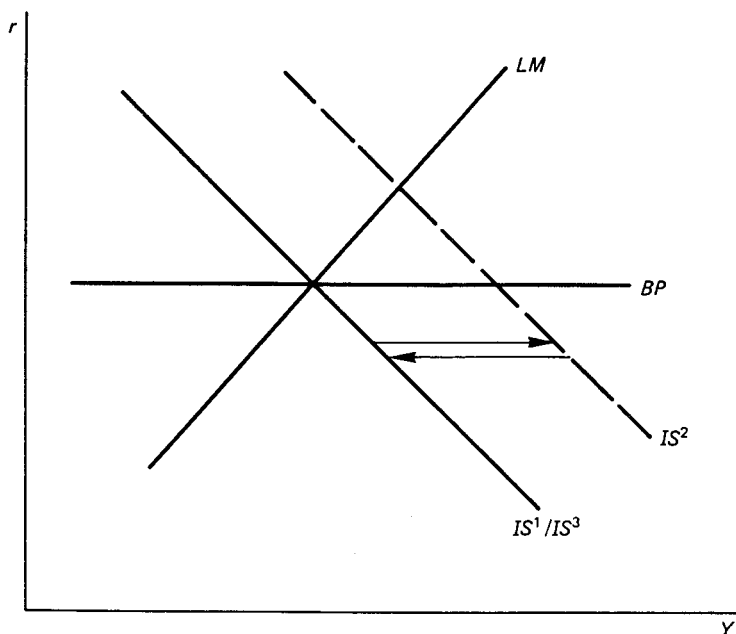
Figure 6.11

tutes by the same amount as the increase in government expenditure, thereby shifting *IS* back to its original location. The effects of fiscal expansion are completely crowded out by the exchange-rate appreciation and there is no effect whatsoever on income or employment, see Figure 6.11. We can note in passing that with fixed exchange rates the capital inflow would not have resulted in exchange-rate appreciation but in an increase in the money supply. In these circumstances fiscal expansion is very powerful.

MONETARY POLICY

The effects of monetary policy are illustrated in Figure 6.12. Here, starting from point *A*, a rightward shift in *LM* leads to a fall in the rate of interest, a capital outflow, a rise in income, a BoP deficit and exchange-rate depreciation with *BP* shifting down to BP^1, which in turn shifts *IS* to the right. At the new point of equilibrium, *B*, income has risen and the rate of interest has fallen.
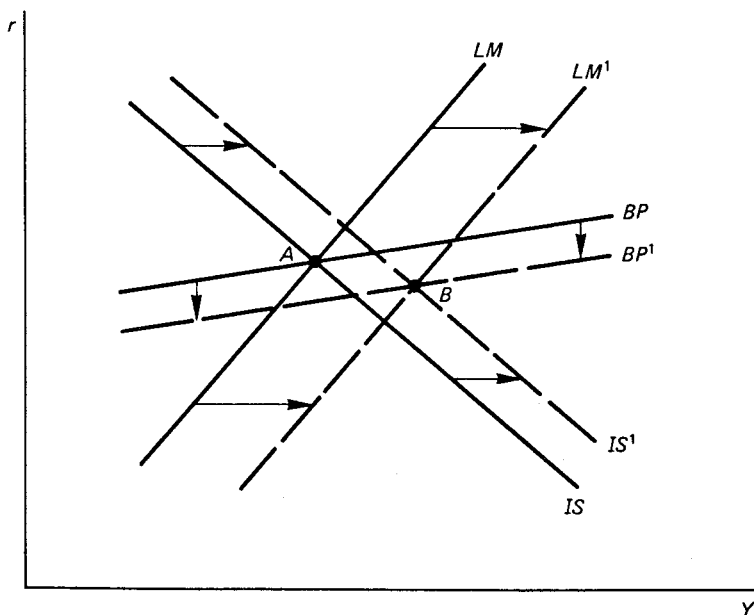
Figure 6.12

Had the exchange rate been fixed, the fall in the interest rate would have caused a capital outflow and an offsetting leftward shift in *LM* negating the impact of the original monetary expansion. The conclusion emerges that monetary policy has a powerful impact on income and employment under flexible exchange rates if capital is mobile, in contrast to the situation with fixed rates.

But do things change if *BP* is steeper than *LM*? In fact, as Figure 6.13 illustrates, in the case of monetary policy the relative slopes of *BP* and *LM* seem to matter little, and the same general conclusion emerges. Let us however look briefly at the special cases of zero and perfect capital mobility.

With *zero capital mobility*, as illustrated by Figure 6.14, we again find that monetary expansion has a powerful influence on output and employment, since the exchange-rate depreciation induced by the fall in the interest rate and the payments deficit associated with the rise in income shift IS to the right.

With *perfect capital mobility* shown in Figure 6.15 exchange-rate depreciation is, in addition, required to offset the capital outflow associated with the fall in the interest rate. This outcome contrasts
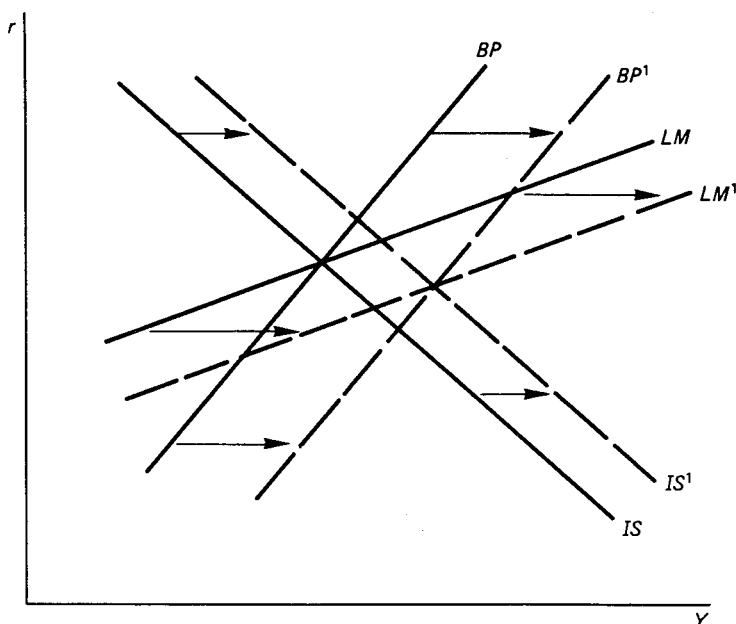
Figure 6.13

sharply with the case of fixed exchange rates where the capital out-
flow causes a fall in the money supply and a leftward shift in *LM*
which offsets the original monetary expansion.

It may be useful at this stage to summarise the conclusions we
have reached about the effectiveness of fiscal and monetary policy
as stabilisation tools under different exchange-rate regimes and
assumptions concerning the degree of capital mobility. This is done
in Table 6. 1.

As with all economic models, however, we need to remember
that the conclusions that emerge are likely to be only as strong as
the assumptions upon which the models are based. In the case of
the analysis undertaken above the restrictive assumptions should
certainly not be forgotten.

If, for example, different assumptions are made about the deter-
mination of capital movements, allowing for stock adjustment,
wealth effects, risk, and other influences; the role of expectations in
causing movements in exchange rates; the effects of exchange-rate
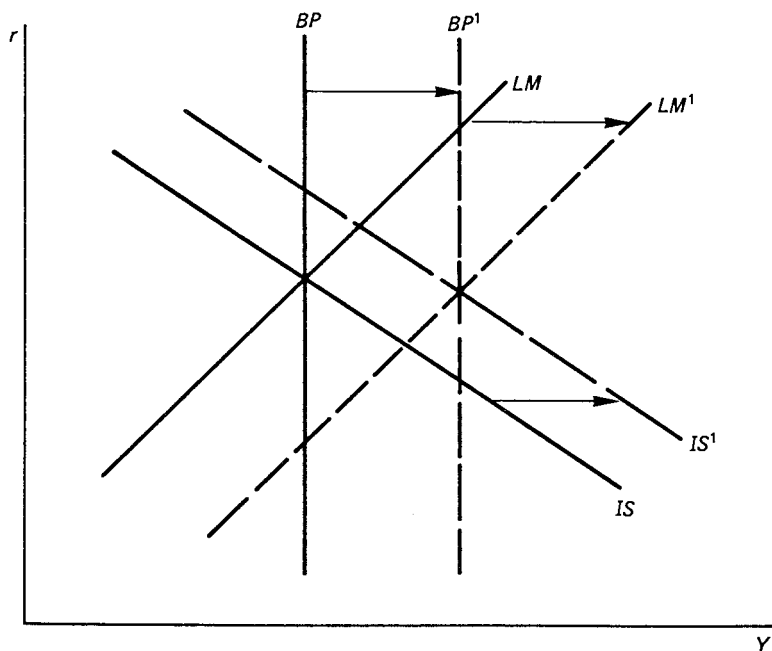changes on the domestic economy; and inflation, it is possible to

Figure 6.14

generate rather different conclusions from those reached above.
Certainly, it is quite feasible that the long-run effects will be differ-
ent from the short-run effects. The conundrum is that as the
assumptions become more realistic, assuming that we know what is
more realistic, so it becomes progressively more difficult to reach
clear-cut conclusions If, indeed, diminishing returns to increasing
sophistication rapidly set in there may be something to be said for
sticking to the fairly basic analysis outlined above. Ideally one
would wish to find robust conclusions that hold irrespective of the
assumptions made, but at the present state of the art it is by no
means clear if these exist.

MACROECONOMIC INTERDEPENDENCE: THE
TRANSMISSION OF POLICY CHANGES

Before leaving the analysis of stabilisation policy it is worth asking
the question as to how changes in policy in one country are likely to
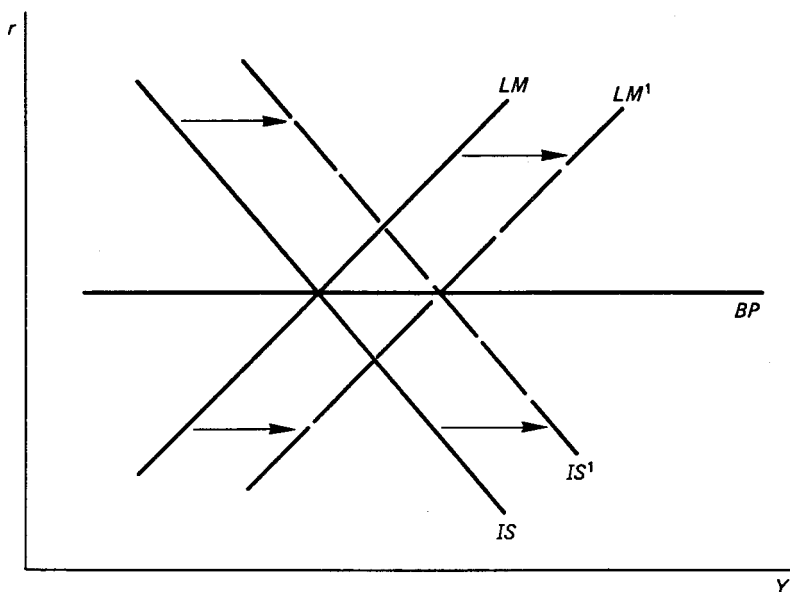affect other countries.

Figure 6.15

The conventional view is that, with fixed exchange rates, disturbances in one country spread abroad; disturbances are exported abroad and, indeed, imported from abroad. An increase in domestic aggregate demand leads to an increase in domestic imports and therefore foreign exports via both an income and a price effect. Also the accompanying current-account deficit implies an outflow of money which further reduces the domestic impact of the increase in demand and increases the extent to which the impact is felt abroad.

With flexible exchange rates it is the price variable, i.e. the exchange rate, that changes and not the quantity variable, i.e. the balance of payments. An increase in domestic aggregate demand results in a depreciation in the exchange rate. There are no money flows since the balance of payments is kept in equilibrium, and the domestic economy takes the full force of the domestic disturbance. Of course, by similar reasoning the domestic economy is protected or insulated from disturbances emanating abroad.

However, the foregoing analysis concentrates on the current account. What happens if instead we focus on the capital account and

Table 6.1

	Fixed exchange-rate capital mobile	*Fixed exchange-rate capital immobile*	*Flexible exchange-rate capital mobile*	*Flexible exchange-rate capital immobile*
Fiscal policy	Effective (Monetary effect endorses fiscal effect)	Effective (But less so than in the case of capital mobility since there is no endorsing monetary flow)	Relatively ineffective (Completely ineffective with perfect capital mobility)	Very effective (Exchange-rate change endorses fiscal change)
Monetary policy	Relatively ineffective (Completely ineffective with perfect capital mobility)	Effective (Since there are no offsetting monetary flows)	Very effective (Exchange-rate change endorses monetary flows)	Effective (Exchange-rate change endorses monetary changes but exchange-rate change muted by lack of capital mobility)

assume a relatively high degree of capital mobility? Much now depends on whether the disturbance originates from a change in fiscal or monetary policy because of the different effects they have on the rate of interest.

With fixed exchange rates fiscal expansion leads to an increase in the interest rate, a capital inflow and an increase in the domestic money supply. The effect on the domestic economy is enhanced and there is a contractionary effect abroad. Monetary expansion, on the other hand, leads to a fall in the interest rate, a capital outflow and a fall in the domestic money supply. The expansionary effect is felt abroad and not in the domestic economy.

Moving to flexible exchange rates we find that fiscal expansion with its associated rise in interest rates leads, via the induced capital inflow, to an exchange-rate appreciation. The stimulus is therefore felt abroad because of the relative depreciation in the value of foreign currencies. Monetary expansion, again in contrast, results in a fall in the interest rate, a capital outflow, and exchange-rate depreciation, which in turn generates a stimulus for the domestic economy and contraction abroad.

The above analysis suggests that the key question in trying to sort out the distribution of the effects of changes in the stance of domestic fiscal and monetary policy, as between the domestic economy and the rest of the world, relates to the relative significance of the current and capital account effects. Underlying these effects is the nature of trade functions and capital movements discussed in Chapter 3.

Appendix

In the main text of the chapter we have examined an approach to the analysis of stabilisation policy based on the *IS–LM–BP* model. In this appendix we examine two further approaches to the analysis of the appropriate policy mix.

THE SWAN APPROACH TO INTERNAL–EXTERNAL BALANCE[11]

This is illustrated in Figure 6A.1.

EB represents the combinations of cost ratio (the ratio of foreign prices to domestic prices) and real demand giving external balance. It slopes upwards to the right since an increase in internal demand leads to a deterioration in the balance of payments, unless the cost ratio improves adequately. *IB* likewise represents the combinations of cost ratio and real demand which generate full employment. *IB* slopes downwards to the right since as the cost ratio gets worse, and the value of exports therefore declines, domestic demand will have to compensate for this if full employment is to be maintained.

EB and *IB* divide the diagram into a number of regions. To the right of *EB* there will be a payments deficit since with a given cost ratio, domestic demand has expanded, whilst to the left of *EB* there will be a payments surplus. To the right of *IB* there will be inflation since again with a given cost ratio there is greater domestic demand, whilst to the left there will be unemployment.

The appropriate policy mix will not be determined by the region in which the economy is located but by the economy's location *within* a region. Drawing in the horizontal and vertical lines through the point of intersection between *IB* and *EB*, it may be seen that whereas, for example, both point *M* and point *N* indicate a deficit and unemployment, at *M* the appropriate policy is an improvement in the cost ratio and an increase in real demand, while at point *N* it is an improvement in the cost ratio and a decrease in real demand. Swan thus demonstrates that signals in the form of surpluses, deficits, inflation and unemployment may give a misleading guide to policy-makers.

This approach provides us with a broad treatment of internal–external balance, since the analysis is no longer restricted to monetary and fiscal policy. Although there remain basically two instruments in the form of demand management and cost ratio adjustment, these general instruments incorporate a whole range of subinstruments. Demand management, for example, may be conducted through both fiscal and monetary policy, whilst the cost ratio may be influenced *inter alia* by exchange-rate alteration,
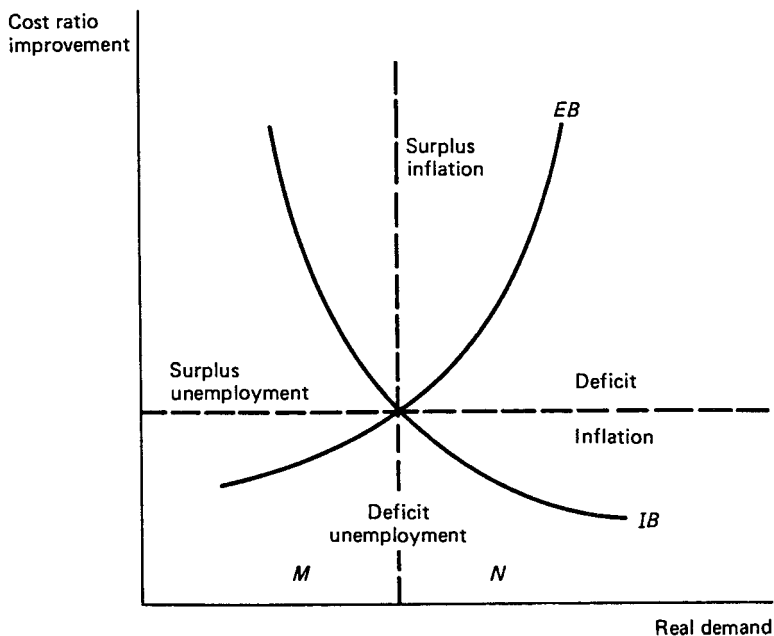
Figure 6A.1

incomes policy, and competition policy. In this respect the policy choice available to policy-makers is more accurately stated.

Qualifications to the Swan treatment of the problem of internal–external balance include the fact that retaliatory action is again assumed away. In addition, it is implicitly assumed that there is sufficient information available upon which to construct the curves. Instead uncertainty regarding the demand curve or exports, the elasticity of substitution between exportables and importables, the propensity to import, and the dynamic properties of the *IB* and *EB* relationships means that the implied precision may be unsupportable. The greater the uncertainty about these factors, the less precise may we be. Indeed, as with both the Mundell and the *IS–LM–BP* approach, one might ponder on the implications of *EB* sloping downwards to the right, as an increase in real demand, with money supply fixed, results in an increase in the rate of interest and a capital inflow which more than offsets the deterioration in the trade balance. Depending on the relative slopes of the internal and external balance curves, this may clearly affect the location of policy regions and the changes in cost ratio and real demand that are required. The above qualifications impose limitations upon policy-makers' ability to identify the correct policies. A final limitation is that the model does not allow for simultaneous inflation and unemployment. An attempt to overcome this limitation has been made by Hunter.
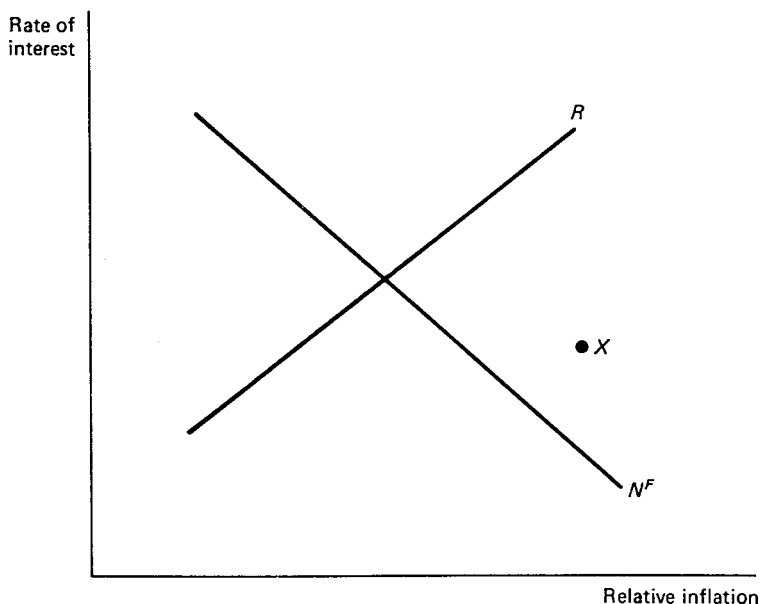
Rate of
interest

Relative inflation

Figure 6A.2

THE HUNTER APPROACH[12]

Hunter provides an alternative diagram which allows for the existence of some degree of cost inflation, i.e. inflation unconnected with excess demand.

The model is illustrated, in Figure 6A.2.

On the vertical axis is measured the rate of interest, whilst on the horizontal axis is measured the ratio of the rate of increase in domestic prices to the rate of increase in foreign prices. The R curve represents a country's holdings of international reserves at a constant level. R slopes upwards to the right since as the interest rate rises, international reserves will increase unless the domestic rate of inflation increases relative to that in other countries.

To the right of the R curve, international reserves are falling, whilst to the left they are rising.

The N^F curve illustrates the combinations of r and p which give rise to full employment. The curve slopes downwards to the right since as the rate of interest falls the level of employment tends to rise unless relative inflation increases. Above N^F there is unemployment, whilst below N^F there would be demand-pull inflation. Full equilibrium will exist where R and N^F intersect, provided that the implied rate of inflation and reserve level are deemed satisfactory.

The policy implications of the diagram may be analysed by means of an example. Suppose the economy is located at point X, where (i) the relative inflation rate is too high, (ii) there is unemployment, and (iii) there is a balance of payments deficit. A position such as X cannot be pinpointed in the Swan diagram, since inflation and unemployment exist side by side. Having identified position X, what is the appropriate policy action? Monetary expansion will exacerbate domestic inflation and worsen the balance of payments, not only as a result of the inflation it induces but also as a result of the fall in the rate of interest.

Contractionary demand policies, on the other hand, may have a beneficial impact on the rate of inflation and the balance of payments, but will increase the amount of unemployment.

The most appropriate policy in conditions of unemployment, balance of payments deficit and inflation may be devaluation, although the cost inflationary repercussions of this may make some form of incomes policy necessary.

Broadening the analysis, Figure 6A.3 depicts four zones where targets are not being realised. The appropriate policies and their likely outcomes in each of these four zones may be summarised in the following manner.

(a) In zone (1) where there is a payments surplus and unemployment the appropriate policy is monetary and fiscal expansion which will reduce the rate of interest and increase the rate of inflation.

(b) The zone (2) where there is a payments surplus, unemployment, but relatively high cost inflation, expansionary monetary and fiscal policy used in conjunction with exchange-rate appreciation is the policy package required. Expansionary monetary policy has the effect of reducing r, lowering the level of unemployment and correcting the balance of payments surplus. Revaluation will tend to reduce the rate of inflation and, again, correct the payments surplus.

(c) In zone (3) where there is a payments deficit, unemployment and excess inflation, the appropriate combination of policies is exchange-rate depreciation and incomes policy. This will tend to correct the deficit and create employment. Expansionary monetary policy may also be used in order to reduce the interest rate to its equilibrium level.

(d) In zone (4) the policies required are similar to those in zone (3) except that with $r < r^e$ contractionary monetary policy is necessary.

The analysis illustrates the danger of using demand management in order to tackle cost inflation. In the above diagram this would only be the 'correct' policy in zone (4). Where inflation and unemployment exist simultaneously, a change in the exchange rate appears to be a more relevant policy either in the form of appreciation in the case of a surplus or depreciation in the case of deficit. In the latter case incomes policy may be needed to offset the associated cost inflation.

With flexible exchange rates the level of international reserves will not change but the nominal exchange rate will. The R schedule effectively now shows the combinations of interest rate and relative inflation required to support a given nominal exchange rate as an equilibrium rate. With flexible
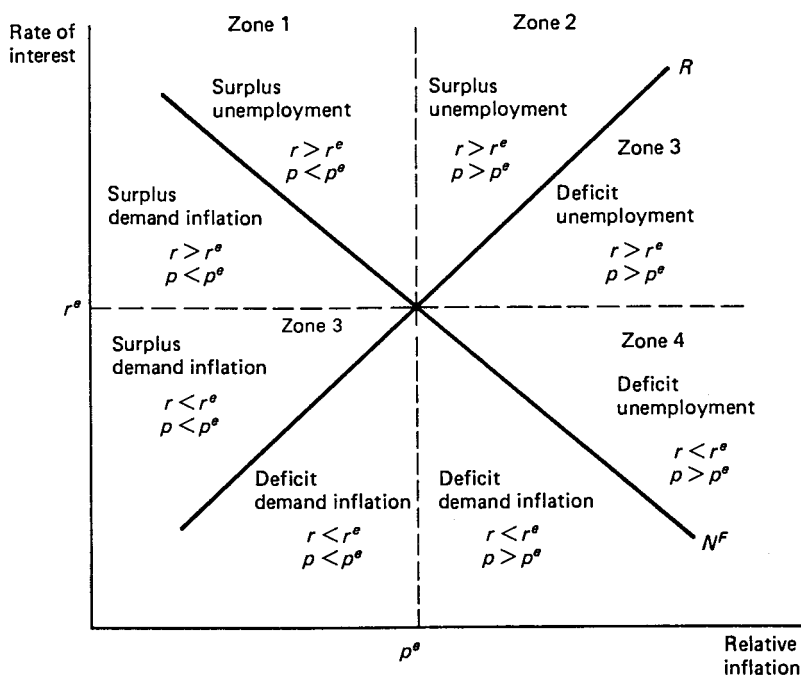
Rate of interest

| Zone 1 | Zone 2 |

R

Surplus
unemployment

$r > r^e$
$p < p^e$

Surplus
unemployment

$r > r^e$
$p > p^e$

Zone 3

Surplus
demand inflation

$r > r^e$
$p < p^e$

Deficit
unemployment

$r > r^e$
$p > p^e$

r^e

Zone 3

Zone 4

Surplus
demand inflation

$r < r^e$
$p < p^e$

Deficit
unemployment

$r < r^e$
$p > p^e$

Deficit
demand inflation

$r < r^e$
$p < p^e$

Deficit
demand inflation

$r < r^e$
$p > p^e$

N^F

p^e

Relative
inflation

Figure 6A.3

exchange rates the nominal exchange rate will respond automatically to balance of payments disequilibria. In zones 3 and 4 the exchange rate will depreciate and in zones 1 and 2 it will appreciate. Fortunately these are the directions in which, according to the model, they should move.

7 Exchange-Rate Management and Policy

INTRODUCTION

In the previous chapter we focused on the analysis of monetary and fiscal policy. Exchange-rate variations came in to the analysis as a fairly passive response to payments disequilibria. In this chapter we concentrate more exclusively on the effects of changing the exchange rate. This will involve discussing the so-called elasticities approach to the balance of payments. This approach contrasts with the open-economy model introduced in Chapter 2 since, whereas that model essentially examines the implications of changes in income with prices held constant, the elasticities approach examines what happens when prices change and income is held constant. The chapter also examines devaluation within the context of the absorption approach which stresses the importance of income as opposed to prices.

Having analysed the way in which altering the exchange rate may affect the balance of payments both through its effects on prices and income, the chapter goes on to examine exchange-rate policy; in what way, if at all, should the exchange rate be managed, and is there a case for co-ordinating exchange-rate policy across countries?

THE ELASTICITIES APPROACH TO THE ANALYSIS OF EXCHANGE-RATE CHANGES

Let us begin the analysis by assuming, first, that internal prices are constant and that it is only through changes in the exchange rate that relative prices change, and second, that changes in the exchange rate are administered rather than taking place automatically in response to market forces.

The basic model underlying the analysis may be illustrated very simply in Figure 7.1. What we have here is a model of the foreign exchange market. The 'goods' traded are currencies, and there are both demand and supply curves for these. The point of intersection between the demand and supply curves gives the equilibrium price of one currency in terms of another, i.e. the exchange rate, as well as

Price of $ in
terms of £

(Exchange
rate)

S ($)

D ($)

Quantity of currencies
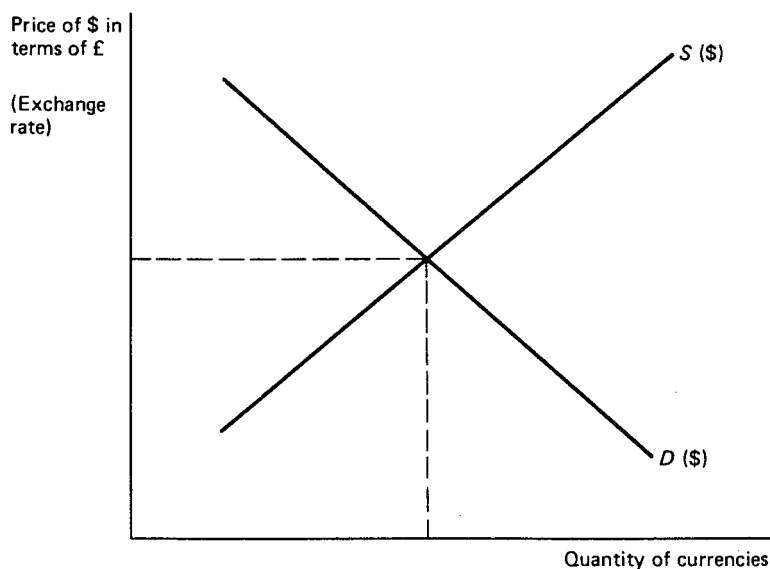
Figure 7.1

the equilibrium quantity traded. Any exchange rate other than this
one will, according to this figure, be a disequilibrium rate and there
will be excess demand for or excess supply of a particular currency.

Figure 7.1, however, conceals a good deal and we therefore need
to look at it in more detail. As it has been drawn there is a downward
sloping demand curve for dollars, with the demand increasing as the
sterling price of dollars falls, and an upward sloping supply curve for
dollars with the supply of dollars increasing as their sterling price
rises. Assuming that there are only two currencies, dollars and
sterling, an increase in the demand for dollars implies an increase in
the supply of sterling, and similarly an increase in the supply of
dollars implies an increase in the demand for sterling.

Taking the demand for dollars first, what underpins this demand
curve? It is important to recognise that the demand for dollars is a
derived demand, reflecting the demand for US goods and services, as
well as the need to pay interest on or indeed to pay off debt. The
demand for US goods emanating from the UK will be a function of
their sterling price. As this rises, demand will tend to fall, and as the
sterling price falls so demand will tend to rise. To find out the

demand for dollars we need to translate the demand for US goods at a specific sterling price into the demand at a specific dollar price. This is done by using the sterling/dollar exchange rate. With a given exchange rate and a given dollar price of US goods we can work out the sterling price of these goods. We can then translate the demand for US goods at this sterling price into a demand for dollars. As the exchange rate changes so the sterling price of US goods also changes, though their dollar price remains the same. Furthermore, as the sterling price changes so the demand for US goods changes and so too does the demand for dollars. How the demand for dollars changes in response to changes in the exchange rate depends on the UK's sterling price elasticity of demand for imports from the US.

A sterling devaluation, i.e. a fall in the dollar price of sterling or a rise in the sterling price of dollars, makes the sterling price of goods imported from the US higher and, depending on the demand elasticity for these imports, tends to reduce the demand for dollars, as shown in Figure 7.1. However, if demand is completely price inelastic, the demand for dollars will be unaltered by a sterling devaluation (i.e. dollar appreciation), and the demand curve will be vertical.

Let us now move over to the supply curve of dollars; what factors underpin this relationship? The supply of dollars depends on the quantity and price of UK exports sold. The UK's supply of exports depends on their sterling price. Through the exchange rate the sterling price of exports may be converted into an associated dollar price. It is upon this dollar price that the US demand for UK goods depends. Again the point of intersection between the demand curve for and supply curve of UK exports expressed as a function of the dollar price gives the equilibrium quantity of exports sold and therefore the supply of dollars at a particular exchange rate. As the exchange rate changes so the dollar price of goods priced in sterling changes. With a sterling depreciation (dollar appreciation) the dollar price of UK goods falls, and depending on the price elasticity of demand, the demand for UK exports from the US will rise. However, for the supply of dollars on to the foreign exchange market to rise, the price elasticity of demand for UK exports has to be greater than one, i.e the demand response in terms of quantity has to more than offset the fact that each unit of UK exports now earns fewer dollars. With a price elastic demand curve for UK exports the supply curve of dollars will indeed be upward sloping as shown in Figure 7.1.

Up to now the analysis is relatively straightforward. It is essentially

Policy

simple demand and supply analysis. However, as noted above, complications can occur if the elasticity of demand for exports is low. Let us briefly examine this potential problem.

If the demand for UK exports into the US is price inelastic a sterling depreciation (dollar appreciation) will mean that fewer dollars are supplied on to the foreign exchange market. Indeed, at the extreme, if demand is completely inelastic the fall in the supply of dollars will perfectly match the fall in the dollar value of sterling. The US will need only the same quantity of sterling but will need to pay fewer dollars in order to purchase it. In the case where US demand is price inelastic the supply curve of dollars will, as a result, bend backwards as shown in Figure 7.2.

But does the existence of a backward bending supply curve of dollars necessarily mean that sterling depreciation will fail to improve the UK's balance of trade? The short answer is 'no'. In the case illustrated by Figure 7.2 it may be seen that although the sterling depreciation does indeed reduce the supply of dollars, the demand for dollars falls by even more. However, it is certainly possible to conceive of a case where the demand curve for dollars is inelastic, as in Figure 7.3. Here, over a certain range of sterling devaluation, the
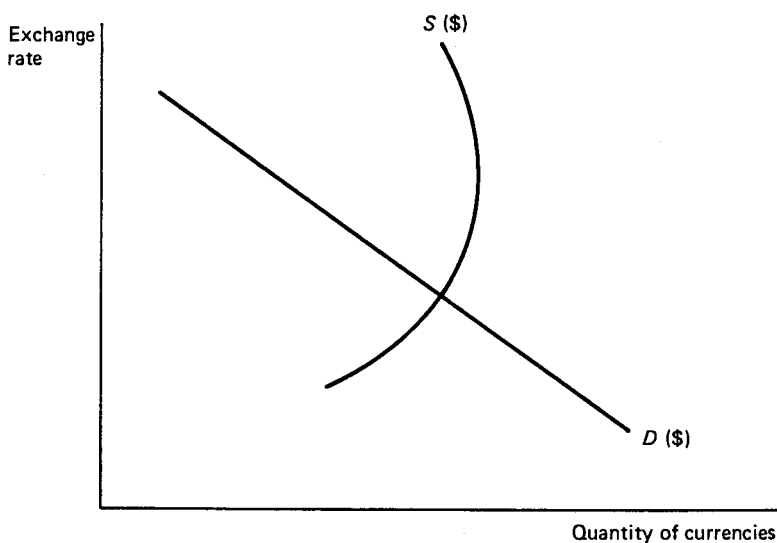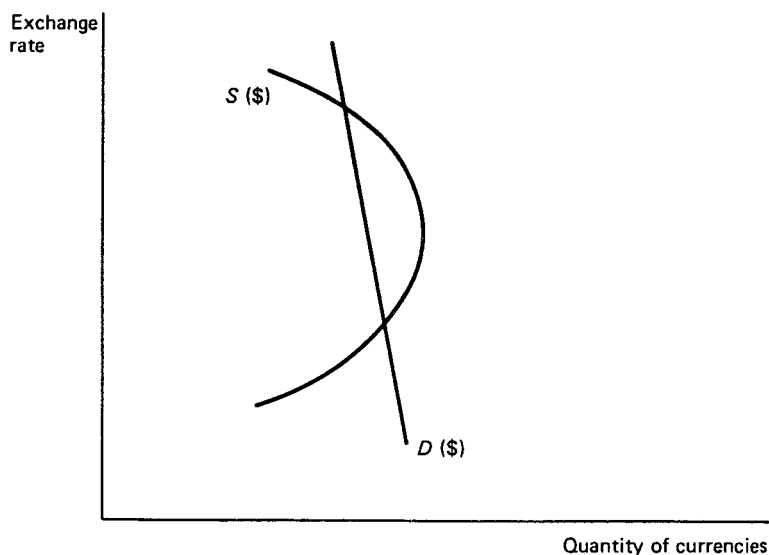

Figure 7.2

Exchange
rate

Figure 7.3

supply of dollars falls by more than the demand for them and the depreciation weakens the UK trade balance.

The relevance of foreign trade elasticities to the analysis of the effectiveness of devaluation as an instrument for improving the trade balance can be spelt out with more precision.

DEVALUATION, FOREIGN TRADE ELASTICITIES AND THE CURRENT ACCOUNT

By changing the relative prices of home and foreign goods, exchange-rate devaluation represents an attempt to encourage people (both nationals and foreigners) to switch the pattern of their expenditure in favour of goods (and services) bought from the country whose currency is devalued. Two questions lead on from this basic statement. First, how do relative prices change as a result of devaluation? And second, how do quantities respond to these price changes?

With regard to the first question, and holding other things constant, devaluation raises the domestic currency price of imports and

either reduces the foreign currency price of exports or raises their domestic currency price.

But will other things hold constant? Devaluation tends to increase the domestic price level and this may offset the competitive advantage that would otherwise be achieved. Moreover, producers may change their posted prices and there may be other forms of retaliatory action such that the effects of devaluation are neutralised.

Although much of the debate about devaluation surrounds the responsiveness of demand and supply to induced relative price changes, those who believe in short-run as well as long-run purchasing power parity claim that the essence of the argument against devaluation is that it will simply generate additional inflation, to such an extent that the real exchange rate does not change; there will then be no correlation between nominal and real exchange rates. In these circumstances a nominal devaluation has no effect on the real exchange rate because it is accompanied by an equivalent and offsetting increase in the domestic price level. Discussions about price elasticities become redundant according to this view, and there is no point in trying to use devaluation as a way of strengthening the current account of the balance of payments.

In theory there is little doubt that devaluation will increase the domestic price level somewhat, for, as seen earlier, the domestic currency price of imports will rise, and this will push up consumer (and producer) prices. To the extent that devaluation also increases the demand for output, in the form of exports and import substitutes in the devaluing country, other inflationary impulses will also be experienced. To some extent foreign producers may seek to offset the effects of devaluation by lowering the currency price of their exports, in which case it will be the profits of foreign producers rather than import prices and their market share that are affected. However, the debate is not generally about whether devaluation will increase the domestic price level in the devaluing country; it will. The debate is about the *extent* to which this will happen and whether it wipes out all the competitive advantage that devaluation seeks to create, and this is an empirical issue. How far are exchange rate changes 'passed through' to changes in the prices of traded goods? Empirical evidence suggests that while devaluation is associated with an increase in the domestic price level, the latter is not sufficient to eradicate the relative price effect of the former.

Let us therefore assume that the price effects normally associated with devaluation are forthcoming. The rise in import prices means a

deterioration in the devaluing country's terms of trade. If we now assume that the same quantities of goods are traded as before the devaluation, then the current account of the balance of payments will deteriorate. The demand for foreign exchange will remain the same as it was before the devaluation as the real inflow of imports is maintained, but the supply of foreign exchange will fall as foreigners need to spend less of their own currency to buy an equivalent real amount of the devaluing country's exports. There will therefore be a net fall in foreign exchange earnings. A crucial question then relates to the quantity responses to the price changes induced by devaluation.

But which elasticities are important? The answer is that it depends on the sort of country being studied. For small open economies it is conventionally assumed that the elasticity of import supply and of export demand are infinitely large, with exports being priced in foreign currencies and therefore not changing in response to the devaluation of the home currency. The significant values are therefore the price elasticity of demand for imports and the price elasticity of supply of exports.

For large industrial countries, on the other hand, it is convention ally assumed that it is import supply and export supply that are infinitely elastic; with diversified economies being able easily to switch domestic output into exports and out of home consumption. Here it is the price elasticity of import and export demand that is significant.

But what values do these elasticities have to possess? Remember that the assumed object of the exercise is to reduce the demand for foreign exchange by reducing the demand for imports, and to increase the supply of foreign exchange by selling more exports.

Taking the small country case first, the demand for foreign exchange will fall if the price elasticity of demand for imports is greater than zero. Meanwhile, the supply of foreign exchange will rise if the price elasticity of export supply is greater than zero. Overall, devaluation will strengthen the current account if the sum of import demand elasticity and export supply elasticity is greater than zero.

In large industrial countries, where export supply is assumed to be infinitely elastic, the supply of foreign exchange will rise if the price elasticity of export demand exceeds one. For each unit sold less foreign exchange is now earned. Just as in the analysis of the effect of price reductions on a firm's total revenue in imperfect
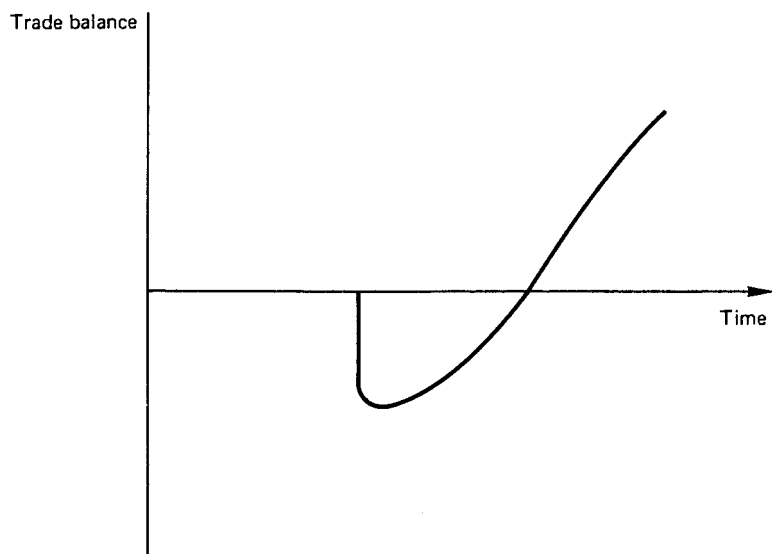
Figure 7.4

competition, total revenue will only rise if elasticity is greater than one. However, the current account may still improve even if the export demand elasticity is less than one. This will be the case if the demand for foreign exchange falls by more than the implied fall in foreign earnings and this depends on the price elasticity of demand for imports.

Overall, devaluation will strengthen the current account of an industrial country if the sum of export demand and import demand elasticities exceeds one.[1]

ELASTICITY PESSIMISM

Having seen in the preceding sections that the effects of devaluation depend in large measure on the values of certain foreign trade elasticities, the next question to which we turn is whether the elasticities are likely to be below the required values. Is there good reason to be pessimistic about the effects of devaluation on the trade balance?

One implication of low price elasticities needs to be stressed. If elasticities are so low that devaluation becomes an ineffective weapon for strengthening the current account then it logically follows that revaluation will be effective. Not only this, revaluation will also improve the terms of trade and have a counter-inflationary effect. The observed fact that countries do not revalue in an attempt to strengthen their balance of payments, and that over-valuation leads to payments deficits and not surpluses seems to suggest, as does other empirical evidence, that trade elasticities are above the critical values.[2]

However, it is true that there are grounds for expecting the elasticities to be higher in the long run than in the short run. The long-run impact of devaluation on the current account may thus be more marked than the short-run impact. Indeed, as far as the balance of payments is concerned, things may get worse before they get better. After all, the immediate effect of devaluation is to worsen the terms of trade. There may be some time lapse before quantities respond to this change in relative prices. Furthermore, if export prices are invoiced in the devaluing country's own currency. the supply of foreign exchange will fall immediately upon devaluation. In contrast, if import prices are invoiced in foreign currency the demand for foreign exchange will not fall immediately. This gives rise to the so called *J*-curve phenomenon illustrated in Figure 7.4. Again there may be differences here between countries, since by invoicing their exports in foreign currency developing countries escape the *J*-curve effect.

INCOME ELASTICITIES

In the above analysis the importance of price elasticities in the context of discussing the effects of devaluation has been stressed. A rather different view is that it is income elasticities and not price elasticities that are important. While the price changes induced by devaluation may have a temporary effect, is it not perhaps the underlying income elasticities of demand for imports and exports that determine the balance of payments in the long run. This view of devaluation clearly ties in closely with the structural approach to the balance of payments discussed in Chapter 4. It needs to be recognised, though, that goods which possess high income elasticities may also possess high price elasticities. If this is the case, the analysis

carried out above continues to have relevance even within a framework which emphasises the significance of income elasticities.

AN ABSORPTION-BASED APPROACH TO DEVALUATION

The approach to exchange-rate changes adopted so far in this chapter accentuates the effects of the induced changes in relative prices. However, the absorption approach to the balance of payments introduced in Chapter 4 ignores relative prices. Recall that this model argues that the balance of payments (B) represents the difference between domestic output (Y) and domestic absorption (A):

$B = Y - A$

Within this framework devaluation will only strengthen the balance of payments if it raises Y or reduces A, or, more generally, reduces A relative to Y. But is devaluation likely to work in this fashion? To answer this question, we need to trace out the effects of devaluation on domestic output and expenditure.

Why might Y change as a result of devaluation? First, by increasing the demand for exports or import substitutes output may increase without there being an increase in the level of domestic expenditure. The question is whether the demand can be met in real terms or whether it will merely result in inflation.

Second, where the terms of trade deteriorate as import prices rise, real income will fall. With constant real absorption the trade balance will deteriorate.

Third, to the extent that devaluation is accompanied by the removal of various controls there may be an increase in economic efficiency and an increase in output.

We can see that there are forces pulling in different directions. Whichever way output and income changes, this will have an impact on expenditure to the extent that expenditure is a function of income. The important question from the point of view of the balance of payments is the extent to which the induced change in expenditure matches the change in income. However, as noted in Chapter 5, there are components of expenditure which are unrelated in income.

Even if output does not increase, the balance of payments may

therefore still strengthen according to the absorption approach, if autonomous expenditure falls. Why might expenditure fall?

First, through its effect on raising the domestic price level, devaluation increases the nominal demand for money. Interest rates therefore rise and expenditure falls. What is more, the rise in the price level will reduce real balances and this may cause consumption to fall and saving to rise.

Second, there will be distributional consequences associated with devaluation which may combine to lower domestic expenditure. As inflation occurs in an economy which has a progressive tax system, government revenue will rise relative to expenditure since tax-payers are moved into higher tax brackets. Although such 'fiscal drag' may reduce domestic expenditure, the fiscal effects of devaluation in general remain somewhat uncertain since much hinges on the other policies that are simultaneously pursued. Changes in tariffs, quotas and subsidies, all of which frequently go hand in hand with devaluation, affect the fiscal balance. Furthermore, to the extent that devaluation and these other policies influence income and employment there will be additional effects on tax revenue and government expenditure.

The distribution of income may also be altered if devaluation increases profits relative to wages. Certainly our earlier analysis suggests that devaluation will raise profitability in the traded-goods sector. If, as normally assumed, the marginal propensity to save from profits is higher than that from wages then such a redistribution will raise the economy's average propensity to save and reduce its average propensity to consume. How long-standing this effect is depends on how quickly wage earners realise that redistribution has taken place and how well equipped they are to resist it.

Third, for economies which have significant amounts of debt denominated in foreign currency, devaluation may have an additional deflationary effect on domestic expenditure. In such cases devaluation raises the domestic currency cost of servicing any given external obligation, and expenditure is thereby diverted abroad.

Finally we may note that whether devaluation reduces domestic expenditure depends significantly on the nature of domestic monetary policy. If this is used to offset any expenditure dampening effect associated with devaluation, then the absorption approach predicts that the balance of payments is unlikely to strengthen.
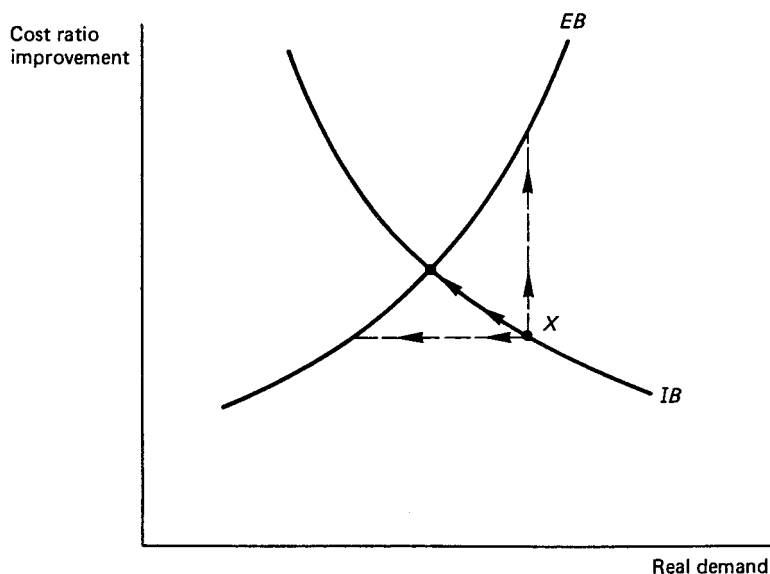
Figure 7.5

SYNTHESISING THE ELASTICITIES AND ABSORPTION APPROACHES

So far in this chapter we have presented two approaches to the analysis of devaluation. The elasticities approach stresses the importance of the effects of devaluation on relative prices. The absorption approach stresses the importance of its effects on income and expenditure. In a sense subsumed within the absorption approach is the monetary approach which stresses the effects of devaluation in correcting the assumed underlying monetary disequilibrium. Here it is the effect that devaluation has on reducing the real supply of money which is emphasised.

The question addressed in this section is whether there is a framework within which the elasticities and absorption approaches may be integrated. The Swan diagram described in the Appendix to Chapter 6 provides us with just such a framework, since it illustrates clearly how balance of payments correction may rely on a combination of switching policies (the elasticities approach) and policies which change the level of expenditure (the absorption approach). Relying on one approach may be inadequate. Starting from point *X* in Figure 7.5 we can see that to reach *EB* by demand

deflation involves increasing unemployment, while to reach it by devaluation involves inflation. A combination of devaluation and deflation seems to be the appropriate policy mix.

However, although useful as a means of synthesising the two approaches the problems with the Swan diagram catalogued in the Appendix to Chapter 6 need to be borne in mind. As noted above devaluation may reduce domestic expenditure. In the context of Figure 7.5 it may push the economy upwards and to the left (in a north-westerly direction) rather than vertically upwards. Indeed, in theory, if the effects of devaluation on competitiveness are completely offset by an increase in the price level, and the deflationary effects are the only ones that remain, the economy will be shifted horizontally to the left.

The causes of such an unorthodox response to devaluation are important from a policy point of view. Where the prime cause is a low import demand elasticity or export demand or export supply elasticity, the appropriate policy may be to change the pattern of production and trade and to undertake infrastructural investment directed at raising the response elasticities. On the other hand, where the prime cause is a high degree of real wage resistance, incomes policy or trades unions policy may be more relevant.

THE METHOD AND PACE OF EXCHANGE-RATE ADJUSTMENT

While we have been talking in this chapter about devaluation, i.e a relatively large, discrete and infrequent alteration in the nominal exchange rate, we should recognise that different ways of altering the exchange rate may have significantly different effects. Not so much in terms of their ultimate relative price effects and the switches in expenditure that these induce – although even here a sudden big change in relative prices may have more or less effect than a series of small changes which ultimately lead to the same relative price differentials – but rather in terms of their effects on expectations.

Devaluation may, for example, have a significant impact on the capital account by persuading lenders that the country's government is committed to strengthening the current account. The effects of devaluation on the capital account have been ignored in the above analysis but can be important. Against this, devaluation may foster inflationary expectations and generate considerable real wage resis-

tance which impedes its effectiveness as a balance of payments tool.

More gradual depreciation in a slow or crawling fashion may not engender such expectations and resistance but may, on the other hand, be seen by external creditors as a less strong policy commitment. Indeed, a statement by a government that it is prepared to see its exchange rate float downwards may be interpreted by creditors as suggesting that the government is unconcerned about domestic inflation.

By the same token, a firm and credible commitment to maintain a fixed exchange rate may be seen as imposing inflationary discipline, which itself lowers expected inflation. If governments rule out devaluation, they rule out one method of counteracting the balance of payments effects of excessive inflation. Since this makes it more likely that inflation will lead to the adoption of contractionary policies, which increase unemployment, workers will be inclined to moderate current wage claims. In this way a fixed exchange rate provides a 'nominal anchor' for macroeconomic management. Stabilisation policy is based on protecting a particular nominal exchange rate, and it therefore becomes visible and clearly defined. Problems arise, of course, if inflation is moderated insufficiently to prevent an increase in the real exchange rate. This will weaken the balance of payments and cast increasing doubt on the government's ability to defend the fixed nominal rate. At the same time governments may be reluctant to risk the inflationary consequences of devaluation. Such dilemmas lie at the very heart of exchange rate crises.

Joint floating and monetary integration

Rather than all countries adopting flexible rates or all countries adopting fixed rates, there may be some circumstances under which a group of countries agrees to maintain relatively fixed rates between themselves but a flexible rate with the rest of the world. The countries in the group will use some form of 'monetary integration'. This is a conceptually weak term, since it can mean different things. It normally incorporates some form of exchange-rate union and free convertibility. Monetary union may in turn include the establishment of a new reference (or even a single) currency, a reserve fund to provide member countries with balance of payments finance, and a high degree of policy co-ordination, with ultimately

perhaps only one set of monetary and fiscal authorities. As a first step, on the other hand, it may merely constitute a commitment to peg exchange rates.

Having defined monetary integration, we must now identify the features that characterise a group of countries between which it might occur. This reduces to listing the factors that define optimum currency areas.

Optimum currency areas

A general guideline here is that an optimum currency area will exist between countries which are either unlikely to have to adjust or may easily and at relatively little cost adjust by means other than altering exchange rates. Over the years a number of criteria for demarcating optimum currency areas have been suggested.

The first relates to the degree of factor mobility. Countries between which there is considerable mobility of both capital and labour are candidates for exchange-rate union, since factor mobility substitutes for exchange-rate flexibility. For example, if in a two-country world one country has a trade deficit and excess labour supply and the other country has a trade surplus and excess labour demand, labour migrates from the first to the second country. This both alleviates the labour market disequilibria in the two countries and corrects the balance of trade disequilibria, since what was formerly home demand in the first country now becomes export demand and what was formerly export demand in the second country now be comes home demand. Clearly there are a number of implicit assumptions here, including the assumption that labour is homogeneous and may equally well be employed in either country to produce any good, and also that labour is demanded in a fixed proportion to output, i.e that there are fixed technical coefficients. But if these assumptions are valid, then the need to alter the exchange rate between the two countries to induce a change in the pattern of expenditure can be avoided.

With well-developed and integrated capital markets, capital may also move rather than exchange rates. Trade deficits are offset by capital inflows, which may ultimately result in a changing level and pattern of output in the capital-importing and capital-exporting countries eliminating the trade deficit and surplus.

A second criterion for delineating optimum currency areas relates to the openness of the economies concerned. With open economies

which possess high propensities to import, the less will be the amount of demand deflation required to correct a deficit or demand expansion required to correct a surplus; the more will be the impact of exchange-rate variations on the domestic price level, and possibly on the rate of inflation; and the greater will be the number of transactions to which exchange-rate uncertainty will apply. The greater will therefore be the incentive to adopt a fixed rate. Furthermore, the higher the degree of trade interpenetration between the countries, the greater will be the advantages from a fixed exchange rate, since the benefits from certainty will apply to a larger proportion of the total trade of the countries concerned.

A third criterion relates to the commodity and geographical diversification of trade. Where there is a significant diversity in the range of products a country produces, the law of large numbers will operate to reduce the likelihood that adjustment, and therefore exchange rate changes, will be required. Or again, if a country's trade is geographically diversified with other countries in the group, it will be protected from shocks emanating from trading partners, and exchange-rate changes are less likely to be required. Indeed, to the extent that random shocks within the union offset one another, the common exchange rate *vis-à-vis* the rest of the world will be relatively stable, and this will make the price level inside the union more stable than it might otherwise be.

A fourth criterion relates to the similarity of governmental priorities between key macroeconomic policy objectives. If a group of countries face similar trade-offs between, say, inflation and unemployment, and left to themselves individual governments would choose a similar location on this trade-off, then similar inflation rates will result and the policies will be consistent from a balance of payments point of view. But if different countries face different trade-offs or if they select different combinations of inflation and unemployment, then initially their policies will result in payments disequilibria. The financial flows generated by such disequilibria under fixed exchange rates will eventually tend to eliminate the divergences, but this means that countries will have to be prepared to accept rates of inflation and levels of unemployment that they do not regard as optimal. In order to comply with external constraints they will be sacrificing internal objectives.[3] The problems created by trying to pursue divergent policies within a group of countries with fixed exchange rates provides an argument for monetary and fiscal harmony, but this may be difficult to arrange. Of course, the

need to eliminate deficits and surpluses will be less marked if a fairly permanent redistribution of income from surplus to deficit countries within the group is accepted. But such regional assistance is usually less acceptable between countries than within them. One implication is that the asymmetry of adjustment associated with fixed rate systems may be internalised within the monetary union, and a deflationary bias result.

Finally, but more generally, the more effective and cost-efficient exchange-rate variations are at correcting balance of payments disequilibria, the more reluctant will countries be to give up this policy instrument. On the other hand, in circumstances where exchange-rate changes are ineffective or inefficient because of low trade elasticities or a high degree of real wage resistance countries may be more prepared to engage in monetary integration.[4]

More recently 'new' optimum currency area theory has stressed the attractions to countries with relatively high inflation of joining an exchange rate union with a partner country which has a better inflationary record. Countries are essentially trying to 'import' the superior reputation of their partner as an inflation-fighter. If the commitment to the fixed exchange rate is credible, countries with relatively poor inflationary credentials may be able to reduce inflation at a lower cost in terms of lost output and unemployment than if they were to be outside the area. The sacrifice they need to make is lower. The fixed exchange rate is almost literally the peg upon which they can hang their counter-inflationary policy, and it is the commitment to the fixed rate that lowers inflationary expectations. Indeed, if the long run Phillips curve is vertical there will be no long-run unemployment and output costs.

However, in order to work, the commitment to the fixed exchange rate has to be believed. A potential problem here is that while countries retain their own currencies they retain the option of altering the value of their currency relative to others, and no matter what governments say, exchange rate speculators may continue to believe that, under certain circumstances, they will renege and devalue. Each time governments follow this route, they damage their reputation and make it more difficult to credibly commit to a fixed exchange rate in the future. To overcome their lack of credibility governments may be forced to, in effect, eliminate the devaluation option by eliminating national currencies within the area. Within a single currency area it becomes impossible to devalue the exchange rate. From a macroeconomic point of view the potential benefits

offered are lower inflation, lower interest rates (as a consequence of reduced inflation and the eliminated exchange rate risk) and higher economic growth. But there are potential costs as well. National policy makers will still be seeking to attain similar internal and external targets in terms of avoiding high levels of unemployment and balance of payments deficits, but will now have to approach the task without the exchange rate instrument and without independent monetary policy. Even under an exchange rate union which retains national currencies, the scope for independent monetary policy will be constrained by the need to defend agreed exchange rates. The analysis in Chapter 6 showed that with fixed exchange rates and perfectly mobile capital monetary policy is ineffective. By giving up monetary policy and the ability to choose a preferred inflation rate, governments will sacrifice seigniorage (the profits from creating money) and the ability to alter tax revenue by manipulating the rate of inflation, (the so-called inflation tax).

8 Global Macroeconomic Management

INTRODUCTION

When we move away from looking at individual economies and their dealings with the rest of the world to examining the operation of the world economy as a whole, the *BP* schedule introduced in previous chapters loses its relevance. The world economy does not trade with, lend to, or borrow from other economies. In essence we are back within the confines of the closed economy model which is conventionally represented by the *IS–LM* framework.

Within this framework it is quite possible to do for the world economy the sorts of things one conventionally does for a closed national economy. One can discuss the shapes of the *IS* and *LM* schedules, shifts in the schedules, the effects of monetary and fiscal policy, the generation of inflation and unemployment, and Keynesian and monetarist ways of approaching these issues.

Since such analysis is presented in almost all introductory macro-economic textbooks, we shall not run through it again here. Instead this chapter examines three rather more specific issues under the heading of global macroeconomic management. First, we examine the question of whether a system of generalised exchange-rate floating is more or less inflationary than one of fixed exchange rates. Second, we examine the scope for global macroeconomic management through controlling the level of international reserves. This is akin to analysing a form of international monetary policy. Third, we examine the extent to which the global economy may be managed through the redistribution of world income, using some form of international fiscal policy.[1]

INFLATION AND DIFFERENT GENERALISED EXCHANGE RATE REGIMES

In discussing the implications of different exchange-rate regimes for inflation, it is important to distinguish between the *transmission* of inflationary impulses across countries and the actual *generation* of these impulses. As we shall discover, the analysis seems to suggest that given inflationary pressures will be more widely spread across countries under a fixed exchange-rate system than under a flexible exchange-rate system. Inflation under the former system tends to be externalised across countries, while under the latter system it is internalised within countries. An implication of this is that the dispersion of inflation rates tends to be less if exchange rates are fixed.

With regards the generation of inflation there are arguments both for and against believing that any particular exchange rate regime will be more or less inflationary than any other. The general conclusion emerges that it is amongst factors other than the nature of the exchange rate regime that the causes of changes in the global rate of inflation are to be found.

THE TRANSMISSION OF INFLATION

There are a number of reasons for believing that inflation will be more effectively transmitted between countries under a fixed exchange-rate regime.

The first of these relates to the effects on the prices of traded goods. With fixed exchange rates, an expansion in aggregate demand within one country will lead to an increase in domestic prices. For those goods that are exported, this represents an increase in import prices to the importing countries and cost inflation. Such countries may also experience demand inflation as expenditure is switched towards their products because prices in the country in which inflation was initiated are now relatively higher. In the initiating country aggregate demand spills abroad and the current account of the balance of payments deteriorates, but the inflation associated with the increase in aggregate demand is, to some extent, neutralised; it being, in effect, exported to other countries.

With flexible exchange rates, on the other hand, the increase in

prices in the inflation-initiating country leads to exchange-rate depreciation and this in turn tends to result in further inflation (see below). The fall in the exchange rate protects the trade balance and prevents the excess demand spilling abroad. The inflation is 'bottled up' in the country where it started.

The second reason why inflation is more effectively transmitted between countries if exchange rates are fixed rests on its monetary implications. With fixed exchange rates an increase in the money supply in one country tends to result in higher prices and a deterioration in the current account of the balance of payments. International reserves fall but this fall is matched by a rise in reserves in the countries where the balance of payments has moved into surplus. The monetary impulse is thereby transmitted abroad.

With flexible exchange rates the level of international reserves is insulated by movements in the exchange rate. Since reserve levels do not change there is no monetary spill-over and again inflation is contained within the initiating country.

However, monetary disturbances have implications for the capital account as well as for the current account. An increase in a country's money supply leads to a fall in its interest rate and an outflow of capital towards other countries. At the same time the fall in the interest rate generates increased expenditure and higher prices. With fixed exchange rates the balance of payments deteriorates but the exchange rate does not change. With flexible exchange rates, on the other hand, the exchange rate depreciates, prices rise, the demand for money rises and the rate of interest rises. Again we find that for the initiating country, and with flexible exchange rates, the rate of inflation associated with a given increase in aggregate demand is higher than it is if exchange rates are fixed.

The above discussion seems to support the claim that inflation will be more widely spread across countries where exchange rates are fixed. Of course, how much inflation is generated within a country which is effectively importing demand from abroad depends on various economic characteristics including its level of capacity utilisation. But let us now move away from the transmission of inflation and look at the question of whether inflation will on average be higher or lower with different exchange-rate regimes in operation.

THE GLOBAL RATE OF INFLATION

The nature of the exchange-rate regime will influence the global price level by affecting either the level of costs or the level of demand. It will influence ongoing changes in the price level, or the rate of inflation, by affecting the rate at which costs or demand change.

Looking initially at the price *level*, flexible exchange rates carry with them the additional cost of forward cover as traders offload the uncertainty associated with variations in exchange rates. Furthermore, if governments decide that with flexible exchange rates they no longer need to hold such large levels of international reserves, the decumulation of reserves down to a lower level will lead to an increase in the level of global aggregate demand and an increase in the global price level. However, in principle, once the new level of reserves has been reached there should be no further inflationary impulse from this source. Similarly the additional cost of acquiring forward cover should lead to a once-for-all increase in the price level and not a continuing rise in it.

The conventional argument offered to support the view that a flexible exchange-rate regime leads to a faster global *rate* of inflation is that it removes the balance of payments constraint on demand expansion. With fixed exchange rates, expanding aggregate demand, through its effects on the balance of payments, results in a fall in reserves. The loss of reserves then imposes discipline on governments to desist from expansionary policies. However, with flexible exchange rates reserve discipline no longer exists. Governments can simply allow the exchange rate to depreciate to offset the effects of inflationary policies on the balance of payments. Macroeconomic policy becomes undisciplined and the global rate of inflation accelerates.

This argument in fact misleadingly combines an element of positive economics which is correct with an assumption which may be incorrect. The correct element is that flexible exchange rates provide countries with more freedom to choose their inflation rate or the optimum point on their Phillips curve.[2] The assumption is that, given such freedom, governments will choose a higher level of demand and a higher rate of inflation. In fact some governments may have a strong aversion to inflation and will use the opportunity provided by flexible exchange rates to escape the effects of inflation abroad. Indeed it would seem to be governments' attitudes to inflation rather than the nature of the exchange-rate regime that is the crucial factor in explaining global inflation.

Asymmetries in the distribution of the adjustment burden under fixed exchange rates may also be relevant here. If, under a fixed exchange-rate regime, it is the deficit countries that do the adjusting by bringing their rates of inflation down to the levels in surplus countries, then the move to floating is likely to lead to an increase in global inflation. If, however, it is the surplus countries that adjust their inflation rates upwards to the levels in deficit countries then the move to floating is likely to reduce the global rate of inflation.

So far this analysis suggests that with flexible exchange rates governments choose the domestic rate of inflation and then permit the exchange rate to adjust in such a way as to make this choice consistent with balance of payments equilibrium. Three further points need to be raised. First, where the chosen inflation rate results in exchange-rate depreciation which in turn causes inflation, is it not likely that a vicious circle will be set up? Second, the causation implied above runs from domestic inflation to the exchange rate. Is this always the case? Third, if prices are downwardly inflexible, will flexible exchange rates not lead to a higher global rate of inflation?

Taking the first point, as seen in Chapter 5 it is quite possible that exchange-rate depreciation will lead to an increase in inflation. However, it also needs to be recalled that depreciation may have deflationary consequences for domestic demand. Apart from this, domestic macroeconomic policy in the form of fiscal and monetary policy may in any case be used to compensate for the inflationary effects of depreciation. If countries are averse to inflation this aversity will itself impose discipline on demand expansion. Indeed, where avoiding inflation is the centrepiece of government policy, flexible exchange rates may impose more discipline on demand management than fixed rates. As established earlier, flexible rates internalise inflation and increase the domestic rate of inflation associated with any given increase in domestic aggregate demand. The Phillips curve therefore becomes steeper (see Figure 8.1). Again it emerges that, to the extent that there is self-imposed discipline to avoid inflation, there is no reason to believe that flexible exchange rates mean a higher global rate of inflation. Indeed by magnifying the inflationary consequences of overexpanding demand, the likelihood may be that policies which are rather less expansionary will be pursued than would be the case with fixed rates.

Moving on to the second point, it needs to be recognised that a country's exchange rate may move because of factors apart from the domestic rate of inflation. These factors include levels of demand abroad and externally caused changes in the terms of
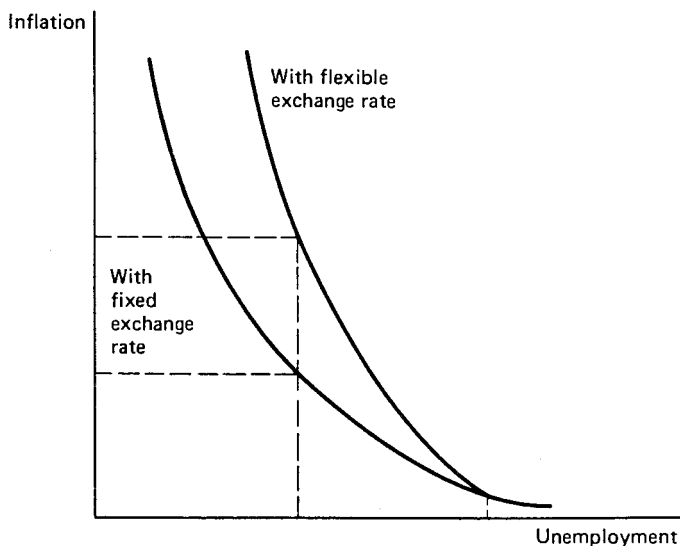
Figure 8.1

trade. Recognising this, it follows that correlation between inflation and exchange-rate flexibility need not necessarily support the reserve discipline argument.

Third, but leading on from this, if prices are downwardly inflexible but upwardly flexible, an increase in exchange-rate flexibility will mean that the additional inflation in countries with depreciating rates will exceed the counter-inflationary effects in countries where the exchange rate appreciates. In this way the global rate may increase.

However, the general conclusion still seems to hold. There is no clear analytical reason for believing that any one exchange-rate regime necessarily involves a higher global rate of inflation than any other. Government's attitudes to inflation and the fiscal and monetary policies they pursue seem to offer a superior explanation of variations in global inflation.

We can note in passing that this conclusion is quite consistent with the empirical evidence. With the move over to generalised floating in 1973 global inflation initially rose, but subsequently fell even though exchange rates continued to float. This in part supports the claim that the move to floating will raise the price level once for all. It also suggests that in explaining global inflation the nature of the exchange-rate regime is of relatively minor significance.

GLOBAL MACROECONOMIC MANAGEMENT THROUGH CONTROLLING INTERNATIONAL RESERVES

If global inflation does not primarily depend on the nature of the exchange-rate regime, an alternative explanation has to be found. One view is that it depends on the amount of international liquidity in the system. If this is the case, controlling liquidity offers a way of managing the world economy. In essence what we have here is a form of global monetary policy.

This section investigates the credentials of such an approach to global macroeconomic management. The basic idea is that by controlling the quantity of international reserves, control may in turn be exerted over the principal macroeconomic variables such as employment, inflation and economic growth. Lying behind this idea is the belief that deficient reserves lead to unemployment and stagnation while excess reserves lead to inflation.

The transmission mechanism involved is largely related to the assumed policy responses by governments to deficient or excess reserves. With reserves below their desired level it is assumed that governments will pursue deflationary policies to strengthen the balance of payments. With excess reserves, on the other hand, it is assumed that governments will relax their management of domestic demand. If the desired level of reserves is where their marginal costs equal their marginal benefits, excess marginal benefits will imply deficient reserves and excess marginal costs will imply excess reserves. Although a government's attempts to achieve equilibrium may initially be successful, we need to recognise the distinction between partial and general equilibrium. For altering one country's reserve holdings will usually have implications for reserve holdings in other countries. If one country increases its reserves, these have to come from other countries. Similarly if one country reduces its reserves, these end up elsewhere. If there is a generalised excess supply of reserves, this can only be eliminated by policies which increase the global demand for reserves.

For the control of international reserves to have a predictable impact on global expenditure, essentially two conditions must hold. First, the demand for reserves must be a stable function of a relatively small number of variables. Second, the supply of reserves must be exogenous and within the control of the relevant authorities.

Of course, these conditions are in no way specific to assessing the scope for global monetary policy, the same conditions also underpin

the assessment of the scope for domestic monetary policy. In either context if the conditions are not met then there is little room for managing demand by manoeuvring the quantity of the monetary base of the system.

In examining the stability of the demand for international reserves a number of points are relevant. First, demand will be influenced by the willingness of governments to use adjustment policies, including the exchange rate, and this may change through time. The more willing they are to adjust, the lower will be the demand for reserves. Second, the demand for reserves may not rise with the level of trade; the demand coefficient may not be fixed. Third, there may be a demand for international liquidity, defined as access to the means of international settlement, rather than a demand for international reserves as such. The demand for reserves may therefore be unstable with, for example, a fall in the quantity of reserves being matched by a fall in demand as the quantity of another form of liquidity increases. Again the links with domestic monetary theory are clear where it has long been recognised that the availability of close money substitutes can result in a variable velocity of circulation and an unstable demand for money. A question here is how closely substitutable are other forms of international liquidity for reserves?

Still pursuing the link with domestic monetary theory we may note finally that because, in the global economy, there are relatively few governments demanding reserves by comparison with the number of agents demanding money in the domestic economy, the law of large numbers is less applicable. The aggregate demand function may therefore be more unstable because random instabilities fail to cancel out one another.

Turning now to the question of the exogeneity of the supply of international reserves, there are a number of reasons for believing that the level of reserves is in practice related to changes in the demand for reserves, and that the quantity of reserves is largely outside the control of the relevant international monetary authorities. Countries may borrow from the private international capital markets in order to add to their reserves; while a growing quantity of foreign exchange in the system may, to some extent, itself reflect excess demand for reserves as policies in non-reserve currency countries push reserve currency countries into balance of payments deficit. Furthermore, the gold price, and therefore the value of gold reserves, is determined by market forces, and even IMF-based

sources of reserves may in practice fairly passively respond to changes in demand.

Some components of reserves, for example Special Drawing Rights, may even so remain more exogenous than others, particularly foreign exchange. This leads on to the supplementary question of whether meaningful control of reserves may be exercised, even though a large proportion of the total quantity of reserves is not determined directly by the international monetary authorities.

Taking the example of SDRs, such control might be possible, if, first, there is a separate and distinct demand for SDRs as opposed to other reserve assets, with the result that countries respond to a shortage or excess of SDRs in a predictable way. Or if, second, changes in the quantity of SDRs have an effect on the quantity of other reserves via the requirement that central banks have to hold a certain proportion of their reserves in the form of SDRs. However, a further problem is that even if some control could be exercised over reserves in this way, it is unlikely that such control could easily be extended to cover other forms of international liquidity.

Although, in principle, the move towards an international financial system based on SDRs, or the introduction of some type of reserve ratio, could offer scope for implementing global monetary policy, the practical problems associated with such reforms would appear effectively to rule them out in the forseeable future. Since, in addition to this, and although there are a limited number of basic determinants which systematically effect the demand for reserves, exchange-rate flexibility and the availability of alternative sources of financing make the demand function fairly unstable, we are left with the conclusion that controlling the amount of international reserves is at best a highly imperfect tool for global macroeconomic management.

If there are problems with global monetary policy, what about global fiscal policy?

THE GLOBAL REDISTRIBUTION OF INCOME

A lesson of closed-economy macroeconomics is that altering the distribution of income through the tax system may have some impact on the level of aggregate demand, provided different groups in society have different marginal propensities to spend. Is there any reason why this basic insight should not be applied to the global

economy? The idea here is that by transferring spending power from relatively rich countries with relatively low marginal propensities to consume to relatively poor countries with relatively high marginal propensities to consume, the global *IS* schedule may be shifted to the right as a result of the ensuing increase in the world's average propensity to consume. The analysis is illustrated by Figures 8.2a and 8.2b. If the global economy is initially located to the left of its full employment schedule such as transfer offers one way of raising the degree of resource utilisation and of reducing unemployment.[3]

Although at first sight appealing, particularly for those who wish to combine global macroeconomic management with the provision of more foreign aid to developing countries, the analysis begs a series of questions.

First, if the global economy is fully employed, or at least at its natural rate of unemployment, expanding demand will result in a higher rate of inflation. Second, if the global *LM* schedule is vertical then global income and employment will fail to rise at all, with the stimulus being crowded out by the rise in the rate of interest. Even with an *LM* schedule which is not vertical, the effects of global income distribution on world interest rates need to be recognised since a rise in interest rates will dampen the effects on output and employment. This is in spite of the fact that the world's expenditure multiplier may be rather higher than that of many individual economies since the world economy is a closed economy with no import leakage.

Third, there is the question of whether income or wealth transfers will necessarily lead to an increase in global expenditure. The actual recipients of the transfers may have a marginal propensity to save which is as high as that of many of the tax-payers from whom the income is transferred.

Fourth, if the cause of unemployment in the world economy is a deficiency of global aggregate demand, the more appropriate and efficient means of dealing with it may be to increase demand through domestic fiscal policy in at least some of the world's most powerful and influential economies. To such countries, providing aid will have a less high-powered and less predictable impact on their domestic economies. However, to protect the balance of payments of such countries, expansion of this type would need to be co-ordinated. Of course, if governments believe that demand is not deficient then no means of raising it, whether through additional aid or through fiscal expansion, is likely to find favour.
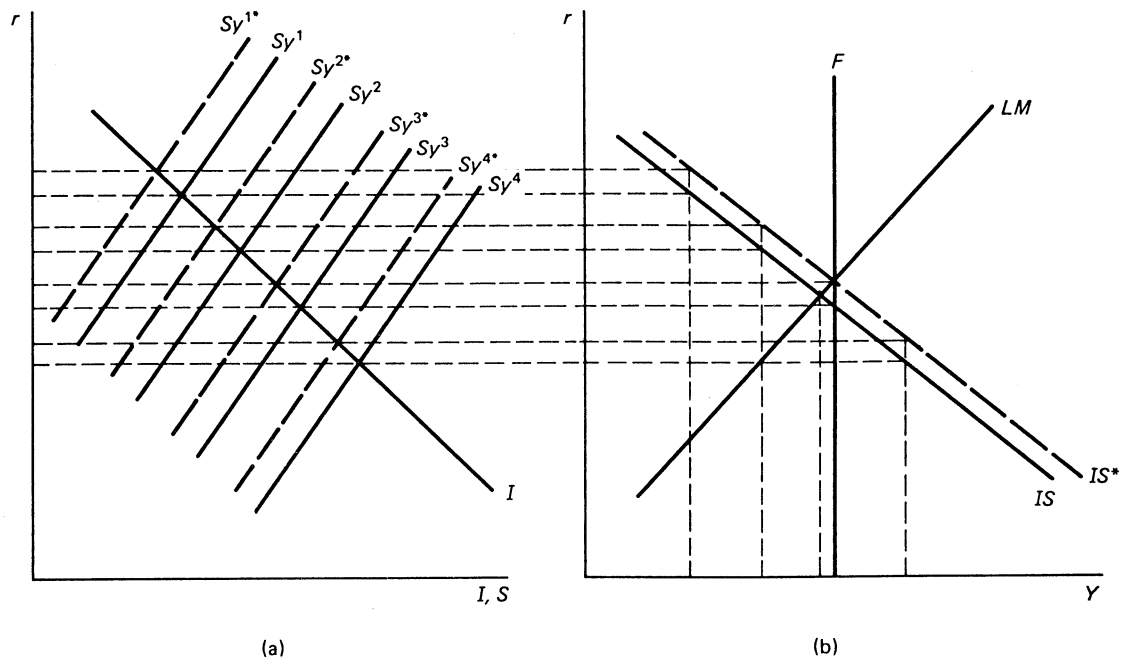
Figure 8.2

Part III
Applications

9 Explaining Global Macroeconomic Events

INTRODUCTION

While economic theory may be fascinating in its own right, it becomes much more compelling when it can be used to help analyse and explain real events. In this chapter we briefly examine a series of global economic events that have occurred since the 1970s to see what international macroeconomic theory has to say about them. In order, these are the oil crisis of the 1970s, the developing country debt crisis of the 1980s and related issues associated with the value of the US\$, the global economic recession of the early 1990s, and the Mexican peso crisis of the mid 1990s. The following chapter then examines the crisis in the Exchange Rate Mechanism of the European Monetary System in 1992 and 1993, and Economic and Monetary Union (EMU) in Europe. As things move along, other aspects of global macroeconomic performance will also be highlighted to throw into sharper relief some of the issues that have been raised in earlier sections of this book.

THE OIL CRISIS OF THE 1970s

Oil prices quadrupled between 1973 and 1974. Given the importance of oil to the world economy, a natural question to ask is what effects did this have. What actually happened was that global inflation rates rose to post-war record levels and at the same time the world economy moved into sharp recession. Simultaneously therefore, both the rate of inflation and the rate of unemployment rose. Economists at the time were more familiar with an inverse relationship between inflation and unemployment as shown by the Phillips curve, and the question therefore arose, as to how an increase in oil prices could have such apparently counter-intuitive effects.

Fortunately the global macroeconomic effects of the rise in the price of oil may be conveniently analysed within the framework of the global *IS–LM* model shown in Figure 9.1. The rising oil price redistributed income from oil-consuming and importing countries
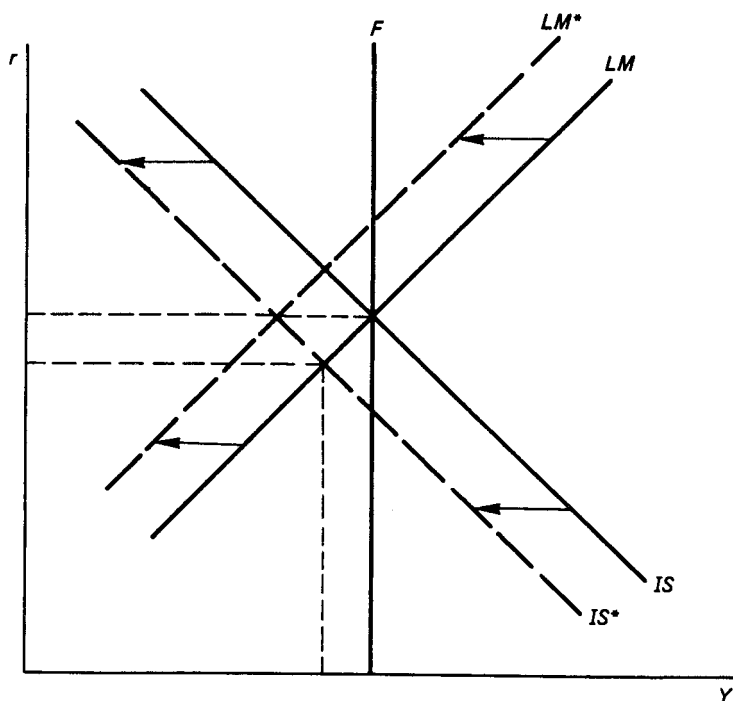
Figure 9.1

to oil-producing and exporting countries. On the basis that the latter had a higher marginal propensity to save than the former, the effect of such redistribution was to increase the global average propensity to save and to shift the global *IS* schedule to the left. The uncertainty caused by the large rise in the price of oil, also had a detrimental effect on expectations. The global investment schedule therefore shifted to the left thus causing a further leftward shift in *IS*.

With no change in the location of a positively sloped global *LM* schedule, such a leftward shift in *IS* causes both output and the rate of interest to fall. Assuming that the world economy is initially at full employment, the leftward shift in *IS* also causes unemployment and capacity under-utilisation.

Of course, it is also possible that increasing uncertainty strengthens liquidity preference. The related increase in the demand for money might then shift *LM* leftwards. Such a leftward shift endorses the impact on output and income but causes the interest rate to

rise. Falling real interest rates during the 1970s would, however, seem to suggest that it was the leftward shift in *IS* which dominated.[1]

So far the analysis shows how the increase in oil prices had a demand deflationary impact on the global economy. Is this inconsistent with the fact that, following the rise in the price of oil, global inflation accelerated? The answer is 'not necessarily'. For although global aggregate demand was deflated, the increase in oil prices also exerted a cost inflationary effect.[2] While, in principle, a once and for all increase in the price of oil will lead to a once and for all increase in the price level, it may also lead to expectations of further price increases. Besides, what if wage earners resist the implied cut in real wages? In these circumstances there will be secondary effects, and a more general and persistent tendency for prices to rise. Where the nominal money supply is fixed, inflation will reduce the real supply of money, and the real *LM* schedule will shift leftwards, thus emphasising the demand deflationary effects.

Real wage resistance has further implications. For, to the extent that workers are successful in protecting their real wages in circumstances where the equilibrium real wage has fallen, profits will tend to fall and unemployment will rise. The process is illustrated in Figure 9.2. Here it is seen that an increase in the price of oil shifts the demand curve for labour to the left thus reducing both the equilibrium real wage and the equilibrium level (or so called natural rate) of employment. If real wages are maintained at their former equilibrium level the increase in unemployment is more marked, rising above the already higher 'natural' rate of unemployment.

The balance of payments implications of the oil price rise were perhaps rather more complex than might at first be thought. Not only did the rise in the price of oil create current-account disequilibria, it also served to generate both a demand for and a supply of international capital. Many developing countries borrowed heavily to finance current account deficits.

THE DEVELOPING COUNTRY DEBT CRISIS OF THE 1980s

If the 1970s were dominated by the oil crisis, the 1980s were dominated by the Third World debt crisis which broke when Mexico announced in 1982 that it was unable to meet its outstanding debt obligations. The nub of the crisis was reflected by the rapid rise in

Real wage

Supply of labour

Demand for labour

Demand for labour
(after oil price rise)

Employment
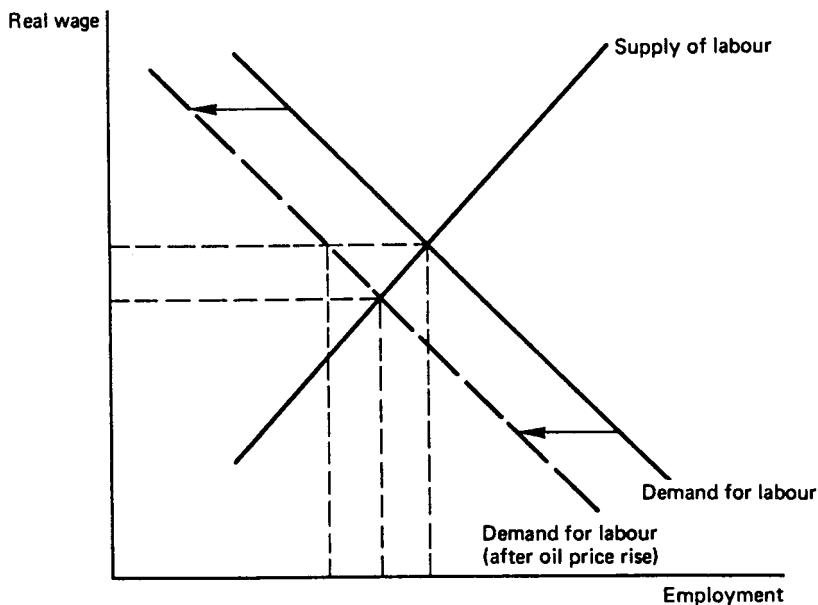
Figure 9.2

the debt service ratios (DSR) that faced indebted nations. This ratio expresses debt service payments as a percentage of export earnings. A rising debt service ratio can therefore be associated with either increasing debt service payments or falling export earnings. But what caused the crisis, and what in particular brought it about in the early 1980s?

Although it is unwise to ignore the role of domestic factors such as over-expansionary fiscal and monetary policies which led to currency over-valuation within the indebted nations, it is helpful to examine the global economic environment in which they found themselves.[3]

The trade functions introduced in Chapter 3 show a country's exports as depending on income levels in importing countries. Since developing countries sell most of their exports to industrial countries, the level of economic activity in the richer economies exerts an important influence over the export performance of developing countries.

Debt service payments depend on the amount of debt and the rate

of interest. Although developing countries can influence the amount of debt they acquire, they have to take world interest rates as given, since these are largely determined by the monetary policies of industrial countries. Interest rates will rise and fall as monetary policy becomes more and less restrictive. To explain rising debt service ratios we are therefore looking for a combination of circumstances that led to falling national income and rising interest rates in the industrial countries.

The early 1980s were indeed a period of economic recession and rising interest rates in industrial countries, but why?[4] Newly elected governments in the US and UK were preoccupied with reducing inflation, which had accelerated towards the end of the 1970s. The governments were influenced by monetarist modes of thought and therefore put the control of monetary aggregates at the centre of their macroeconomic strategy. As Figure 9.3 illustrates, contractionary monetary policy shifted the industrial countries' *LM* schedule to the left. With a fixed *IS* schedule, the rate of interest r rises from r^1 to r^2 and income falls from Y^1 to Y^2 and we have a simple (albeit partial) explanation of the debt crisis. Perhaps without this bout of monetary contraction in industrial economies the debt crisis could have been averted.

In the mid 1980s, the US began to relax fiscal policy and its *IS* schedule shifted rightwards. This was a mixed blessing for indebted developing countries. For those, such as Mexico and Brazil, that sold their exports mainly in the US market, export earnings rose, and this served to reduce their debt service ratios. But, as Figure 9.3 reveals, fiscal expansion (with *IS* shifting to IS^1) which is accompanied by monetary tightness (with no accommodating shift in *LM*) leads to rising interest rates (r^2 to r^3) that then increase DSRs.

Moreover, the heavily indebted developing countries had most of their debt denominated in dollars. The last thing that they wanted to see in the early 1980s was a sharp appreciation in the value of the dollar, but this was exactly what happened. At first glance the dollar appreciation was counter-intuitive since the US was running a large fiscal deficit. Fiscal deficits are normally associated in people's minds with balance of payments current account deficits, indeed there is talk of the 'terrible twins'. Surely a current account deficit should have led to depreciation in the value of the dollar and not appreciation? Again, the *IS–LM–BP* model comes to our rescue. Given the configuration of schedules shown in Figure 9.4, it can be seen that fiscal expansion leads to an overall balance of payments
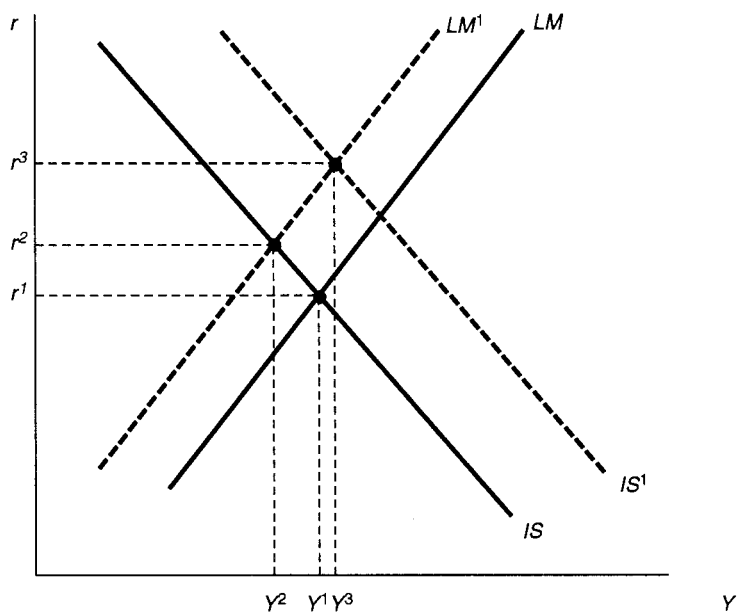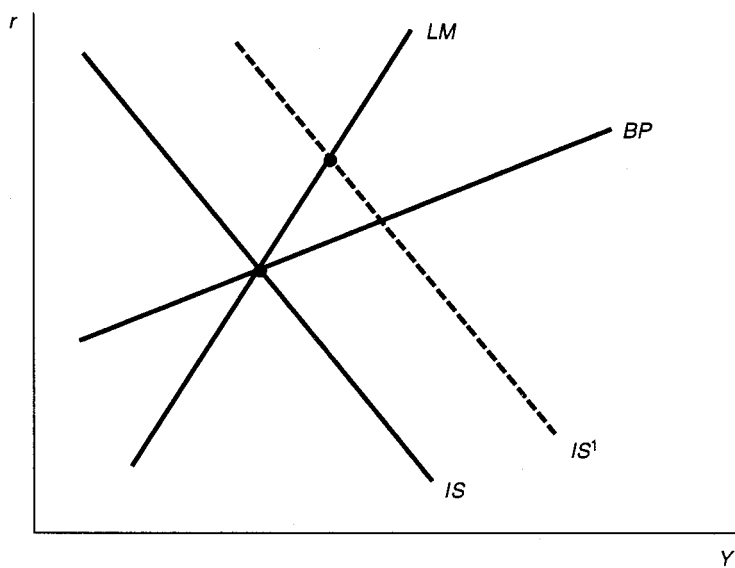
Figure 9.3

Figure 9.4

surplus and exchange rate appreciation, for, while the increase in national income weakens the current account, the increase in the interest rate induces capital inflows to such an extent that the capital account effect overpowers the current account effect.[5]

WHAT GOES UP: THE FALL IN THE VALUE OF THE DOLLAR IN THE LATE 1980s

From 1986 until the early 1990s the value of the dollar fell sharply both in nominal and real terms (see Chart 1), as the capital account effect weakened and the current account deficit began to dominate.
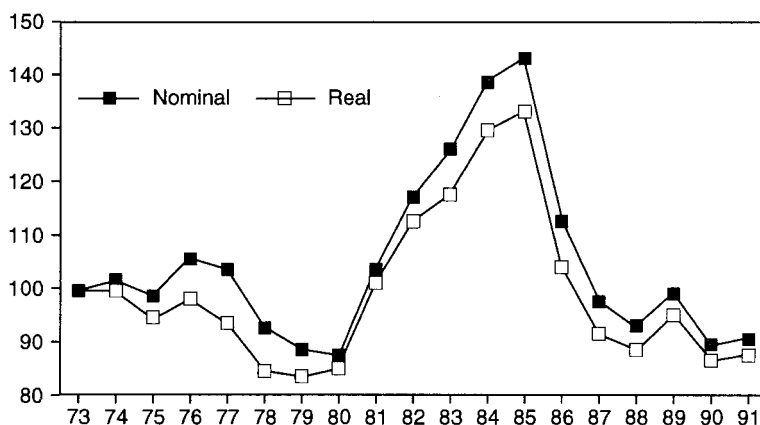
Chart 1 The Value of the US Dollar

Did this depreciation have the predicted effects on the US current account? Clearly other factors were at work, since in the real world other things rarely remain constant. But the fact is that the deficit certainly fell from $167 billion in 1987 to $8 billion in 1991, and it is difficult to believe that this was not, in significant part, to do with the falling value of the dollar. An interesting aspect of the association between movements in the exchange rate and the current account deficit in the US context is that exchange rate changes seemed to take about two years to have their effect, suggesting that a J curve relationship does hold. Moreover, the fact that changes in the nominal exchange rate led to broadly equivalent changes in the real exchange rate challenges the view that devaluation is ineffec-

tive at altering real rates and, by implication, balance of payments performance.

The US story also provides support for another aspect of our simple open economy macroeconomic model, since in 1991 the US economy was in sharp recession, while Japan and the European economies were still growing. This also contributed to the shrinking US current account deficit. As the US moved out of recession in 1992, ahead of other industrial countries, and as the value of the dollar ceased falling and began to rise, the US current account deficit began to re-emerge, and by 1994 had risen back to nearly \$150 billion.[6]

A slightly different approach to explaining the swings in current account deficits and surpluses that are a feature of the world economy is to focus on the fact (established in Chapter 2) that $X–M = S–I$. However, the problem, as noted earlier, is that savings and investment are two things that economics has found difficulty in explaining. Ideas are plentiful, but they tend to perform poorly against the facts.[7] As a consequence it is difficult to predict either of them. Thus it was that the elimination of the fiscal deficit in the UK towards the end of the 1980s was accompanied by an increasing rather than a falling current account deficit. What had happened was that private sector saving had declined by more than public sector saving had increased.

Amalgamating private and public saving, evidence for the US shows that saving and investment were approximately equal in 1991 at nearly 16 per cent of GDP. Following this the US savings ratio fell while the investment ratio rose and the US current account consequently moved into deficit. By contrast in Japan both saving and investment ratios were substantially higher, and the former (at over 30 per cent) exceeded the latter (at under 30 per cent) resulting in current account surpluses.

From the perspective of a country with deficient savings, the related current account deficit will only be sustainable for as long as it is possible to attract offsetting capital inflows, representing excess saving elsewhere in the world economy. Since different countries will have different degrees of creditworthiness, similar sized deficits (normalised for country size) will be more sustainable in some countries than others. Thus a current account deficit in the US is more sustainable than would be an equivalent deficit in a low income country, which may as a consequence be forced to turn to the IMF (see Chapter 11).

RECESSION AND UNEMPLOYMENT IN THE 1990s

A feature of the early 1990s was economic stagnation in industrial economies. Their rate of economic growth had been slowing down since the late 1980s when it had been averaging 4 per cent per annum. By 1991 economic growth was down to an annual rate of less than 1 per cent, although, as noted above, the US reached its trough in 1991, two years ahead of the European Union. The explanation of the recession is largely in line with the simple model used in this book. Concerned about accelerating inflation after 1987, when governments had responded to a worldwide stock market crash by relaxing monetary and fiscal policy, governments were reining in on expansionary fiscal policy and were cutting back on the growth of broad monetary aggregates. Both *IS* and *LM* schedules were shifting to the left, and as a consequence there was a pronounced effect on income, where the shifts re-inforced one another, but a more muted effect on interest rates where the shifts had offsetting effects. This also implies that the effects of the recession in the early 1990s on indebted developing countries were different from the effects of the recession of the early 1980s, where it was attributable to monetary contraction.

In the 1990s and in the US in particular the government's fiscal deficit received much adverse attention and political parties vied for popularity through their policies to reduce it. But what would have been the effect of rapidly eliminating the US fiscal deficit for both the US and the world economy?

In Figure 9.5a fiscal contraction results in a relatively small fall in US national income and a relatively large fall in the rate of interest. Given the assumed relatively flat *BP* schedule, the effect of the fall in US imports on its current account is dominated by the negative effect on capital flows, and the overall balance of payments (BoP) moves into deficit, with the exchange rate therefore depreciating. The fall in interest rates to some extent compensates the rest of the world for the recessionary effects of the decline in US national income, not only because the recession in the US is ameliorated, but also because of the reallocation of global capital. The effect of dollar depreciation on other countries also depends on whether their currencies are pegged to the dollar.

In Figure 9.5b the recessionary effects of fiscal contraction are more marked since with a flat *LM* schedule the rate of interest does not fall by as much as in Figure 9.5a. In the case of Figure 9.5b the
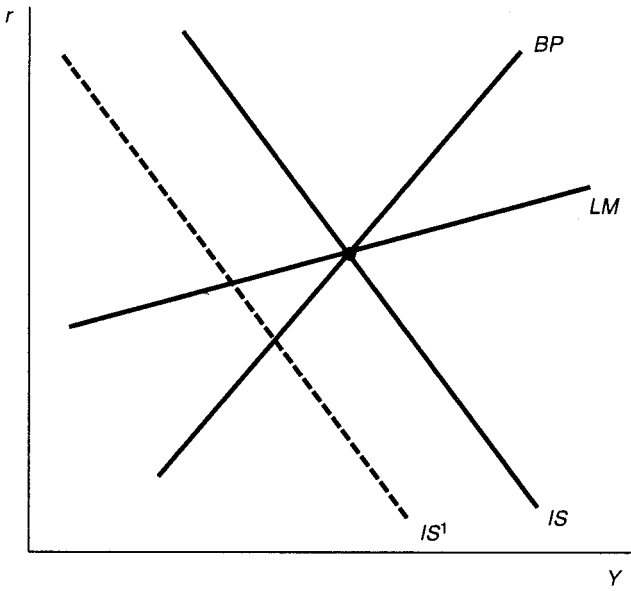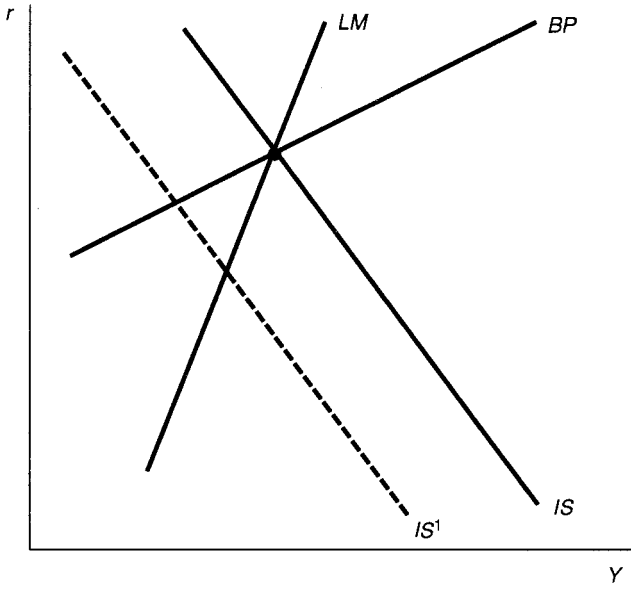
Figure 9.5a and b

overall BoP moves into surplus and the value of the dollar appreciates; this tends to enhance the recessionary effects of the fiscal contraction in the US. In the absence of the exchange rate consequences, the effects on the rest of the world are more severe in the scenario shown in Figure 9.5b since exports to the US are likely to fall more sharply, while world interest rates fall only a little.

Assuming no change in US monetary policy, the facts were perhaps more consistent with Figure 9.5b. The early 1990s saw a pronounced recession in the US combined with a modest (though nonetheless significant) decline in interest rates. The current account BoP deficit was almost eliminated and the fall in the value of the US dollar was arrested. For the US's trading partners, such as Mexico, their current account was weakened by the reduced demand in the US market for their exports, but their capital account was strengthened as inflows of capital were stimulated by the lower US interest rates and by the reduced incentives to invest in the US that were associated with the recession.

THE MEXICAN PESO CRISIS OF 1994–95

The spill-over effects from US macroeconomic policy were aptly illustrated in the first half of the 1990s. Relatively low interest rates in the US in 1991 and 1992 led to capital outflows to various parts of the world including Latin America and, in particular, Mexico. The capital inflows drove up the real value of the Mexican peso and this fairly rapidly undermined the Mexican current account balance of payments which moved into substantial deficit as imports increased sharply. Capital inflows also encouraged the Mexican government to allow domestic consumption to rise; increasing absorption put pressure on the balance of payments.

Overvaluation of the currency eventually led to expectations that the peso would have to be devalued. The authorities were reluctant to do so for fear of the inflationary consequences; but defending the exchange rate rapidly depleted reserves which further endorsed expectations that the government would have to devalue. A sharp rise in US interest rates in 1994 and 1995 made matters worse by further encouraging capital to move back to the US. Capital was now no longer coming into Mexico to finance the current account deficit. The Mexican authorities resisted pressures to raise domestic interest rates for fear of the effects on the domestic financial sector

and economic growth, and expanded domestic credit to offset the effects of capital outflows on the domestic money supply. This again weakened the balance of payments and, with the enduring attempt to avoid devaluation, led to losses of international reserves.

A self-perpetuating speculative crisis resulted, the nature of which eventually forced Mexico to devalue and raise interest rates, as well as to turn to the IMF for historically large amounts of financial assistance.

The course of events outlined above is illustrated by Figures 9.6a and 9.6b. In the early 1990s (shown by Figure 9.6a), the Mexican *IS* and *LM* schedules intersected above the *BP* schedule, with the Mexican interest rate inducing capital inflows which were more than adequate to finance the current account deficit, and which allowed international reserves to be accumulated. By the end of 1994 (shown by Figure 9.6b) the *IS* schedule had shifted across to the right, reflecting increased consumption and lower saving, but the monetary authorities had also expanded the domestic money supply in an attempt to keep interest rates from rising. At the same time the Mexican *BP* schedule had become steeper since an uncertain and unstable political environment in Mexico had increased the risk premium needed to encourage foreign lenders to lend.

Furthermore the interest rate in the US had risen, thereby reducing the Mexican rate relative to the US rate. The outcome of this combination of factors was that by 1994 and 1995 the Mexican *IS* and *LM* schedules (shown by IS^1 and LM^1 in Figure 9.6b) intersected below the new *BP* schedule (BP^1) showing that capital inflows were no longer adequate to finance the (increasing) current account deficit. Instead the deficit had to be financed by running down reserves. Clearly this was only a short-term possibility since reserves are finite. Ultimately, and faced by a financial crisis, the Mexican authorities had to devalue, shifting the *BP* schedule downwards, and to adopt contractionary monetary policies, shifting *LM* to the left.

The Mexican peso crisis had important implications for Mexico and for the world. For Mexico, there was much soul-searching as to whether the crisis could have been avoided by different macroeconomic policies such as higher interest rates and an earlier devaluation. For the world, it showed the difficulties of forming a judgment between the counter-inflationary benefits of a fixed exchange rate (the nominal anchor) and the costs of sticking to it once currency over-valuation occurs, particularly in a global environment of high
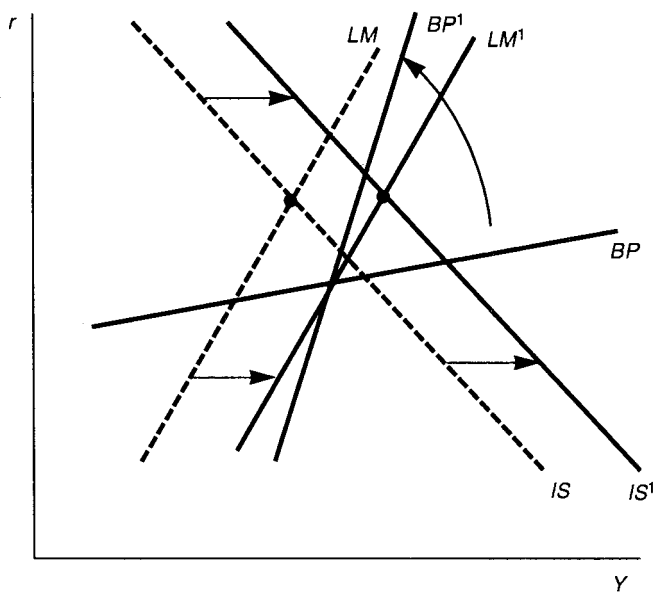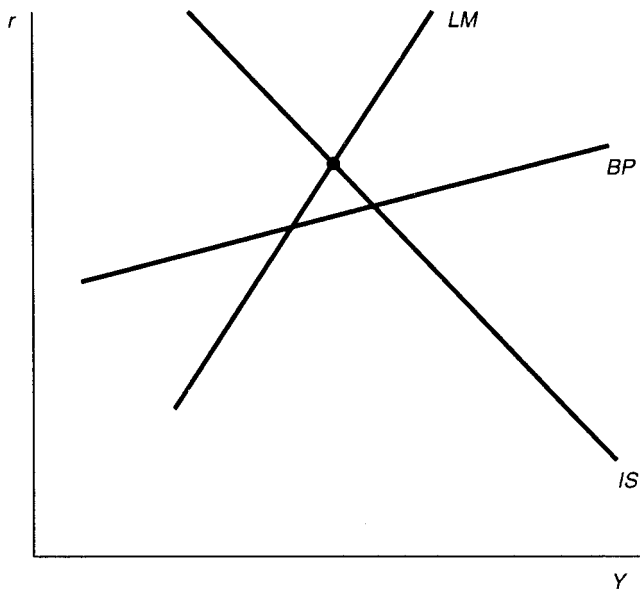
Figure 9.6a and b

capital mobility and volatility. The real and intellectual ramifications of the Mexican crisis remain at the heart of much of the debate over the reform of the international monetary system, since the episode illustrates the so-called impossible triad of fixed exchange rates, capital mobility and monetary independence.

CONCLUDING REMARKS

Clearly the accounts of major global economic events offered in this chapter are rudimentary and superficial. The world economy is more complex than this. However, the point of the exercise is to show that simple international macroeconomic models provide a useful guide to understanding important world economic events. For a modest model this is no mean achievement. Moreover, the basic analysis has the attractive feature of directing attention to the relevant issues and focusing the mind. It provides a relevant analytical framework. This is not theory for theory's sake, but theory as a means of gaining a greater understanding of how the world economy works.

10 Britain's Entry Into and Exit From Europe's Exchange Rate Mechanism, 1990–92, and the Subsequent Pursuit of EMU

Every so often a sequence of events occurs in the real world that seems custom-made to illustrate basic economic principles. The UK's flirtation with the European Exchange Rate Mechanism (ERM) at the beginning of the 1990s – joining in October 1990 and leaving in September 1992 – represents just such a sequence. It is difficult to imagine a better designed case study of the international macroeconomics developed throughout the earlier chapters of this book.

The travails of the European Monetary System over 1992–93, with immense foreign exchange uncertainty affecting a number of currencies, provided a real 'humdinger' of a crisis. Not only did key dates get written into the economic history books (16 September, 1992, when the UK withdrew from the ERM became known as 'Black Wednesday'), but five years later the debacle of Britain's dramatic reversal of the principal plank of its macroeconomic strategy – the commitment to a fixed exchange rate against other European currencies – was being seen as the beginning of the end of the Conservative administration, opening the way for the Labour Party's landslide victory in 1997. So why did Britain join the ERM in the first place, and why did it leave it? What went wrong? If errors were made, were they of the UK's own making or were they external and outside the Government's control?[1]

BRITAIN'S ENTRY INTO THE ERM

For many years prior to its eventual entry into the quasi-fixed exchange rate element of the European Monetary System, the UK had agonised about the issue, saying that it would join when the

'time was ripe'. This stance failed to hide deep disagreements within the Government which resulted in the resignation of senior ministers, including a Chancellor of the Exchequer, a Foreign Secretary, and ultimately the Prime Minister. What finally tipped the balance in favour of entering the ERM was a belief in its counter-inflationary benefits. It was assuredly not the advantages emphasised by 'old' optimum currency area (OCA) theory, as explained in Chapter 7, that were persuasive. Indeed the government clearly believed that Europe (with Britain included) did not constitute an optimum currency area on the basis of the criteria identified in old OCA theory.

However, the Government was in something of a dilemma towards the end of the 1980s. The centrepiece of its macroeconomic policy in the early to mid-1980s, namely the tight control of monetary aggregates, had been largely discredited and abandoned, and it was therefore keen to find an alternative anti-inflationary policy 'rule' to which it could commit itself.[2] The defence of a pegged exchange rate offered one alternative, and 'new' OCA theory emphasised the credibility and counter-inflationary benefits of adopting a peg and tracking the monetary policy of a lower inflation partner (Germany). A cynic might argue that the desire to control inflation took precedence over the Government's natural preference for unregulated markets (including foreign exchange markets), and its dislike of the speed with which Europe was integrating. The Government acted as if it disliked inflation more than it was sceptical of Europe! This, in part, also explains why the UK entered the ERM at what many observers believed to be an overvalued exchange rate, since about the only argument for currency over-valuation is as a counter-inflationary device. In 1990 the UK Government was anxious to reduce interest rates for domestic reasons. Entering the ERM with a high value for sterling seemed to provide an offsetting disinflationary effect.

In this narrow sense joining the ERM seemed to deliver its promise, and the UK's inflation rate, that had been accelerating up until 1989, when it reached over 7 per cent, began to decline thereafter. There was some evidence that, as new OCA theory predicted, the UK had been able to improve its 'sacrifice ratio'. The credibility gains seemed to have enabled inflation to be reduced at a lower cost in terms of lost output and unemployment than if Britain had continued to stay outside the ERM. So what went wrong?

BRITAIN'S EXIT FROM THE ERM

One of the well known dangers of an exchange rate union between countries is its exposure to asymmetrical shocks, which affect different countries in different ways. Such shocks or disturbances create macroeconomic disequilibria, and such disequilibria put strains on fixed exchange rates. The ERM was hit by just such a shock in 1990 when East and West Germany unified. German monetary policy which had been a strength of the ERM in the second half of the 1980s was destined to become a fundamental weakness in the early 1990s.

The need to re-build the East German economy resulted in German fiscal expansion; Germany's *IS* schedule shifted to the right. With an independent and inflation-averse central bank (the Bundesbank), German monetary policy remained tight. Germany's *LM* schedule remained static, and did not shift to the right to monetise the fiscal deficit. Expansionary fiscal policy therefore increased German national income (Y), but it also drove up the interest rate as the German government borrowed heavily to finance the fiscal stimulus.

This was something of a mixed blessing for Germany's European partners. The good news was that there was now greater scope for exporting to Germany and enjoying an element of export-led growth in their own economies. It is no coincidence that as the German current account balance of payments moved from surplus in 1990 into deficit in 1991 and beyond, the current account deficits in France and the UK diminished. German expansion to some extent therefore spilled over to partner countries. However, given European trading patterns, this benefit was not large enough to offset overall balance of payments problems.

More significantly, the bad news was that in order to defend fixed exchange rates and avoid the pressures put on them by capital moving to Germany attracted by higher German interest rates, other European economies had to increase their own interest rates. Germany acted as if it had the degree of freedom to determine its own monetary policy independently. Other European economies without this freedom followed suit. What had originally been a counter-inflationary benefit of ERM membership consequently became counter-inflationary overkill.

It is interesting that events seemed to be inconsistent with intertemporal optimising models of the balance of payments. These

would have had forward-looking agents anticipating future fiscal surpluses in Germany to pay for contemporary fiscal deficits. The behaviour induced by this, that is increases in current private saving to pay for future tax hikes, should then have ameliorated pressures on the value of the Deutschmark (DM) to rise. In fact the DM appreciated against the US dollar and this re-inforced the recessionary tendencies in Germany's European partners.

While high interest rates made sense in a German context they did not make sense in other European economies, including the UK. The rate of economic growth in the UK was a mere 0.4 per cent in 1990; but in 1991 and 1992 it was –2.0 per cent and –0.5 per cent respectively. Unsurprisingly, in these circumstances, unemployment had risen from 5.8 per cent in 1990 to nearly 10 per cent in 1992. These were politically significant economic problems.

But there was worse to come. Increased spending in Germany was threatening German price stability. The rate of inflation in Germany rose from 1.5 per cent per annum in 1988 to 5.5 per cent per annum in 1992, a rate deemed unacceptable by the Bundesbank. Its reaction was to pursue contractionary monetary policy, shifting the German *LM* schedule to the left. German short-term interest rates, that had been below 4 per cent in 1988, rose to 9.5 per cent by 1992.

Germany's European partners now had a stark choice. Capital controls had been removed in the late 1980s, so they could not prevent interest rate differentials from leading to capital flows. The choice was therefore to match German interest rates in order to defend agreed exchange rates, or set lower interest rates that were seen as being more appropriate for achieving domestic targets, and abandon fixed exchange rates. The system simply did not allow them to have fixed exchange rates, free capital mobility and monetary autonomy. Initially they followed the high interest rate route as shown in Figure 10.1 Here the UK is seen as shifting its *LM* schedule sufficiently far to the left to create macroeconomic equilibrium (a point of intersection between the UK's *IS* and *LM* schedules) at an interest rate level determined by the intersection between German *IS* and *LM* schedules. The consequence, is that national income in the UK falls from Y^1 to Y^2 and unemployment, by implication, rises. This is exactly what happened.

There is one important further twist to the story. The whole point of joining the ERM was to make a *credible* commitment to a fixed exchange rate and to overcome time consistency problems associated
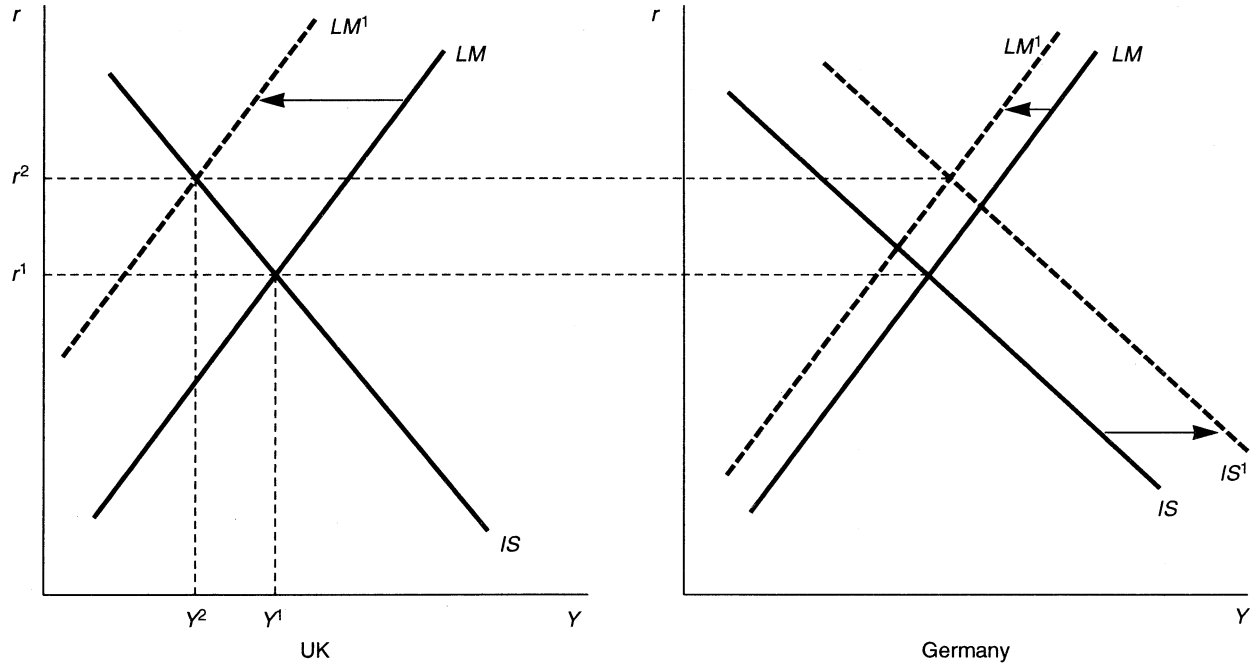
Figure 10.1

with expected policy reversals. However, credibility does not
depend on what governments say, but on whether private agents
believe that economic and political circumstances will enable them
to do what they say. Although in the run up to the 1992 crisis the
UK government repeated its commitment to the ERM, with rising
unemployment and recession in the UK, foreign exchange specula-
tors found the commitment to a fixed exchange rate to be literally
incredible, especially when the Government was publicly admitting
its dislike of high interest rates. Anticipating that the UK
Government would eventually be forced to renege on its commit-
ment and devalue, they started to sell sterling, and sell it heavily.
The di was cast.

Now if speculators were selling sterling and a fall in its value was
to be avoided, someone had to buy it to offset market forces. In
such a situation it was the UK Government that bought sterling by
running down its foreign exchange reserves. But, by definition, this
is not a policy that can be pursued for ever, since reserves are finite.
For as long as it does continue, the domestic money supply falls and
the *LM* schedule shifts further leftwards.

Furthermore, once speculators expect a devaluation, they have to
be offered yet higher interest rates in the form of a risk premium in
order to encourage them to hold the currency that they believe will
be devalued. There has to be an additional interest rate incentive to
hold the currency. Thus once the crisis had begun – triggered by
referendum results in Denmark and France that called into question
whether EMU was politically feasible and whether exchange rates
would be realigned – the UK authorities had to increase interest
rates still further, even though speculators knew that the
Government believed that they were already too high for domestic
purposes. It is in this way that exchange rate crises feed on them-
selves, with the eventual outcome assuming an air of inevitability,
unless something happens to strategically alter speculators' expecta-
tions.

As in the Mexican case discussed in the previous chapter where
similar forces were at work, the UK Government found itself in a
situation where it was losing reserves in an almost certainly unsus-
tainable attempt to defend an over-valued exchange rate. There was
a clear inconsistency between internal and external targets at the
then given exchange rate. Prolonging the agony would have wiped
out Britain's reserves and simply handed more profits to private
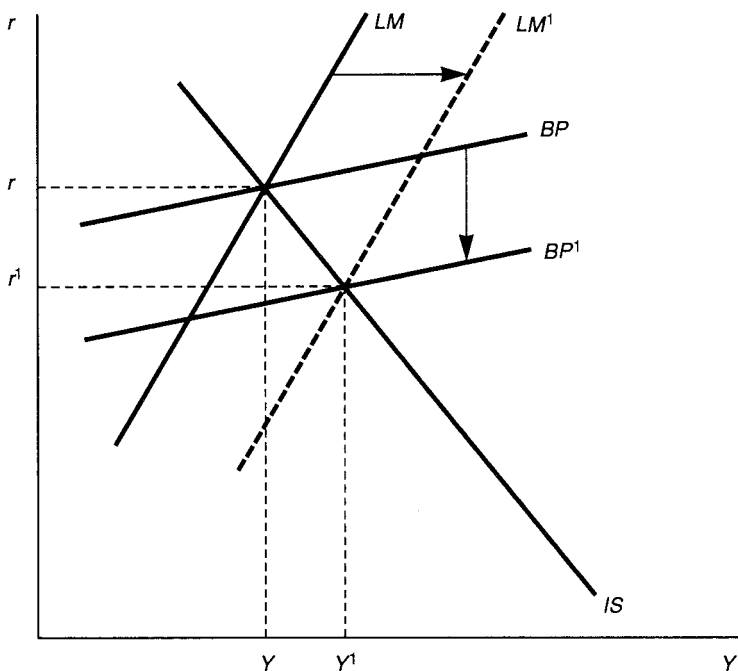speculators. By the time Black Wednesday dawned there was little

Figure 10.2

option other than to devalue sterling. As shown in Figure 10.2 the UK simultaneously shifted both *LM* and *BP* downwards and to the right, ensuring that equilibrium was attained with a lower rate of interest, (r to r^1), a lower value for sterling, and a higher level of national income (Y to Y^1). (This contrasts with the Mexican case where devaluation was accompanied by rising interest rates.)

When it came to a contradiction between the internal objectives of economic growth and lower unemployment and the external objective of defending the exchange rate, it was demonstrated that a point is reached at which economic growth and fuller employment take priority. This challenged the time consistency of exchange rate commitments. Was there any merit in 'tying your hands' to a fixed exchange rate if you could untie them when it became awkward to have them tied? This question reverberated through the subsequent discussions of monetary union in Europe.

But what happened to inflation after Black Wednesday? Did abandoning the ERM have a cost for the UK in terms of lost reputa-

tion in the effort to control inflation? Did inflation accelerate? Significantly, this was not the case. Inflation continued to fall even after the UK had withdrawn from the ERM, dipping below 2 per cent per annum in 1994 and hovering around 2.5 per cent per annum up until 1997. If nothing else, the ERM experience seemed to have persuaded people that the Government was serious about inflation.[3] Indeed, most of the principal macroeconomic factors beyond 1992 performed quite well. Economic growth began to accelerate and unemployment began to fall. To the extent that it is economic performance that determines the outcome of elections, the British experience seems to suggest that there can be a lengthy lag. Strong contemporary macroeconomic indicators in 1997 were apparently insufficient to expunge the electorate's memory of the events surrounding Black Wednesday.

ECONOMIC AND MONETARY UNION (EMU)

Did the effective collapse of the ERM in 1992–93 sabotage the movement towards a single European currency? Surely things would have been much worse had there been a single currency in Europe and therefore no devaluation option? While some observers have argued along these lines, suggesting that currency realignment is the least cost way of correcting balance of payments disequilibria, others have argued that the adverse experience of the ERM in the early 1990s was a reason for speeding up the process of monetary unification, rather than slowing it down or abandoning it altogether. The essence of their case was that the events of 1992–93 illustrated the problems that occur when genuinely European financial institutions do not exist, and countries are instead allowed to pursue their own self-interests. More generally, the argument was that monetary union would force partners to converge in terms of their economic performance. Moreover, to the extent that it was the lack of credibility in fixed exchange rates, and the related speculative flows, that caused the crisis, a single currency system, where there would have been no opportunity to switch between currencies, would have avoided it.

Indeed advocates of fast-track EMU argued that prior convergence as incorporated in the Maastricht agreement was only necessary in the case of a fixed exchange rate system, in order to avoid expectations that non-convergence would result in currency realign-

ment. However, if such realignment is ruled out as a possibility by quickly adopting a single currency, it is no longer necessary to have prior convergence. Although, in this case, arrangements will be needed for dealing with balance of payments disequilibria within the monetary union which are the consequence of any existing divergence.

The debate over EMU during the 1990s reflects, in applied fashion, many aspects of the theoretical debates amongst economists over international macroeconomics. Economists who believe in a non-vertical short-run Phillips curve tend to argue that giving up the exchange rate as a policy instrument can carry a real cost in terms of unemployment. Whereas those who believe that Phillips curves are vertical in the short-run as well as the long-run see the only cost as being that of being unable to choose a domestically-optimal inflation rate – and this may be only a relatively small cost. Economists who believe that nominal exchange rate changes lead to real changes are reluctant to give up the exchange rate instrument, whereas those who believe that devaluation is ineffective because it leads to offsetting inflation see no problem. Economists who believe that goods and labour markets work inefficiently are reluctant to give up being able to adjust the exchange rate, whereas those who believe in efficient markets have no such reservations because they see labour and goods markets adjusting instead of foreign exchange markets.

Economists who argue that with highly mobile private capital, limited official reserves, and asymmetric shocks, there can never be any such thing as *immutably* or *irrevocably* fixed exchange rates, claim that the real choice is between flexible exchange rates on the one hand, and full monetary union on the other. This choice is often couched as being as much a political as an economic one, since it largely depends on the scope for regional transfers within the union.

Those economists who believe that it is possible to calculate equilibrium exchange rates argue that there is a third option involving managed exchange rate flexibility. To them the 1992–93 crisis in the ERM reflected the eventually dramatic but essentially fairly basic refusal to allow exchange rates to adjust prior to 1992 in order to reflect the changed economic fundamentals associated with German unification.

It is because of these debates over the macroeconomics of single currencies, alongside the uncertainties about the microeconomics of international money which we have not discussed in this book, that

economists appear frustratingly unable to speak with a common voice about such an important issue as monetary union in Europe. Indeed it is this lack of economic consensus that has helped to make EMU a political issue. Where the economics is unclear the politics dominates. But, as implied above, the economics and politics are connected, since some economic policies, such as regional transfers, require a high degree of political cohesion. It is in this sense that an economic union can only survive in the context of a political union.

What is a fairly safe bet is that as Europe pushes on towards, or even holds back from a single currency, it will, one way or the other, continue to provide fertile territory for the application of the international macroeconomic analysis described in this book. However, this chapter also reminds us that we should not expect too much of international macroeconomics. It gives us a useful analytical framework, and helps to identify the central issues, but it does not always give clearly defined answers.

11 Macroeconomic Policy and the International Monetary Fund

In Chapter 9 we saw that following the peso crisis in 1995 Mexico was forced to turn to the International Monetary Fund (IMF) for assistance. Mexico had in fact had a fairly lengthy involvement with the IMF prior to the peso crisis. Such involvement has not been untypical for developing countries, nor, since the early 1990s, for countries in transition (CITs) from centrally-planned to market-based economic systems. But what macroeconomic policy advice does the IMF provide, and is it possible to analyse it using the international macroeconomics that has been introduced in this book?

Even though the IMF has gradually modified the conditions it stipulates if a country is to receive its support, moving away from exclusive attention to aggregate demand, it has continued to place very strong emphasis on strict monetary and fiscal policy as well as on exchange rate policy. The 'hard core' of Fund-supported stabilisation programmes (so-called Fund conditionality) normally involves some limit on monetary expansion, a reduced fiscal deficit, and a specific adjustment to the exchange rate. Under what circumstances will this package of policies be appropriate?

IMF-SUPPORTED POLICIES AND THE *IS–LM–BP* MODEL

In constructing a diagram to illustrate the situation of a country turning to the Fund, we can be unambiguously certain that it will be below and to the right of its *BP* schedule since countries are only eligible to draw resources from the Fund if they have a payments need.

Beyond this, and as an initial approximation that we shall modify later, the structure of the diagram depends on whether the overall payments deficit is accompanied by domestic capacity under-utilisation and unemployment, or by overfull employment and inflation.

Furthermore, in drawing the diagram we need to assess whether devaluation has an expansionary or contractionary effect on aggre-

gate demand. The particular blend of policies supported by the Fund clearly assumes an expansionary effect. As discussed in Chapter 7 the analytical support for this is ambiguous, although on balance and in the light of empirical evidence the assumption of a net expansionary effect is reasonable.

Figure 11.1 shows one possible economic situation. The economy is experiencing a balance of payments deficit and inflation, that is equilibrium is to the right of the full employment line.[1] Other features of Figure 11.1 are, first, that *LM* is relatively steep suggesting a rather low interest rate elasticity of demand for money, associated perhaps with a paucity of money substitutes, and second, that *BP* is also rather steep suggesting that capital movements in and out of the country are not very sensitive to interest rate changes. Instead, capital may move more in response to changes in creditors' perceptions of creditworthiness. These aspects of the Figure may be consistent with many of the developing countries to which the Fund advances most of its loans.[2]

Another assumption which is implicit in Figure 11.1 is that the country got into payments difficulties as a result of pursuing over-expansionary demand management policies, which shifted *IS* and *LM* to the right and resulted in a point of intersection between them to the right of *F*.

In these circumstances the standard package of Fund-supported policies appears to be sensible analytically. Devaluation serves to strengthen the current (and capital) accounts of the balance of payments, while fiscal and monetary restraint, that is leftward shifts in *IS* and *LM*, attempt to deal with both the indigenous demand-based inflation and with the inflationary repercussions of devaluation. The policies are illustrated in Figure 11.1 and result in both the correction of the payments deficit and the eradication of inflation.

However, is this package of policies robust? In Figure 11.2 equilibrium occurs to the left of *F*. An economy represented by Figure 11.2 therefore has both a payments deficit and unemployment. A package of devaluation and monetary and fiscal restraint, as illustrated in Figure 11.2 by the downward shift in *BP* and the leftward shift in *IS* and *LM*, will strengthen the balance of payments but will accentuate the underutilisation of capacity. Unless devaluation has a strong expansionary effect the government's assumed objectives of payments equilibrium and 'full' employment would have been better realised by a combination of devaluation and modest fiscal and/or monetary expansion, that is by a downward shift in *BP* and a
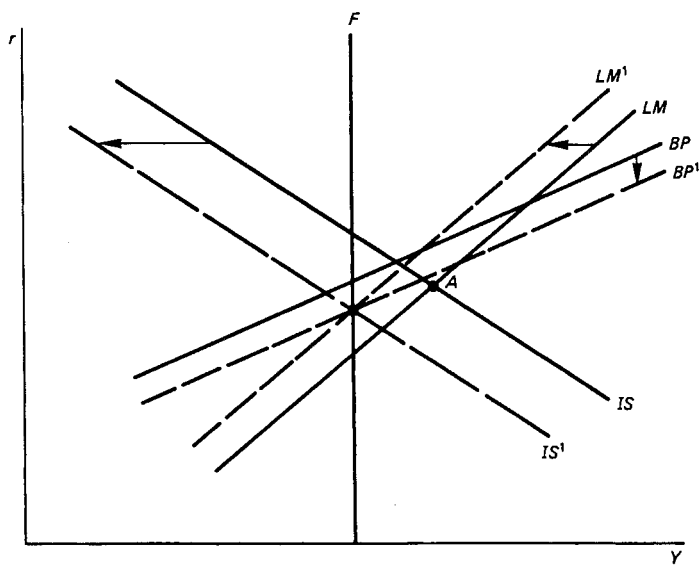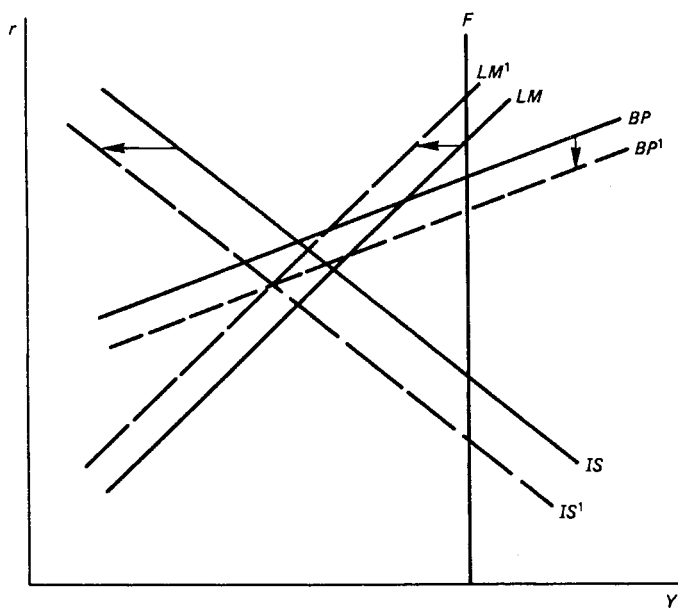
Figure 11.1

Figure 11.2

rightward shift in *IS* and *LM*. However, with some expansionary impulse coming from devaluation, the realisation of full employment will require less expansionary domestic fiscal and monetary policy than would otherwise have been the case.

What we discover is that while the conventional Fund-supported policies may have a universal effect on the balance of payments, which may in turn go a long way towards explaining why the Fund supports them, they may in certain instances have a detrimental effect on other governmental macro policy targets, especially those relating to full employment and economic growth. This explains why there may be disagreement between the IMF and country governments.

RELAXING SOME ASSUMPTIONS

Up to now we have assessed Fund-supported policies in the context of a rather restrictive model. A fuller review of the appropriateness of such policies requires us to relax some of the assumptions on which this model is constructed.

First, unemployment and inflation may co-exist. One explanation of such co-existence is that inflation is cost-determined. In such circumstances demand deflation is likely to be an inefficient way of reducing inflation, and other policies which operate more directly on unit costs may be more efficient. Similarly, in as much as devaluation is cost inflationary, policies which neutralise this effect may receive analytical support. It is a weakness of the *IS–LM–BP* model, and of the Swan model, that it does not allow for cost inflation.[3]

Second, one can clearly challenge the view that devaluation will shift *IS* to the right. If it has contractionary effects it will shift *IS* leftwards and will need to be accompanied by expansionary fiscal and/or monetary policy. Furthermore, with low foreign trade elasticities the effects of devaluation on the price level will shift *LM* to the left as the demand for money rises, and devaluation will again need to be accompanied by expansionary fiscal and/or monetary policy, even at full capacity utilisation, if full employment is to be achieved. It is not easy or even possible to reach firm *a priori* conclusions on these issues since everything depends on the values of specific determinants. Conclusions need to be based on empirical evidence which may, of course, vary from country to country.

Third, the Fund sees rightward shifts in *IS* and *LM* as the princi-

pal cause of payments deficits. As discussed in Chapter 5, deficits may arise from structural causes, with *BP* shifting upwards over time. While shifting *IS* and *LM* to the left may get the economy on to the new *BP* schedule, the policies implied by such shifts are likely to involve adverse consequences for employment and economic growth. There is a strong argument in such circumstances for pursuing policies which shift *BP* back downwards, placing less emphasis on policy-induced shifts in *IS* and *LM*. One such policy is devaluation, but it is not the only one. A range of other 'structural' policies are available. A criticism of the Fund here is that the conventional package of policies is too inflexible to deal with the variety of problems to which it may be directed.[4]

Fourth, the conventional package of Fund-supported policies may be criticised for being based on partial equilibrium rather than general equilibrium analysis. There may be a fallacy of composition if a large number of countries pursue a combination of devaluation and deflation. The competitive advantage sought by devaluation will be negated by other devaluations, while the attempt to strengthen the current account of the balance of payments may be undermined by the fact that exports fall.[5]

Finally, different assumptions about the degree of capital mobility have implications for the effectiveness of different macroeconomic policies. With a relatively high degree of capital mobility, for example, contractionary monetary policy will have a more high-powered impact on the balance of payments and thereby on the exchange rate than equivalent contractionary fiscal policy. But is the traditional analysis of capital movements appropriate for many of the countries that borrow from the Fund? It is part of the Fund's strategy to encourage private creditors to lend to countries accepting IMF advice. By this means (as well as through devaluation) the Fund may be seen as attempting to shift a borrowing country's *BP* schedule downwards, as compared with the location that it would otherwise have. Generally speaking, for many countries borrowing from the Fund the effect of the Fund's involvement on the location of their *BP* schedule may be more important than the shape of the schedule; though of course, almost by definition, shifts may be more significant for countries where *BP* is steep, and capital movements are subject to low interest rate elasticity.

THE FUND'S FOCUS ON *LM*

In looking for an analytical framework within which to conceptu-
alise Fund conditionality many observers have argued that the mon-
etary approach to the balance of payments described in Chapter 4 is
the most representative. This model focuses on excess domestic
credit expansion as the intermediate cause of balance of payments
deficits, although it then begs questions about why this expansion
occurs, which may in part be answered by looking at fiscal policy.

If the Fund's underlying theoretical framework is summarised by
the monetary model, it may be evaluated by examining the realism
of this model's assumptions in the context of countries that turn to
the Fund. Thus, if the demand for money is unstable, if credit cre-
ation affects real income or the price level and thereby the demand
for money, and if the monetary authorities find it difficult to control
monetary aggregates, the model constitutes a less satisfactory (and
probably unsatisfactory) basis for the design of policy than if the
opposite circumstances hold. Moreover, the model does not conve-
niently cope with structural adjustment, export expansion and eco-
nomic growth, features which are very important for many of the
Fund's developing country clients.

There is also the somewhat paradoxical situation that the
monetary model de-emphasises the role of currency devaluation
whereas the Fund has favoured the use of this policy instrument.
Generally the Fund has argued that nominal devaluations are an
effective way of eliminating overvaluation of the real exchange rate,
and that foreign trade elasticities are high enough to allow this in
turn to exert a beneficial impact on the balance of payments. It has
only been in the context of the presumed counter-inflationary
properties of nominal anchors, where the defence of fixed exchange
rates is seen as breaking the vicious circle of inflation, devaluation,
and further inflation, which can be found in some developing
countries and CITs, that the Fund apparently had second thoughts
about the exchange rate instrument. Recent experiences in Mexico
in 1994–95, and in the Franc Zone countries of Africa in 1994 –
where over-valuation contributed to crises which ultimately
necessitated large devaluations – as well as in South East Asia
in 1997 – where devaluation proved to be an important policy
weapon – have probably caused the Fund to weigh the nominal
anchor argument favouring quasi-fixed exchange rates. Empirical
evidence confirms that the Fund has been much more influential

in affecting exchange rates in client countries than in affecting credit creation.

CONCLUDING REMARKS

As with the previous two chapters, this chapter has shown how reasonably simple international macroeconomics may be applied to the real world.

The twin test of any macroeconomic model is first whether it is simple and second, whether it is realistic. The *IS–LM–BP* model certainly passes the first test, capturing the essence of international macroeconomics in just three schedules: representing the real sector, the monetary sector and the balance of payments. The applications of the model made in the last three chapters of this book suggest that it also helps us to gain a reasonable understanding of international macroeconomic phenomena. It seems to fit the facts quite well and to provide concise and coherent explanations of what might otherwise appear to be complex events. It is therefore fairly realistic. Hopefully it provides a useful analytical tool kit with which to approach the case studies that have yet to happen.

Notes

1 Introduction

1. Although open-economy macroeconomics is the fashionable title, most traditional textbooks in international economics contain an analysis of similar issues.
2. Views differ about the usefulness of the *IS–LM* construct. Those who dislike it will tend not to like this book. The justification for using it here is that it provides a fairly simple way of presenting and analysing quite complex problems. Not only that, but, as the case-studies reveal, the model does seem to stand up quite well against observed facts. For the undergraduate anxious to find an analytical framework within which to work, the *IS–LM* model has much to be said for it. Most introductory textbooks contain an exposition of the *IS–LM* model and students unfamiliar with it should read the relevant chapters of one of these before proceeding with this book.

2 An Open-Economy Macroeconomic Model

1. These models are adequately described in most introductory economics textbooks.
2. In a closed economy the 'paradox of thrift' occurs where the desire by individuals to increase their saving fails to lead to any increase in aggregate savings since the very act of saving reduces the level of national income which then induces saving to fall.
3. A more rigorous and mathematical presentation of the process described here may be found in many intermediate or advanced texts in international economics.
4. There are numerous books available which survey the various theories of inflation. Readers of this book are encouraged to glance through at least one of these surveys in order to appreciate just how narrow is the analysis of inflation presented here.

3 Trade Functions and Capital Movements

1. A fairly wide-ranging selection of empirical evidence is available on the import function. The independent variables usually include, in one form or another, relative prices and terms of sale, the level of domestic income and/or the internal pressure of demand and a time trend. Some pieces of research take a broad look at the determination of imports as a whole, whilst others concentrate on the determination of one specific category or type of import.

Some empirical work, instead of taking actual imports as the dependent

variable, takes import share, which allows attention to be focused on determinants such as relative prices and capacity utilisation. Although estimations using import share carry with them certain underlying assumptions, for instance, that there are identical income elasticities of demand for both home and foreign produced goods, the main advantage of using it is that the problem of multicollinearity is reduced.

A major problem involved with empirical estimation of the import function is that the independent variables may not be directly observable. We are, therefore, forced to look for suitable proxies. Some determining variables may simply not be suited to quantitative estimation at all. It is, for example, *ex ante* waiting time which is of significance, and this has been variously estimated from delivery lag, inventory level and capacity utilisation data. Actual waiting time may be a less satisfactory proxy since it may be far removed from the quoted waiting time and may fail to reflect the producers' willingness to seek and accept new orders which will influence the supply of imports. It is very difficult, however, to derive any series at all that represents clearly the enthusiasm with which suppliers pursue the sale. Lags are also likely to be significant in attempting to explain import performance, though the precise structure of these may be difficult to ascertain.

Different empirical studies have come up with different results, some have found relatively high price elasticities whereas others have found relatively low ones. In many studies the internal pressure of demand appears to be important, not least because it affects aspects of non-price competitiveness. Furthermore, there is some empirical support for a cyclical ratchet effect.

2. Empirical studies of the export function tend to have adopted a disaggregated approach. Such an approach may be viewed as being substantially legitimate since different industries exhibit different market structures and technologies, as well as different elasticities of demand and supply, both long run and short run.

No clear conclusions emerge from the empirical evidence. Price variables get a mixed reception, while perhaps the majority of studies find that exports are negatively related to domestic demand pressure, although the evidence is by no means unanimous.

3. Almost all good introductory texts in macroeconomics contain an analysis of investment and of the capital stock adjustment principle. Interested readers should refer to one of these.

4. Again analyses of the demand for money are available in most introductory texts.

4 Balance of Payments Theory

1. Readers are again reminded that the treatment given to inflation in this book is extremely superficial and they are encouraged to look at other texts which focus more fully on this phenomenon. Similarly scant treatment is given to unemployment. Again, as unemployment has become more of a problem, there has been a growing number of texts produced

which focus on it and one of these should be consulted in order to fill the gaps left here.

2. A deficit on current account implies a net inflow of goods and services and, in the short run at least, this will tend to increase the domestic standard of living. The problem, of course, is to finance and sustain such an inflow.

3. Again, most introductory texts in macroeconomics contain analyses of monetary policy and open-market policy.

5   Theories of Exchange-Rate Determination

1. This chapter concentrates on factors which influence the exchange rate, it does not examine alternative generalised exchange-rate regimes. Readers interested in the arguments for and against different exchange rate systems should consult a textbook in international financial economics.

2. In the former case the location of *LM* does not alter and the size of the increase in the interest rate depends on the slope of *LM*, which itself in large part depends on the interest elasticity of the demand for money, becoming steeper as the elasticity falls. In the latter case *LM* shifts to the right thus offsetting the impact of the rightward shift in *IS*, reflecting the increase in government spending, on the rate of interest.

3. More is said about this important theorem in a later section of this chapter.

4. PPP may still hold even if there is a significant non-traded goods sector, provided there is a fixed price relationship between traded and non-traded goods. This may exist if changes in the prices of traded goods are transmitted to non-traded goods through factor markets or through changes in the pattern of demand induced by relative price changes.

   A related problem is to identify which price index to use in testing the PPP theorem or in predicting exchange-rate movements on the basis of differences in inflation rates across countries. The consumer price index, for example, may be unsatisfactory precisely because it includes the prices of non-traded goods.

5. The question of the way in which expectations are formed is also relevant to, for example, the discussion of investment, inflation, and the demand for money.

6. As with other parts of this book readers are encouraged to experiment with the analysis for themselves. Here, for example, the basic thought processes which are run through in the text can be used to analyse a situation where *LM* is non-vertical.

7. There has been a great deal of debate in the literature concerning whether speculation stabilises or destabilises exchange rates. Much depends on the way in which speculators form their expectations. Where they have a fixed view of the long run equilibrium rate, profit-making behaviour will tend to stabilise the exchange rate around this level. With 'elastic' expectations, however – where a movement in the rate is taken

to suggest a further movement in the same direction – speculation will destabilise exchange rates, while speculators will still make a profit. If speculators possess rational expectations, possessing perfect foresight of the future, they will exploit every opportunity to make a profit and their profits will therefore be maximised. This is linked to the idea of 'efficient markets', where directly new information becomes available it will be fully incorporated into the spot rate thus eliminating unexploited opportunities for profit through speculation. Another aspect of efficient markets is that expectations affecting the future spot rate will be incorporated into the forward rate which then becomes the best predictor of the future spot rate.

The empirical evidence does not provide a great measure of support for rational expectations and efficient markets in the context of the exchange rate. Unexploited profit opportunities do seem to exist. Speculation may sometimes be dominated by uncertainty and high risk premia, and by bandwagon effects. Furthermore, the forward rate does not appear to be an accurate predictor of the future spot rate, suggesting that things that occur after the forward contract is signed are not foreseen. There appears to be little bias in the errors made, with differences between forward rates and actual future spot rates averaging out to zero over time.

8. Where real disturbances are more significant than monetary ones PPP is unlikely to hold even in the long run. It is generally accepted that PPP provides an inadequate explanation of short-run variations in exchange rates, with these normally being much more volatile than aggregate price levels.

6 Stabilisation Policy in an Open Economy

1. These are all important issues. Fortunately there are a number of textbooks available which discuss such questions and readers are advised to consult one of them. A very brief review may be found in Graham Bird, *World Finance and Adjustment: An Agenda for Reform* (London: Macmillan, 1985). Additional references are mentioned in the 'Further Reading' section.

2. In preference to the fixed targets approach it may be better to think in terms of a social welfare function with targets being arguments in this function. Here the policy-makers' objective is to maximise the welfare function subject to certain policy constraints, allowing for the fact that certain targets may be seen as being more important than others and that there may be trade-offs between them.

3. For clarification of this see an intermediate macroeconomic textbook. The basic idea behind Say's Law is that supply creates its own demand, while with the gold standard mechanism, flows of gold which reflect payments disequilibria, cause changes in money supplies which automatically eliminate the disequilibria. Thus in a deficit country the domestic money supply falls as gold flows out to finance the deficit. Prices fall and the deficit is eliminated.

4. See J. Tinbergen, *On the Theory of Economic Policy* (Amsterdam: North Holland, 1952).
5. See R. A. Mundell, 'The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability', *IMF Staff Papers*, 1962.
6. Again most conventional textbooks in macroeconomics have a section on the balanced budget multiplier theorem. Resting as it does on a series of restrictive assumptions, the theorem shows that if government expenditure and taxation are raised by the same amount, national income will increase by an amount equal to the increase in government expenditure. Furthermore, it has been suggested that indirect taxes have a greater deflationary effect than equal yielding direct taxes, since direct taxes may be partially offset by a fall in saving while indirect taxes will not be, and because indirect taxes tend to increase the price level and reduce the real supply of money.
7. A model which attempts to allow for cost inflation is discussed in the Appendix to this chapter.
8. Readers may wish to note at this stage that these conclusions change if *LM* is drawn steeper than *BP* implying a relatively higher degree of capital mobility. Here contractionary monetary policy will restore payments equilibrium at some cost in terms of unemployment. But contractionary fiscal policy will only widen the payments deficit. Those sufficiently interested may confirm this by redrawing Figure 6.4 for themselves. We return to the question of different degrees of capital mobility later in the chapter.
9. Criticisms of *IS–LM* range from a relatively minor debate over the values of certain elasticities or the specification of underlying functional relationships to a fairly root and branch rejection of the entire framework.
10. Again most standard macroeconomics textbooks contain an analysis of aggregate demand and supply schedules.
11. See Trevor W. Swan, 'Longer Run Problems of the Balance of Payments', in R. E. Caves and H. G. Johnson (eds) *Readings in International Economics*, (London: Allen & Unwin, 1968).
12. See J. S. H. Hunter, 'A Technique for Assessing Appropriate Policy Combinations to Combat Inflation, Unemployment and External Imbalance', *Weltwirtschaftliches Archiv*, Band 108, 1972.

7   Exchange-Rate Management and Policy

1. The issues raised here can be presented in a more rigorous fashion mathematically. Many books provide just such an analysis of the so-called Marshall–Lerner conditions for successful devaluation.
2. For a review of the evidence as it applies to developing countries, see Graham Bird, 'Should Developing Countries Use Currency Depreciation as a Tool of Balance of Payments Adjustment? A Review of the Theory and Evidence and a Guide for the Policy Maker', *Journal of Development Studies*, July 1983.
3. If such trade-offs do not exist and unemployment is at its 'natural' rate. the unification of inflation rates implied by exchange-rate union involves

no long-term unemployment cost. There may. however. still be adjustment costs, as well as costs in terms of having to accept a particular unified rate of inflation that would otherwise not be chosen.

4. Characteristics which impede the effectiveness of devaluation as an adjustment instrument may also impede the effectiveness of other adjustment instruments.

8 Global Macroeconomic Management

1. We do not, in this chapter, attempt to provide a theoretical explanation of the world's macroeconomic performance over recent years although Chapter 9 examines certain features of this performance.

2. Readers not familiar with the Phillips curve should consult an introductory text in macroeconomics. Basically, the curve shows the different combinations of inflation and unemployment that can be sustained by an economy; the general notion is that lower inflation can only be bought at the cost of higher unemployment and that governments therefore have to make a choice according to their policy priorities.

3. It was this kind of logic which underpinned the claim made in the Brandt Report that a massive transfer of resources from rich to poor countries would be in the mutual interests of both groups of countries, see Willy Brandt et al., *North-South: A Programme for Survival*; first report of the Brandt Commission (London: Pan Books, 1980).

9 Explaining Global Macroeconomic Events

1. Short-term real interest rates for the major industrial countries were, for example, –0.3 per cent in 1976, –0.5 per cent in 1977 and –0.3 per cent in 1978.

2. However, there remains some debate concerning just how inflationary was the increase in oil prices. A counter-argument is that the increase in oil prices simply reflected a response to increasing global aggregate demand and was not a cost-push phenomenon at all.

3. The overvaluation will arise as domestic inflation causes the real exchange rate to appreciate. The real exchange rate is sometimes presented as the relative prices of non-tradeable and tradeable goods. An increase in the relative price of non-tradeable goods represents real exchange rate appreciation.

4. Readers may conveniently check the data by consulting the IMF's *World Economic Outlook*. For the G7 industrial countries economic growth, which had been running at about 4 per cent in the second half of the 1970s, fell to little over 1 per cent in 1980 and 1981 and to –0.4 per cent in 1982. Short-term real interest rates rose to over 4 per cent in 1981 and 1982, from the negative rates of the late 1970s.

5. The analysis abstracts from the fact that changes in the exchange rate will have implications for the location of *IS* and *LM*. Currency depreciation will, for example, shift *IS* to the right if a net expansionary effect is assumed.

6. By 1997 there were again shades of the first half of the 1980s with

claims that the dollar was overvalued in spite of a large current account deficit.

7. Saving, for example, may be influenced by interest rates, income, wealth-income ratios, the age structure of the population, debt, expectations about the future, and cultural factors. Some of these determinants may change more quickly than others. Recent research has suggested that the post-war decline in the US savings ratio is largely attributable firstly to government redistribution from current young and future generations to current older ones, and secondly to an increase in the propensity of older people to consume out of their remaining lifetime resources.

10 Britain's Entry Into and Exit from Europe's Exchange Rate Mechanism 1990–92, and the Subsequent Pursuit of EMU

1. Details of how the ERM operated may be found in various sources. A good summary, along with a annotated record of the major events in the recent history of European monetary integration is provided by the relevant Bank of England Fact Sheets.

2. Emphasis on monetary aggregates had been discredited by the fact that it proved difficult to define and control these aggregates and that financial innovation seemed to provide considerable scope for increasing the efficiency with which money was used, effectively increasing the velocity of circulation. Furthermore, the view that inflation could be reduced without an increase in unemployment seemed to be inconsistent with the facts and this made a 'monetarist' approach less attractive politically. While the UK probably stuck with the monetarist experiment for rather longer than the US, the Government's response to the Stock Market crash of 1987 was essentially Keynesian, suggesting that a macroeconomic strategy based solely on controlling monetary aggregates had been abandoned.

3. Of course it does not follow that joining the ERM was the best counter-inflationary policy. Moreover it is difficult to disentangle the extent to which it was membership of the ERM per se which brought a counter-inflationary pay-off, or merely the high interest rates that were necessary to sustain this membership.

11 Macroeconomic Policy and the International Monetary Fund

1. Inflation is therefore assumed to be caused by excess aggregate demand. Alternative neo-structuralist models of developing countries suggest that inflation is a cost-plus phenomenon. The implications of such models are discussed briefly in the next section.

2. Information on the size and pattern of Fund lending may be collected from the IMF's Annual Report which also explains the various facilities under which countries can draw resources from the Fund.

3. The Hunter model discussed in the Appendix to Chapter 6 shows how devaluation may need to be accompanied by incomes policy in order to neutralise its cost inflationary effects. Within a cost-plus scenario even

contractionary monetary policy may have inflationary effects as the cost of borrowing increases.

4. Since the mid-1980s the Fund has had facilities from which countries can borrow which acknowledge the importance of structural adjustment. However, the emphasis of IMF conditionality has remained firmly placed on managing aggregate demand.

5. In the context of the trade functions introduced in Chapter 2, while exports may remain given, or exogenously determined, the given level of exports will fall if a significant number of importing countries pursue domestic demand-deflationary policies.

Further Reading

This book provides a fairly non-technical treatment of international macroeconomics. Its contents may be supplemented by texts in economics which introduce and carefully build-up the analysis used here. There are many excellent introductory text books available. Two popular examples are David Begg, Stanley Fischer and Rudiger Dornbusch, *Economics* (McGraw Hill, latest edition) and Richard G. Lipsey and K. Alec Chrystal, *Positive Economics* (Oxford University Press, latest edition).

It will be helpful for readers to be aware of the debates in macroeconomics which, to some extent, can be couched in terms of an augmented *IS–LM* model, but which also relate to the deficiencies of this model. An excellent intermediate text in macroeconomics which fulfils this function is, N. Gregory Mankiw, *Macroeconomics* (Worth Publishers, latest edition).

For those readers who want to develop the 'international' dimension as well as the 'macroeconomic' dimension, there are again many options from which to choose. A good choice would be Paul Krugman and Maurice Obstfeld, *International Economics: Theory and Policy*, 4th edn (Addison-Wesley, 1997), which is a leading intermediate textbook incorporating a blend of theory and applications.

While there are those who view the *IS–LM–BP* model as dated (or even outdated) technology, there is no single alternative model which appears to pass the tests of simplicity and realism. A staunch defence of the model on the grounds that it is the best around for gaining an understanding of how the world economy works is presented in Paul Krugman, 'What We Know and Need to Know about the International Monetary System', *Essays in International Finance*, No. 190 Princeton, July 1993.

While the above references will dot the 'i's and cross the 't's in terms of the basic analysis contained in the first two parts of this book, readers who also want to read a little more about the applications of the analysis contained in Part III may find the following references useful.

With respect to Chapter 9, an early, clear and succinct analysis of the macroeconomic consequences of rising oil prices remains Max Corden's, *Inflation, Exchange Rates and the World Economy* (Oxford University Press, Oxford, 1977), particularly Part 3 which deals with 'International Adjustment to the Oil Price Rise'. A summary of the Third World debt crisis of the 1980s is provided in Graham Bird, 'The Third World Debt Crisis: Causes and Cures' in G. Bird and H. Bird (eds) *Contemporary Issues in Applied Economics* (Edward Elgar, Aldershot, 1991). For a discussion which links variations in the price of oil with developing country debt see Graham Bird, 'Oil Prices and Debt', *Royal Bank of Scotland Review*, No. 154, June 1987, reprinted in G. Bird, *Managing Global Money* (Macmillan, London, 1991). An excellent analysis of the Mexican peso crisis, 1994–95, which makes use of many of the macroeconomic concepts covered in this book may be found in Jeffrey Sachs, Aaron Tornell and Andres Velasco, 'The Collapse of the Mexican Peso: What Have We Learned?', National Bureau of Economic Research Working Paper, No. 5142, 1995.

With respect to Chapter 10 there are numerous general and specialised texts

which deal with European monetary integration. A popular example is Paul de Grauwe, *European Monetary Integration*, (Oxford University Press, latest edition). For those seeking a survey of old and new optimum currency theory, George Tavlas, 'The "New" Theory of Optimum Currency Areas', *The World Economy*, 1993, provides a brief but comprehensive treatment, while a good non-technical summary of the crisis in the ERM in 1992–93 may be found in David Cobham, 'Causes and Effects of the European Monetary Crises of 1992-93', *Journal of Common Market Studies*, December 1996, which also provides a useful bibliography.

Turning to Chapter 11, two recent books that explore in some detail the extent of the IMF's involvement in developing countries and CITs in the formulation of macroeconomic policy are Graham Bird, *IMF Lending to Developing Countries: Issues and Evidence* (Routledge, London, 1995), and Tony Killick, *IMF Programmes in Developing Countries: Design and Impact* (Routledge, London, 1995). For a much briefer summary of the issues see Graham Bird, 'The International Monetary Fund and Developing Countries: A Review of the Evidence and Policy Options', *International Organisation*, 50, 3, Summer, 1996, pp. 477–511.

Most of the issues discussed in this book have an empirical dimension. An excellent source of data on macroeconomic aspects of the world economy, which also contains some explanation and interpretation of what has been going on, is the IMF's *World Economic Outlook*, (Washington, DC, International Monetary Fund) which is published annually. Some time spent getting a feel for the broad empirical picture will be time well spent.

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