

Part IV

The So-called Open Economy Analysis

Main points

Chapter 12: Introduction to "Open economies"

1. The so-called open economy macro model has only one product, and cannot be reconciled with multi-product trade models.
2. The analytical dichotomy between fixed and flexible exchange rates is simplistic and misleading.
3. In a closed economy the impact of a fiscal expansion on private investment depends on behavioral parameters and how the expansion is financed. If the expansion is financed through monetization, there is no impact on interest rates or private expenditure.

Chapter 13: Open Economy Analysis

1. The standard open economy analysis, derivative from the Mundell-Fleming (MF) model, assumes that output is demand constrained.
2. Unlike for a closed economy, the IS, LM and balance of payments (BP) schedules are not independent of each other. Capital flows cover a trade deficit or surplus, and increase or decrease the money base.
3. The conventional theoretical wisdom for a fixed exchange rate is that fiscal expansion is effective because it induces capital inflow that covers a trade deficit. Monetary expansion is 100 percent self-defeating by inducing capital outflow that causes an equivalent monetary contraction.
4. The conventional theoretical wisdom for a flexible exchange rate is that fiscal expansion is totally ineffective with perfectly elastic capital flows, and ineffectiveness is partial if flows are less than perfectly elastic. Monetary policy is effective, with the degree of effectiveness positively related to the elasticity of capital flows.
5. The allegation is simplistic that a flexible exchange rate simplifies policy making.
6. Open economy adjustment in the Mundell-Fleming model is general equilibrium falsely claiming to explain conditions of less than full employment.

Chapter 14: Reassessing Monetary and Fiscal Policy

1. The conventional wisdom on open economy monetary and fiscal policy is invalid because it ignores the effect of the exchange rate on domestic prices, and has a superficial treatment of export and import elasticities.
2. A monetary expansion provokes a depreciation that increases the domestic price level, thereby reducing the real money supply and rendering the real depreciation less than the nominal.
3. Empirical evidence on short term trade elasticities and foreign exchange reserves indicate that a floating exchange rate would be destabilizing.
4. The same parameters that weaken the effectiveness of monetary expansion strength fiscal policy.
5. The relative effectiveness of fiscal and monetary policy with a flexible exchange rate is an empirical question about which no theoretical generalization is possible.

12 Introduction to "Open economies"

12.1 Theoretical Problems with "Open Economies"

The previous chapters analyzed what neoclassicals call a "closed economy". Rigorously defined, a closed economy model is an analytical system in which all variables arise within the system. It is a completely endogenous system in which the variables are governed by a set of behavioral parameters. Every variable is explained within the system, and there are none "outside" of the system. It is necessary to labor this point because it is not rigorous to define a closed economy as an economy without trade and capital flows, as is frequently done in textbooks.

A closed economy model is not an open economy model without trade and capital flows, nor is the reverse true. The closed economy in neoclassical analysis is a one product system. To "open" the "closed" economy to trade between two economies or more would imply that what the economy exports and what it imports are the same commodity. This is absurd. Not even in theory do rational agents sell a commodity in order to buy the same commodity. Yet, this absurdity is the basis of so-called open economy macroeconomics, that people would produce and export a commodity for the purpose of importing and buying the identical item. This absurdity is carried to the next stage of analytical farce by the introduction of different currencies for the two economies. The ratio of these two currencies, the "exchange rate", is formally defined as "the current market price for which one currency can be exchanged for another", or "the price of one currency in terms of another".¹ One can accept such sensible definitions, but what possible role could the exchange rate play between two economies that have one product which is the same one?

This problem results from the inability of neoclassical analysis to resolve the aggregation problem (see Chapters 1 and 2). To take the minimum step towards "opening" the "closed" economy, one could assume that each economy produced only one product, but a different one. If that were the case, trade would occur between the two economies with each importing what the other produced. However, taking even this minimal step would introduce the intractable aggregation problem in both economies.

The implications of the aggregation problem are demonstrated by brief reference to neoclassical trade theory. The formalization of trade theory began with David Ricardo

at the beginning of the nineteenth century. His model, in which the values of commodities were measured in units of the labor required to produce them, assumed that land and capital were fully employed, with the utilization status of labor ambiguous. In the twentieth century economists reformulated trade theory in terms of marginal productivity analysis, which culminated in a synthesis by two Swedish economists, Bertil Gotthard Ohlin and Eli Filip Heckscher, the Heckscher-Ohlin model. This model assumed full employment, had two tradable products, two inputs (capital and labor) and two countries. The assumption of full employment eliminated the aggregation problem.

Subsequently, it was recognized that the model was one commodity "short", because without a "non-tradable" it could not consider the impact of the exchange rate on the allocation of resources within a country (Greenway 1994). The trade model generally accepted in the economics profession assumes full employment and has a minimum of three commodities. A neophyte economist might ask, how does one reconcile a single commodity macro model with a three commodity trade model that is always at full employment? Reconciliation is impossible, implying that the strong conclusions of the trade model, such as the alleged benefits from free trade, do not apply to the macro model, even when it is at full employment. The policy implications of the impossibility of reconciliation are discussed in a subsequent chapter.

12.2 From Theory to Policy

The neoclassical closed economy model can be developed analytically with no reference to public policy as done in Part I, and frequently is, with a "government sector" added subsequently. This cannot be done for an "open" economy model. In theoretical analysis an economy is "open" in the specific sense that it includes more than one "country". In this context the concept of a "country" is quite specific. It is an entity which at the minimum has its own currency, and therefore, an exchange rate with other currencies. The existence of a separate currency implies an authority to manage that currency, which is the "government".

The closed economy requires a money-management authority, but that authority need do nothing beyond open market operations. Once more than one currency exists, each monetary authority has a further task, to manage the exchange rate or choose not to

manage it. At the outset of the analysis of the open economy the issue of how the national authorities, the "government", will manage the exchange rate necessarily presents itself, placing policy choices at the heart of the discussion.

Textbooks usually begin this discussion by proposing a dichotomy between "fixed" and "flexible" exchange rates. The exchange rate is fixed if the government specifies a rate of exchange to other currencies and takes the actions necessary to maintain that rate. The "necessary" actions are an instruction to the central bank to use foreign currencies ("foreign exchange") to purchase the domestic currency when depreciation is anticipated, or to sell domestic currency for foreign currencies to avoid an appreciation. If a government decides to move from one fixed rate to another, a rate for which a domestic unit exchanges for more foreign currency is called a "revaluation", and a rate of exchange for less foreign currency is a "devaluation".

Defining a fixed rate is straightforward. Considerably more problematical is to define a "flexible" rate. It is sometimes defined as an exchange rate system or regime in which the central bank does not intervene, "in which the values of participating currencies are free to change in relation to one another according to market demand and supply for each currency".² This definition is non-rigorous as well as unclear. It could be interpreted as explaining currency movements in terms of flows that reflect the supplies and demands in a market at any moment in time. This is not the case even in the abstract, as demonstrated by the more elaborate definition of a flexible exchange rate, which uses the synonymous term, "floating exchange rate":

[The] movement of a foreign currency exchange rate in response to changes in the market forces of supply and demand [is] also known as *flexible exchange rate*. Currencies strengthen or weaken based on a nation's reserves of hard currency and gold, its international trade balance, its rate of inflation and interest rates, and the general strength of its economy.

(<http://www.allbusiness.com/glossaries/flexible-exchange-rate/4958219-1.html>)

If there are no interventions to limit convertibility, the price of a currency in terms of other currencies is determined by its stock as well as its flow, its domestic "price" in terms of commodities, and the conditions prevailing in the national economy. By the end of the twentieth century it became part of conventional wisdom that a flexible exchange

rate was not determined by flows alone ("supply and demand"). It results from portfolio adjustments to desired stocks of different assets that determine those flows.³ While the specifics of the various theories of exchange rate determination need not be considered at this point, those theories imply that defining a flexible exchange rate as a "market determined" has no clear meaning.

In textbook presentation of open economy macroeconomics, fixed and flexible rates have a specific and behaviorally vacuous definition: a fixed change rate is one that changes by administrative action, and a flexible exchange rate is one that adjusts instantaneously to equilibrate the trade deficit. How a flexible rate equilibrates the trade balance is typically left to the reader's imagination. These two definitions are polar opposites. Actual economies can have fixed exchange rates, and during 1946-1970 all countries in the world with few exceptions pegged their currencies to the US dollar directly or indirectly.⁴ No real world equivalent exists for an exchange rate that instantaneously equilibrates a country's trade balance.

Such exchange rate behavior can be established only as a special theoretical case. The absence of a real world analogue can be verified in the annual reports of the International Monetary Fund, where country exchange rate policies are categorized. The table of exchange rate regimes reports that of 166 country currencies, twenty-three, or fourteen percent, were of the type that approximated the theoretical category of "floating".⁵ While these twenty-three currencies accounted for the vast majority of international trade,⁶ there is no evidence that "floating" resulted a tendency, instantaneous or otherwise, to equilibrate either the trade account or the balance of payments.

12.3 Fiscal and Monetary Policy in a Closed Economy

Central to open economy models in neoclassical textbooks is the concept of "effectiveness" of fiscal and monetary policies. Explicitly or implicitly, open economy policy "effectiveness" is defined in comparison to the closed economy model. Prior to presentation of open economy fiscal and monetary policy, it is necessary to analyze briefly the simpler closed economy case.

I begin by assuming a constant velocity of money and a closed economy at less than full employment, typically due to a fixed money wage in the neoclassical model.

From a position of equilibrium, an increase in the nominal money supply creates an excess supply of money that is eliminated either by an increase in the price of output, by an increased quantity of output, or a combination of the two. Because there is unemployment, output can increase.

In the models presented in Chapters 5-7, the increase in employment necessary for more output required a lower real wage. This lower money wage was generated by a rise in the price of output that exceeded the rise in the money wage. Open economy macro models almost invariably have no explicit labor market. The absence of an explicit labor demand function means that an implicit assumption is made that the real wage is constant. A constant real wage implies a constant price of output. Therefore, the excess demand for money that results from the monetary expansion is eliminated through an increase in output at a constant price.

The process for fiscal policy is more complicated, because its impact on output depends on how it is financed. For this reason I begin the diagrammatic presentation with fiscal policy in Figure 12.1. The LM schedule is the same as that derived in Chapter 6 (see Section 6.2), and the IS schedule now includes government expenditure. The algebra can be found in the annex to this chapter. The closed economy IS schedule is that same as in the annex equation with no imports or exports (equation 11 in the annex with the real exchange rate, exogenous exports and the propensity to import all zero).

In Figure 12.1 the initial position is at the interaction of IS₁ and LM₁, with output equal to y_1 an interest rate of r_1 . Investment is i_1 and the money supply is M_1 . I assume that the government initiates a fiscal expansion that shifts the IS schedule to IS₂. For analytical purposes it is simpler to consider the case of an increase in expenditure rather than a reduction in taxes, and to assume that in the initial position the public expenditures equaled revenue. The increased expenditure would be financed through borrowing, either by sales of government bonds to the central bank or to the private sector.

If the bonds are sold to the central bank, there is an expansion of the monetary base equal to the increase in expenditure. The LM schedule shifts to LM₂, output rises to y_3 , the interest rate and private investment do not change, and the money supply goes to M_2 . By selling the bonds to the central bank, the government simultaneously executes fiscal and monetary expansion. The financing of the expenditure "accommodates" itself,

a process called "monetization". More recently the preferred term is "quantitative easing", which I shall avoid because it quickly acquired ideological undertones.

For bond sales to the private sector no increase in the money supply occurs, and the expansion of expenditure creates an excess demand for money. This excess demand for money causes the interest rate to rise. As the expenditure stimulates more output, asset holders seek to switch to money. In order to sell the bonds that finance the fiscal expansion, the government must raise the yield. The increase in the interest rate releases idle money into active circulation (see Chapter 6), and also reduces private investment. The fall in private investment partially cancels the fiscal expansion, so that output increase less than would be the case with monetization. In Figure 12.1, with no shift in the LM schedule, the interest rate rises to r_2 , investment falls to i_2 , which allows for an increase in output to y_2 , not y_3 . The higher interest rate liberates money from idleness to activity, shifting the active money supply to $M_1(r_2)$.

The relationship between fiscal expansion and how it is financed can be shown algebraically. From the annex to this chapter, the income/output equilibrium (the IS schedule) is:

$$y = \alpha(\delta + g + a_7r)$$

The term α is the open economy multiplier, δ is the autonomous element of investment, g is government expenditure, r is the domestic interest rate, and a_7 is negative. The money market equilibrium is:

$$y = (M^* - a_5r)/v_p$$

IS-LM equilibrium is:

$$r_0 = \frac{M^* - \alpha v_p(\delta + g)}{(\alpha v_p a_7 + a_5)}$$

A monetary expansion alone results in a rise in output and a fall in the interest rate:

$$r_1 = \frac{(M^* + \Delta M) - \alpha v_p(\delta + g)}{(\alpha v_p a_7 + a_5)}$$

$$r_1 < r_0$$

For any increase in the money supply, the increase in output depends on the size of the multiplier and the responsiveness of investment to the interest rate.

$$\Delta y = \alpha a_7 M^*$$

This can be compared to a fiscal expansion. If the expansion, Δg , is financed by bond sales to the private sector,

$$y = \alpha(\delta + g + \Delta g - a_7 r) \quad (\text{IS})$$

$$y = (M^* + a_5 r)/v_p \quad (\text{LM})$$

$$r_1 = \frac{M^* - \alpha v_p (\delta + g + \Delta g)}{(\alpha v_p a_7 + a_5)}$$

$$r_1 > r_0$$

Bond sales result in a rise in the interest rate and a fall in private investment. The fall in investment will be greater the larger the absolute value of the investment sensitivity to the interest rate (a_7) and the lower the sensitivity of money demand to the interest rate (a_5). If money demand is vertical with respect to the interest rate (the False Dichotomy case), private investment falls by an amount equal to the fiscal expansion. If money demand is highly interest rate responsive (Liquidity Trap case) and the investment coefficient low, the fall in investment will be small, a combination viewed as likely by Keynesians. The investment response is an empirical issue about which no theoretical generalization is justified, except the obvious inference that the likelihood of a fall in investment equal to the fiscal expansion would require extreme and improbable values for the relevant coefficients.

If the fiscal expansion is monetized,

$$r_1 = \frac{(M^* + \Delta g) - \alpha v_p (\delta + g + \Delta g)}{(\alpha v_p a_7 + a_7)}$$

$$r_1 = \frac{(M^*) - \alpha v_p (\delta + g)}{(\alpha v_p a_7 + a_7)}$$

$$r_1 = r_0$$

With monetization, the interest rate and private investment are unchanged, and the full effect of the fiscal expansion is realized.

Neoclassicals have assigned the term "crowding out" to the decline in investment that is associated with fiscal expansion when there is no monetization. As might be inferred from the inherently pejorative nature of the phrase, crowding out is judged by the neoclassicals to be bad, *ipso facto*. It is not clear how this judgment might be defended other than on ideological grounds. The real world analogue of Figure 12.1 is an economy suffering from unemployment. Setting aside the ideological view that unemployment always results from the wage setting misbehavior of labor and governments, the economy is below full capacity due to insufficient demand, part of which is insufficient investment demand. If the policy intent is to increase demand without affecting the private components, then monetization is the appropriate policy. If for some reason monetization is judged as inappropriate, then some reduction in private investment may result from the fiscal expansion. This is the technical consequence of a decision not to sell government bonds to the central bank. "Crowding out" is neither good nor bad; it is the by-product of the financing decision.

It should be noted that the more elastic the LM schedule the less private investment will be "crowded". In general governments would and should use fiscal expansion when private demand is weak. When private demand is weak, the demand for loans will also be weak, which implies that private banks hold excess reserves, and the LM schedule is extremely elastic. Therefore, when governments are likely to initiate fiscal expansion the likelihood of crowding out is low. Concern about crowding out in the short run is ideologically motivated, a theoretical possibility that is highly improbable in practice. When it is likely that a fiscal expansion would result in crowding out, a government is unlikely to do it. In any case, even the theoretical possibility of crowding out can always be avoided by monetization. It is in part for that reason that neoclassicals have a very negative opinion of monetization, as discussed in a later chapter.

The case of a monetary expansion alone is treated in Figure 12.2. An increase in the monetary base shifts the LM schedule from LM1 to LM2. This could be implemented by the central bank purchasing assets from the private sector, including the purchase of government bonds. The money supply increases from M1 to M2, the interest rate falls from r_1 to r_2 , and private investment rises from i_1 to i_2 . If the LM schedules are

not vertical, the a fiscal expansion with monetization is more expansionary than monetary expansion alone.

Before proceeding to open economy models, clarification of the direct use of interest rates in monetary is necessary. In the late 1970s and early 1980s a form of economic policy called "monetarism" gained influence among right wing politicians in the United States and the United Kingdom. The principle policy recommendation of this short-lived policy ideology was for central banks to "target" a measure of the money supply and regulate its growth. In the application of this approach policy makers came to the conclusion that regulation of so-called monetary aggregates was not possible in practice. In place of this, governments would directly manipulate central bank interest rates with the intent of affecting private sector behavior, especially credit growth.

While different in appearance, acting on the monetary base through open market operations and manipulating interest rates are functionally equivalent in the neoclassical macro model. When a central bank lowers the rate at which it lends to commercial banks it seeks to induce those banks to expand credit to the non-bank private sector. The purpose of open market operations is to increase directly the bank reserves which allow for credit to expand. In the simple financial markets that characterized most macro models, open market operations and interest rate manipulation are strictly equivalent, though this may not be the case in practice.

At the analytical level, the most important difference between the two is that direct interest rate manipulation is an overt admission that markets are not self-adjusting, and government intervention is required not just occasionally, but as a regular, consistent feature of the economic landscape. It would be a quite interesting study in logical inconsistency to understand how neoclassicals might justify and advocate government price fixing in financial markets and condemn it in all other markets.

The next chapter begins the analysis of monetary and fiscal policy in a model with trade and capital flows. The central characteristics of open economy analysis are the exchange rate regime and the ease of movement of money flows between countries.

Figure 12.1: Fiscal expansion in an open economy, with and without monetization

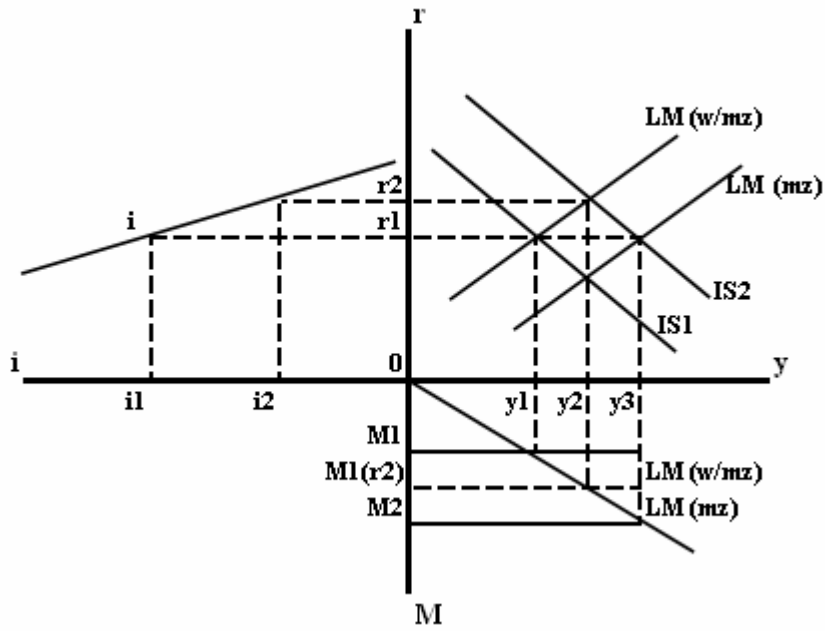
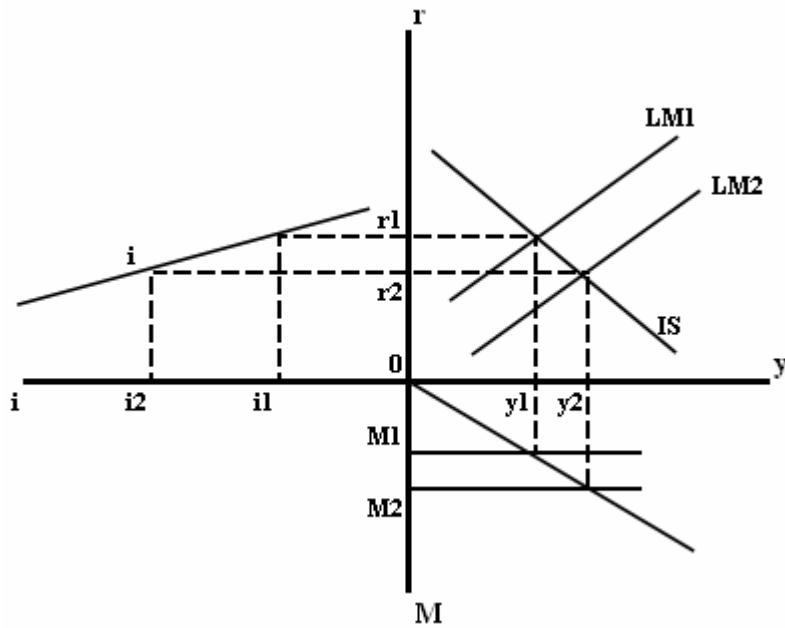


Figure 12.2: Monetary expansion alone in a closed economy



Annex to Chapter 12: The Open Economy in Algebra

This annex provides the algebraic presentation of the open economy model, which is used in this chapter and the next. As in previous chapters, upper case letters refer to nominal values and lower case letters to variables measured in units of the single commodity. Because the open economy algebra includes the public sector and international transactions, it is necessary to change notation to incorporate these complications.

X, x = exports

Z, z = imports

F, f = net external capital flows

Y, y = national income

C, c = household consumption

I, i = business investment

S, s = household saving

G, g = government expenditure

T, t = public revenue, "taxes"

M_s, M_d, M^* = supply of money, demand for money, and the supply (fixed by the monetary authorities)

r = domestic interest rate

r^* = "world" or international interest rate, assumed constant

P = price level

v = inverse of the velocity of money

E, e = nominal and real exchange rates

The behavioral relationships are as follows:

$$(1a) \quad x = x^* + a_1 e \quad \text{export function, } a_1 > 0,$$

$$(2a) \quad z = a_2 e + a_3(y - t) \quad \text{import function, } a_2 < 0 \text{ and } a_3 > 0,$$

$$(3a) \quad f = a_4(r - r^*) \quad \text{international capital flow function, } a_4 > 0,$$

$$(4a) \quad \beta_1 = X/Z = x/z \quad \text{relative trade balance}$$

$$\beta_2 = X/Y = x/y \quad \text{average export share}$$

- (5a) $M_d = vpy - a_5r$ demand for money, $a_5 > 0$
(6a) $M_s = M^*$ supply of money,
(7a) $c = a_6(y - t)$ consumption function, $a_6 > 0$,
(8a) $i = i^* - a_7r$ business investment function, $a_7 > 0$;
(9a) $t = a_8y$ public revenue function, $a_8 > 0$, and
(10a) $g = g^*$ government expenditure.

From the above, the IS, LM and BP schedules are derived. First, the IS curve:

$$y = c + i + g + (x - z)$$

$$y = a_6(y - a_8y) + i^* - a_7r + g + [(x^* + a_1e) - (a_2e + a_3y)]$$

$$y[a_6(1 - a_8) + a_3] = i^* - a_7r + g + [(x^* + a_1e) - a_2e]$$

$$y = [i^* - a_7r + g + x^* + (a_1 - a_2)e] / [a_6(1 - a_8) + a_3]$$

Define $1/\alpha = [1 - (a_6 + a_3)(1 - a_8)]$, and α is the open economy multiplier. Note that $\alpha > 1$ if $(a_6 > a_3)$, if the propensity to consume is greater than the propensity to import.

$\delta = (i^* + x^*)$, autonomous expenditures, and

$$(a_1 - a_2) = a_T, (a_2 < 0, \text{ so } a_T > 0)$$

Substitution yields the IS schedule:

$$(11) \quad y = \alpha(\delta + g - a_7r + a_Te)$$

Second, I derive the LM curve by setting money demand equal to the supply (monetary base).

$$M^* = vpy - a_5r$$

Solving for y directly yields the LM schedule:

$$(12) \quad y = (M^* + a_5r)/vp$$

Finally, the BP schedule. As explained in the next two chapters, the following specification, usually presented as the general case, contains a mistake, the omission of the domestic price level. Following the practice of almost all textbooks, it is used in the next chapter, then corrected in Chapter 14.

$$(x - z) + f = 0$$

$$[(x^* + a_1 e) - (a_2 e + a_3 y)] + a_4(r - r^*) = 0$$

Let $(a_1 - a_2 = a_T)$.

Solving for y gives the BP schedule:

$$(13) \quad y = [x^* + a_T e + a_4(r - r^*)]/a_3$$

When the international rate of interest and the price level are assumed constant, the three equations (schedules) have three variables ("unknowns"), the level of output (y), the domestic interest rate (r), and the exchange rate (e and E are the same because the price level is assumed constant). In the next chapter a fourth equation is added to render the price level endogenous.

13 Open Economy Analysis

13.1 The Standard Open Model

With the exception of Chapter 7, it has been the practice in this book to derive all diagrams rigorously from an algebraic specification of behavioral relationships. That practice cannot be followed in the case of the neoclassical open economy model because to do so would immediately divert the discussion from presentation to critique. In order to have a model to critique, I follow the usual diagrammatical presentation found in intermediate macro textbooks.⁷

The typical presentation excludes the labor market. This allows for less than full employment outcomes, implying that the model is quantity constrained. Because the economy is quantity constrained below full employment, an equilibrium solution does not imply allocative efficiency, and "gains from trade" that characterize the Heckscher-Ohlin trade model are not relevant.

The standard model for analyzing open economy adjustment comes from the work of Marcus Fleming and Robert Mundell.⁸ It has an equilibrium schedule associated with each of three markets, two of which were encountered in presentation of a closed economy: the "IS curve" for the commodity market, the "LM curve" for the money market, and a balance of payments equilibrium schedule for the external sector unusually designated "BP".

Though it is a half-century old, the Mundell-Fleming model remains the keystone of open economy macroeconomics.⁹ The model aspires to provide a simple and consistent method of integrating trade into the IS-LM model. The model emerged in the late 1950s and early 1960s, a time when Keynesian analysis was dominant in the economics profession. The Mundell and Fleming analysis seemed to transform the Keynesian neoclassical synthesis framework from a closed to an open economy that could generate powerful policy rules. These rules or generalizations can be found in twenty-first century textbooks.

The condition for commodity market equilibrium is that expenditures autonomous with respect to the level of income must equal induced non-expenditure. The standard policy analysis involves a comparison of the effects of monetary and fiscal policy. It

becomes necessary at this point to include public expenditure and taxation as well as imports, exports and capital flows. This more complicated commodity market equilibrium condition becomes:

$$I + G + X = S + T + Z$$

G and T are government expenditure and taxation, and X and Z are exports and imports. Because there is only one commodity, we can shift from nominal to "real" variables, with the latter measured in units of the single commodity, as in Part I of this book. After specifying the relationships with new notation to accommodate the increased complexity (see annex to Chapter 12), the expanded IS curve becomes (y is real output):

$$(13.1) \quad y = \alpha(\delta + g - a_I r + a_T e)$$

The Greek letter δ is the sum of the autonomous elements of the investment and export functions, g is government expenditure, a_T is the sum of the absolute values of the coefficients of exports and imports with respect to the real exchange rate, e is the real exchange rate, and a_I is the coefficient of investment with respect to the domestic interest rate (r). In a multi-commodity context, there would be a difference between the import and export exchange rates, but for a one commodity model, the real exchange rate is simple, the nominal rate divided by the price level, or $E/p = e$. In all presentations of the standard model prices are assumed fixed, an assumption that critiqued in some detail in the next chapter.

If the price of the single commodity is constant and set to unity, then the nominal and real exchange rates are identical ($E = e$). I notionally calculate the exchange rate as the ratio of domestic to "foreign" currency, so that an increase implies devaluation or depreciation. The parameter a_T is positive because a devaluation or depreciation increases export demand and reduces import demand, with the latter resulting in an increase in the demand for domestic substitute commodities. In a one commodity model the availability of a perfect substitute is assured.

The standard specification of the open economy LM curve appears in a diagram to be the same as its closed economy counterpart, though a major change has been introduced. Where previously the money supply consisted of domestic credit, in the open economy the money base also includes "foreign currency" holdings in the banking

system. I leave the implications of this change to the next section, and write the LM curve as before:

$$(13.2) \quad y = (M^* + a_5 r) / v_p$$

The parameter a_5 is the derivative of the demand for money with respect to the interest rate. It remains to specify the balance of payments equilibrium schedule. The change in international reserves will be zero if the trade balance ($X - Z$) and capital flow (F) sum to zero. Letting R stand for the stock of reserves,

$$(13.3) \quad \Delta R = 0 = (X - Z) + F$$

With no price changes, these variables can be measured in units of the single commodity. Capital flow is narrowly defined to be portfolio capital and is a positive function of the difference between the domestic and "world" rates of interest (r and r^*). Since this relationship will play a major role in adjustment to external equilibrium it is shown in Figure 13.3, with two capital flow functions represented in the upper right quadrant, with F_2 more elastic than F_1 . The trade balance is shown immediately below, traced from the import and export functions in the lower left quadrant. As in the algebra, imports are a function of income and exports are exogenous.

Using constant price units, the BP schedule is (see annex to Chapter 12);

$$(13.4) \quad y = [x^* + a_T e + a_4 (r - r^*)] / a_3$$

The a_T term is the same as in the IS curve and a_4 is the coefficient of capital flows with respect to the difference between r and r^* . In what follows I assume a constant international interest rate. In textbooks the three market equilibrium relationships are presented in one diagram, as shown in Figure 13.4, with the purpose of analyzing the effect of fiscal and monetary policies. The diagram shows two specifications of the BP curve, one less than perfectly elastic (BP2) and one that is perfectly elastic (BP1). In the case of the latter, a miniscule difference between the domestic interest rate and the world rate results in instantaneous capital flow to cover any difference between exports and imports. If the interest rate is flexible, not set administratively by the central bank, perfect elasticity implies that it cannot differ from the world rate no matter what fiscal or monetary policies are implemented.

Figure 13.4a is frequently used in textbooks, and it conceals considerably more than it reveals. If the exchange rate is fixed and capital flows are perfectly elastic, the simplest analytical case, a shift in any one of the equilibrium schedules results in a change in all the induced variables, output/income, imports, tax revenue and saving. In the most complicated case of less than perfectly elastic capital flows and a flexible exchange rate, to these variables must be added investment, exports, the domestic interest rate and the exchange rate. None of these except the domestic interest rate and output/income can be read from the diagram. It is a severe test of a student's imagination to deduce all the changes concealed by this diagram.

Analyzing open economy adjustment in this model is facilitated by inspecting the BP curve, which dictates the equilibrium outcome. Figure 13.4b emphasizes the two general outcomes for an equilibrium. Either the equilibrium is above the world rate of interest, in which case a trade deficit is balanced by a capital inflow; or the equilibrium is below the world rate of interest, in which case there is a trade surplus balanced by a capital outflow.¹⁰ The latter outcome is usually not treated in text books because it implies a fall in national income, contrary to the expected goal of policy intervention.

In place of Figure 13.4a and 13.4b, I use a four quadrant diagram in Figures 13.5 through 13.12 which explicitly represents the adjustments of important variables. Part 1 of each diagram reproduces Figures 13.4a and 13.4b. Part 2 represents imports and exports in relation to output/income. Imports and exports as a function of the exchange rate with income constant, are presented in Part 3. Finally, Part 4 shows the interaction of the exchange rate and the domestic interest rate. Though complicated, this method of presentation allows analysis of the adjustment process in some detail. Eight diagrams are necessary in order to consider the theoretical possibilities implied by two exchange rate regimes (fixed and flexible), two capital flow possibilities (perfectly elastic and less than perfectly elastic), and two policy instruments (fiscal and monetary).

Prior to initiating a series of complex equilibrium stories, clarification of terms is important. The analysis of open economy adjustment is without exception conducted in comparative statics. In some textbooks the terms "temporary" and "final" equilibrium are used in the presentation of open economy adjustment.¹¹ As explained in Chapter 3, in comparative static analysis this terminology is misleading, because there is no time

dimension. Comparative static equilibria are stable or unstable, unique or multiple, but cannot be "temporary". Authors use these terms for the purpose of providing a step-by-step guide for students through a complex adjustment process. The purpose may be benign, but the terminology is unsound and misleading. Comparative static adjustment to equilibrium is instantaneous, passing through no intermediate stations.

Figure 13.5 shows the consequence of a fiscal expansion achieved by an increase in government expenditure with a fixed exchange rate.¹² From an initial equilibrium shown by points marked with "a", the expenditure increase that shifts the commodity market schedule from IS1 to IS2 is financed by bond sales to the public which leaves the money supply unchanged and puts upward pressure on the interest rate.¹³ With less than perfectly elastic capital flows (an upward sloping BP schedule), the rise in the interest rate induces capital inflow that compensates for the trade deficit generated by the increase in income to level y_2 (shown in Part 2 of Figure 13.5). Because there is no change in the exchange rate (Parts 3 and 4), exports remain the same and there is an upward shift of the import function in the exchange-rate-trade quadrant (due an increase in income).

In summary, the domestic interest increases, output/income rises, a trade deficit thus generated is covered by capital inflow which also increases the money base to shift the LM curve to the right. The more inelastic is the BP schedule, the less is the increase in output/income. The final equilibrium at points "b" is stable on the assumption that the gap between the world and domestic rates of interest causes a continuous capital inflow. The stability of this equilibrium has been questioned because it gives no consideration to portfolio adjustment. This problem in the Mundell-Fleming model, the flows required for equilibrium may cause disequilibrium in desired stocks, is analogous to the relationship between investment flows and the capital stock in the closed economy model.

If capital flows are perfectly elastic, shown in Figure 13.6, the tendency for the domestic interest rate to rise is instantaneously prevented by capital inflow in Part 1, with the consequences in the other quadrants similar to Figure 13.5. In this case the fiscal expansion achieves its maximum increase in output/income, to level y_3 . If Figures 13.5 and 13.6 are compared, one can identify an index of the effectiveness of fiscal policy, the ratio $[y_1y_2]/[y_1y_3]$, which is determined by the slope of the BP schedule, with

effectiveness approaching zero as BP becomes vertical and unity as it becomes horizontal.

The analysis of monetary policy with a fixed exchange rate is simpler, shown in Figures 13.7 and 13.8 only Part 1 is necessary. The central bank purchases bonds from the public, and this increases the domestic money base, shifting the money market equilibrium schedule from LM1 to LM2. The purchase raises bond prices and lowers the domestic interest rate (arrow pointing to the right in Part 1 in both diagrams). This downward pressure on the interest rate results in a capital outflow that cancels the monetary expansion of the central bank (arrow pointing to the left in Part 1 of both diagrams). With a fixed exchange rate, monetary policy cannot increase output/income. This conclusion is not affected by the degree of capital mobility.

The fixed exchange rate stories can be simply stated:

1. fiscal expansion is self-supporting by inducing capital inflow that covers the trade deficit and causes monetary expansion to accommodate the additional expenditure; and
2. monetary expansion is one hundred per cent self-defeating by inducing capital outflow that causes an equivalent monetary contraction.

As one would expect, the "flexible" exchange rate cases are more complicated. Complication is reduced by beginning with two analytical guidelines: i) with perfect capital flow, a "flexible" exchange rate instantaneously equates imports and exports ensuring balance of payments equilibrium; and ii) if the BP schedule is not perfectly elastic, both fiscal and money expansion cause a rightward movement along the BP schedule, implying a trade deficit and capital inflow.

Figure 13.9 presents a fiscal expansion with a flexible exchange rate and less than perfectly elastic capital flows. As before, at the initial equilibrium there is not interest rate differential and trade is balanced ($r = r^*$, $X = Z$ in Part 2). The fiscal expansion (IS1 to IS2) provokes a movement to the right along the BP schedule (Part 1), which simultaneously causes an *appreciation* of the exchange rate due to the capital inflow associated with the interest rate differential (Part 4, exchange rate moves from E1 to E2 when interest rate rises to r_2). The appreciation causes a movement back along the export function and outwards along the import function (Part 3). Simultaneously the

increase in output/income induces higher imports (Part 2), corresponding to an upward shift in imports as a function of the exchange rate (again, Part 3). The increase in output/income is determined by the elasticity of capital flows. The more *inelastic*, the greater will be the increase, the opposite of the fixed exchange rate case.

The adjustment may be easier to understand by inspecting more closely the interaction between income and the interest rate. The increase in the interest rate causes a capital inflow, while movement to a higher level of output/income causes a trade deficit. If the two effects were equal, equilibrium could not move from point "a". Point "a" is the outcome for perfectly elastic capital flows. With less than perfectly elastic flows, the interest rate effect is the stronger, which causes a balance of payments surplus (despite the currency appreciation) that allows for expansion of output.

The fiscal expansion increases the level of output/income (y_1 to y_2), though exports are lower (falling from x_1 to x_2 , see Parts 2 and 3) and imports higher (z_1 to z_2). A rise in the domestic interest rate provoked the appreciation, but there is a capital inflow to cover the trade deficit ($z_2 - x_2$). The more inelastic are capital flows, the more effective is fiscal policy. Inelasticity implies less capital inflow for a given interest rate differential, which implies a weaker pressure for currency appreciation. The problem for fiscal policy in the flexible exchange rate case is that the capital inflow that would allow for output expansion also depresses demand via a currency appreciation.

The limiting case is shown in Figure 13.10, fiscal expansion with a flexible exchange rate when capital flows are perfectly elastic. Fiscal expansion (the arrow pointing to the right in Part 1) causes an instantaneous capital inflow that appreciates the exchange rate (Part 4), and completely cancels the expansion by depressing exports and stimulating imports (the arrow pointing left in Part 1, with the trade effects shown in Parts 2 and 3). In the next chapter algebra is used to show that this, the standard textbook conclusion, is invalid.

The cases of fiscal policy with a flexible exchange rate and less than perfectly elastic capital flows reveal the limitation of a diagrammatic presentation of open economy equilibrium. The first problem is that when one looks at Figure 13.9, it might be thought that greater elasticity would result in a higher level of output/income, while the opposite is the case. This misunderstanding can arise because the graphic gives no

guide to the interaction of the BP and IS schedules. The more elastic the BP schedule, the greater the capital flow associated with any interest rate differential, and, as a consequence, the larger the induced currency appreciation, which depresses aggregate demand by its impact on exports and imports. In the graphic this means that the more elastic the BP schedule, the less the IS schedule shifts to the right. The second problem is that when capital flows are not perfectly elastic, fiscal expansion and monetary expansion both result in a shift in the BP curve, and the amount by which it shifts is determined by the trade elasticities, as discussed in the next chapter.

Figures 13.11 and 13.12 present the standard analysis of monetary policy with a flexible exchange rate. The perfectly elastic case in Figure 13.11 is simply told: monetary expansion causes an income-induced trade deficit and capital outflow, and the exchange rate depreciates until trade is again balanced. The outcome is characterized by higher output/income (Part 1), an upward shift in exports due to exchange rate depreciation (Parts 2 and 3), and an equal increase in imports. The increase in imports is due to the output/income effect that overwhelms the downward shift of the import function due to exchange rate depreciation. Monetary policy finds its full effectiveness with a flexible exchange rate and perfectly elastic capital flows.

As for the parallel case of fiscal policy, a diagram is not fully adequate to understand monetary expansion with a flexible exchange rate and less than perfect capital flows. As before, some characteristics of the outcome can be noted to help understand the adjustment: i) if the elasticity of capital flows is greater than zero, the outcome must lie to the right of the initial equilibrium and on the BP schedule, ii) the exchange rate must depreciate, iii) there must be a trade surplus, and iv) there must be capital outflow to balance the trade surplus.¹⁴

With these points as guide, we can follow the analytical sequence in Figure 13.12. An increase in the domestic component of the money supply shifts the money market equilibrium from LM1 to LM2. This lowers the domestic interest rate and simultaneously generates a trade deficit. The lower interest rate immediately increases investment and shifts the IS schedule. The capital outflow depreciates the currency, which shifts the export and import functions (Parts 2 and 3). Both of these shifts reinforce the outward movement of the IS schedule in Part 1. The equilibrium trade

surplus (distance bb') is exactly equal to the capital outflow. The more inelastic are capital flows, the less effective is monetary expansion, because inelastic capital flows imply a smaller depreciation. This is the mirror image of the fiscal policy case.

This long and tedious diagrammatic analysis yields the standard neoclassical policy conclusions and prescriptions.

With a fixed exchange rate regime,

1.a. Fiscal policy is effective, with the degree of effectiveness positively related to the degree of capital mobility;

1.b. Monetary policy is totally ineffective and the elasticity of capital flows makes no analytical difference;

With a flexible exchange rate regime,

2.a. Fiscal policy is ineffective, with the ineffectiveness reduced as capital flows become more inelastic.

2.b. Monetary policy is effective, with the degree of effectiveness positively related to the elasticity of capital flows.

These conclusions are sometimes synthesized into a single policy rule: fiscal policy is effective with fixed exchange rates and monetary policy is effective with flexible exchange rates. As common as this oft-repeated statement may be, it is wrong, as we see in the next chapter. The next section considers the political implications of the advocacy of flexible exchange rates based on these invalid conclusions.

13.2 "Advantages" of Flexible Exchange Rates

With the collapse in the early 1970s of the IMF-monitored system of fixed rates among currencies, the Mundell-Fleming conclusion that under flexible exchange rates monetary policy was effective and fiscal policy ineffective passed from theoretical curiosity to practical importance. It counseled that active fiscal policy, like fixed exchange rates, was an anachronism gone with fixed exchange rates.¹⁵

This policy advice has great appeal to the neoclassicals, because it complements their faith in the operation of markets, in this case the market for foreign exchange. The ideological nature of the preference is demonstrated in standard textbook presentations

that typically make little reference to the practical difficulties associated with flexible rates.

Salvatore, whose book has one of the most balanced presentations of fixed and flexible rates, summarizes as follows:

In general, advocates of flexible exchange rates argue that such a system is more efficient than a system of fixed exchange rates to correct balance-of-payments disequilibria...[T]hey stress that by allowing a nation to achieve an external balance easily and automatically, flexible rates facilitate the achievement of internal balance and other economic objectives....[A]dvocates of fixed exchange rates argue that by introducing degree of uncertainty not present under fixed rates, flexible rates reduce the volume of international trade and investment, are more likely to lead to destabilizing speculation, and are inflationary...

A careful review of theoretical arguments...does not lead to any clear-cut conclusions that one system is overwhelmingly superior to the other... (Salvatore 2004, 596-598)

After reaching this agnostic and pragmatic conclusion, a page later Salvatore repeats without qualification the claim of the neoclassicals that a flexible exchange rate regime is effective in automatically resolving balance of payments problems:

Under a flexible exchange rate system, only the exchange rate needs to change to correct a disequilibrium in the nation's balance of payments...

A flexible exchange rate system also means that the nation need not concern itself with its external balance and is free to utilize all policies...to achieve its purely domestic goals of full employment with price stability, growth, an equitable distribution of income, and so on. (Salvatore 2004, 599)

The statements that with flexible rates "only the exchange rate needs to change" for balance of payments bliss, and that "the nation need not concern itself with its external balance" read like a parody of neoclassical theology. Even a fervent advocate of flexible rates, the International Monetary Fund, would not take such a sanguine view.¹⁶ The potential difficulties arising under a flexible exchange rate can be highlighted by tracing the steps from a balance of payments deficit to its elimination through automatic exchange rate adjustment. For simplicity, assume that a country's external account

consists only of commodity imports and exports. Let an external "shock", such as a change in world prices, result in a trade deficit:

1. the trade deficit provokes a nominal depreciation of the domestic currency with respect to the currencies of its major trading partners;
2. the depreciation must cause a shift in relative prices within the country, with the prices of tradables rising relatively to non-tradables; and
3. the elasticity of supply of exports (positive) and elasticity of demand of imports (negative) must be sufficiently large to eliminate the trade deficit within a short time period so that the depreciation is not so large as to provoke inflationary instability.

In the absence of capital flows, the first step can be accepted as automatic. The second is contingent upon the degree of price competitiveness in domestic markets. The third would depend on the nature of a country's imports and exports. If domestic relative prices are slow to adjust and short term import and export elasticities were low, the result could be a continuously depreciating exchange rate with no improvement in the trade balance. Even if one ignores the inflationary effect of the depreciation, which is considered in the next chapter, the failure to close the trade gap would lead to the central bank exhausting its foreign reserves. Once imports could not longer be financed, the trade balance would adjust through a contraction of real output that would reduce import demand.

Specifying the steps from a trade deficit to trade equilibrium reveals the underlying premises of the flexible exchange rate mechanism. It assumes that 1) the domestic and world economies are price constrained, which logically implies global and general equilibrium full employment for the country under analysis; and 2) that changes in production and consumption are instantaneous. In other words, a flexible exchange rate regime brings automatic balance of payments adjustment if and only if markets behave according to the rules of Walrasian General Equilibrium.

Looking back at the Mundell-Fleming analysis reveals that it suffers from a fundamental theoretical flaw. It claims to be an analysis of how policy tools can be used to achieve both "internal balance" (full employment) and "external balance" (balance of payments stability). If it limits itself to the case of a fixed exchange rate, the Mundell-

Fleming model can claim to provide such an analysis. However, when it considers the case of flexible exchange rates, the analysis becomes trivial, because the exchange rate adjustment mechanism presupposes Walrasian General Equilibrium.

Therefore, the allegations, "monetary/fiscal policy is effective/ineffective under a flexible change rate regime" are false in the sense of being irrelevant. "Effectiveness" in the Mundell-Fleming context always refers to effectiveness in managing the level of output and employment. Because the exchange rate adjustment mechanism, Walras' Law, holds only for a full employment level of output, the "effectiveness" of fiscal or monetary policy to change the level of output is a question that cannot even be asked, much less answered.

Open economy adjustment based on the Mundell-Fleming model is general equilibrium falsely claiming to explain conditions of less than full employment. As result its entire analysis is invalid. However, despite this fundamental problem, the model continues to be used on an *ad hoc* basis for the analysis of policy effectiveness when output is below full employment. The next chapter demonstrates that the ad hoc less than full employment version harbors an internal contradiction that undermines its usefulness in formulating policy for an open economy.

Figure 13.4b Standard open economy diagram, characteristics of the BP Curve

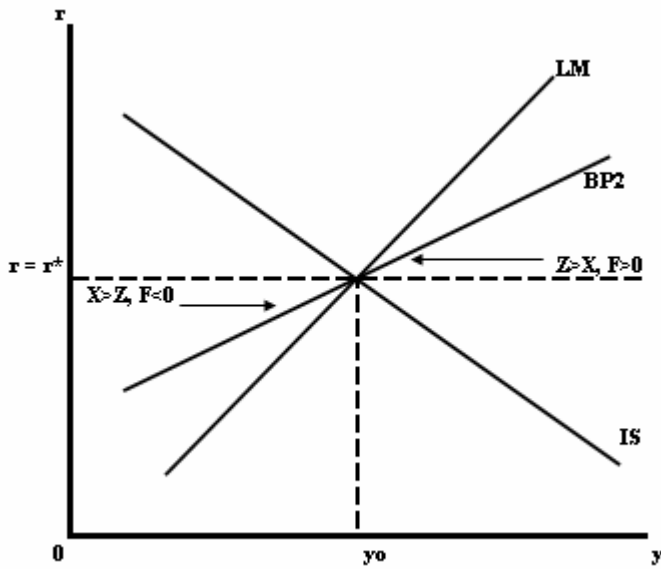


Figure 13.5 Fiscal policy fixed exchange rate, imperfectly elastic capital flows

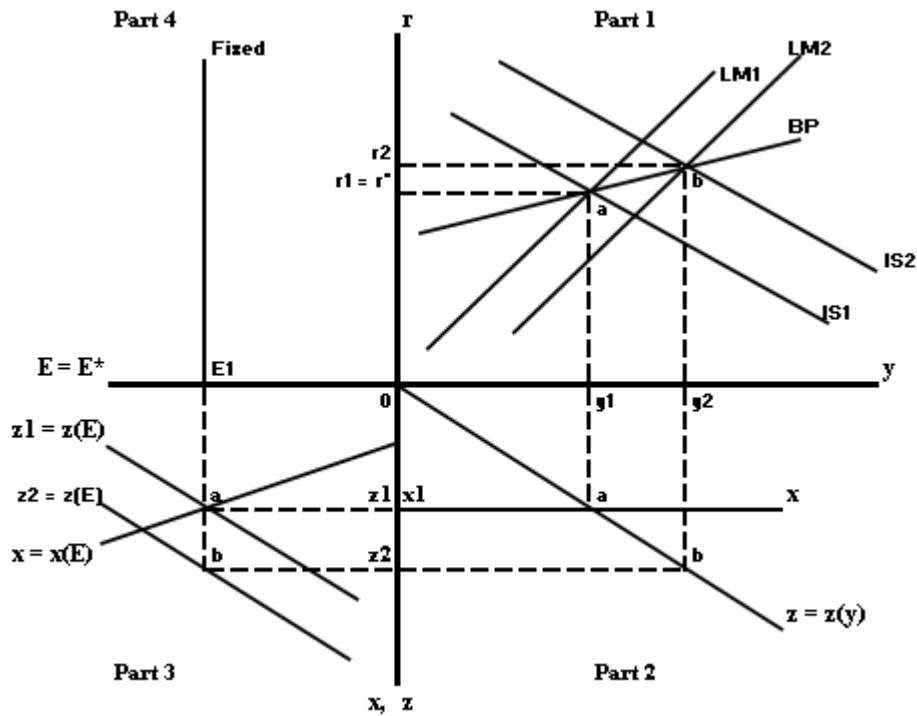


Figure 13.6 Fiscal policy, fixed exchange rate, perfectly elastic capital flows

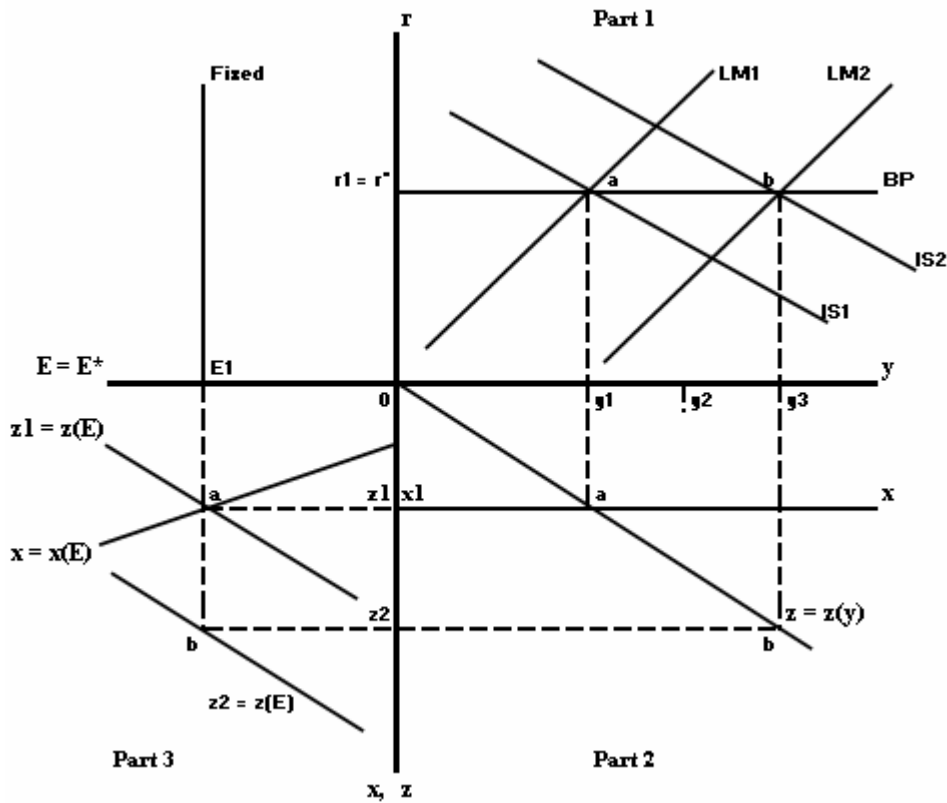


Figure 13.7 Monetary Policy, fixed exchange rate, imperfectly elastic capital flows

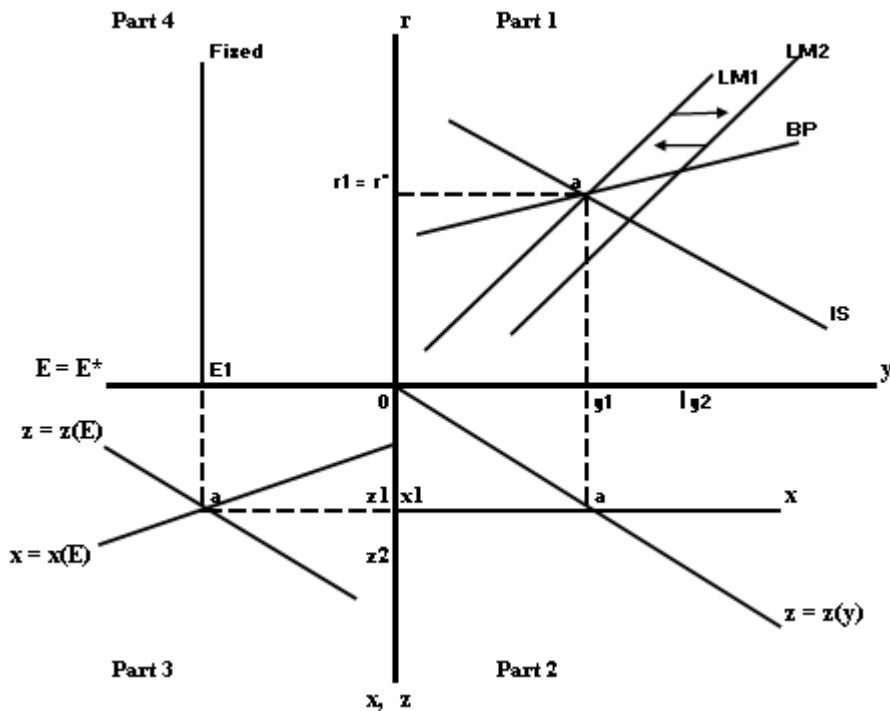


Figure 13.8 Monetary policy, fixed exchange rate, perfectly elastic capital flows

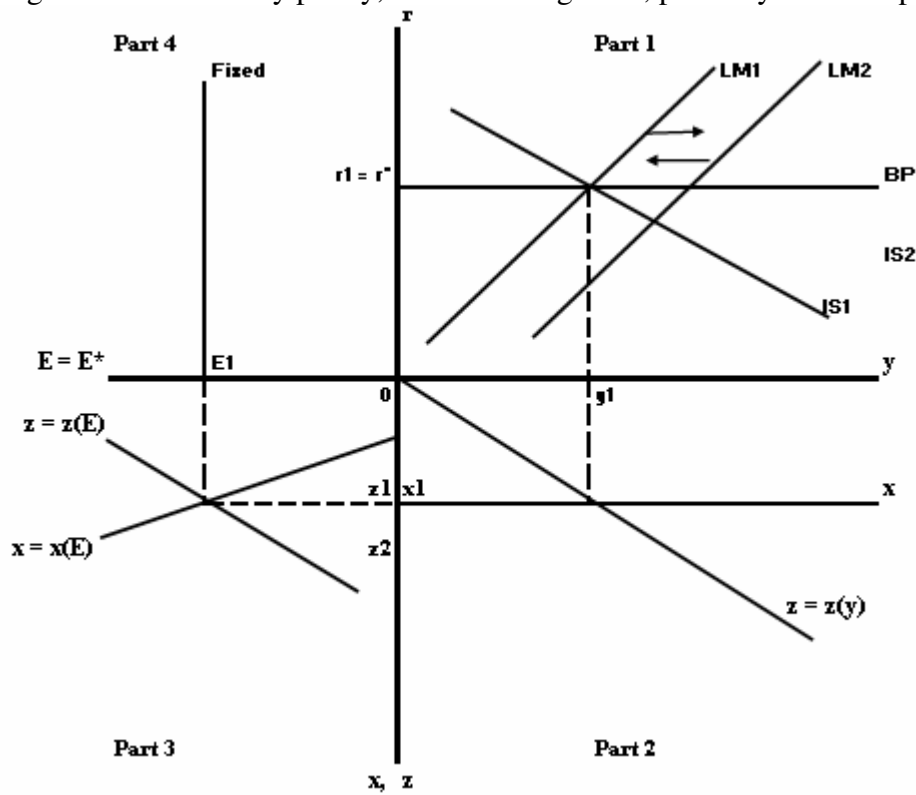


Figure 13.9: Fiscal policy, flexible exchange rate, imperfectly elastic capital flows

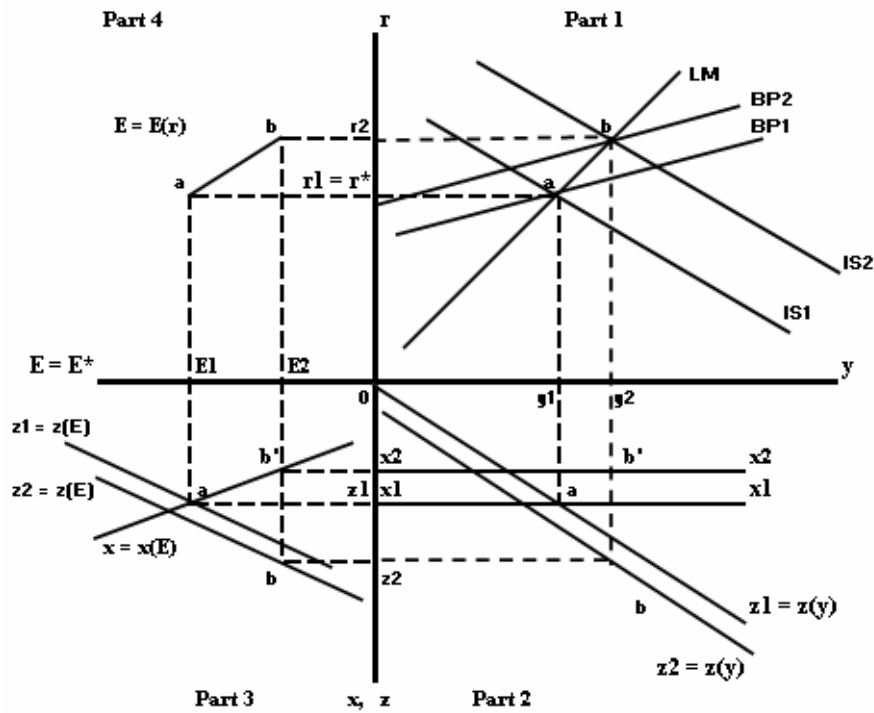


Figure 13.10 Fiscal policy, flexible exchange rate, perfectly elastic capital flows

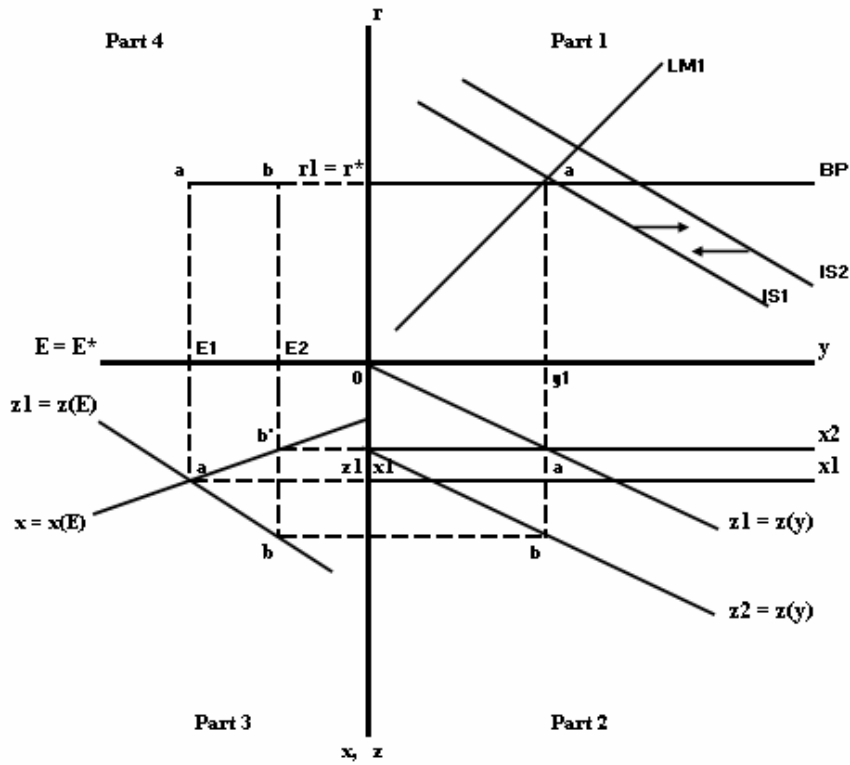


Figure 13.11: Monetary policy, flexible exchange rate, perfectly elastic capital flows

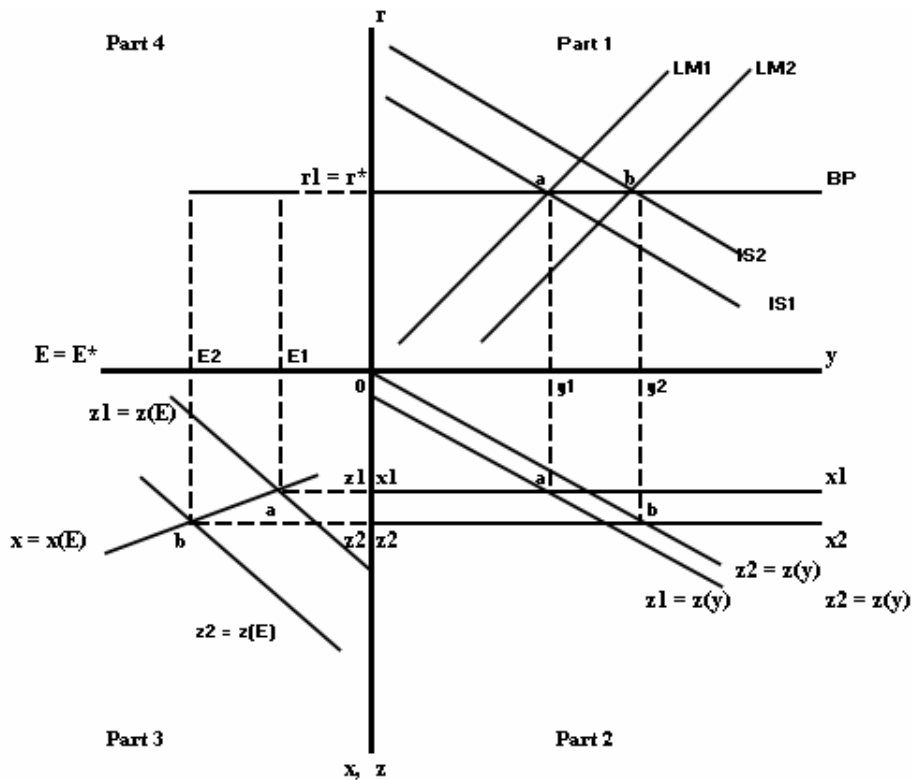
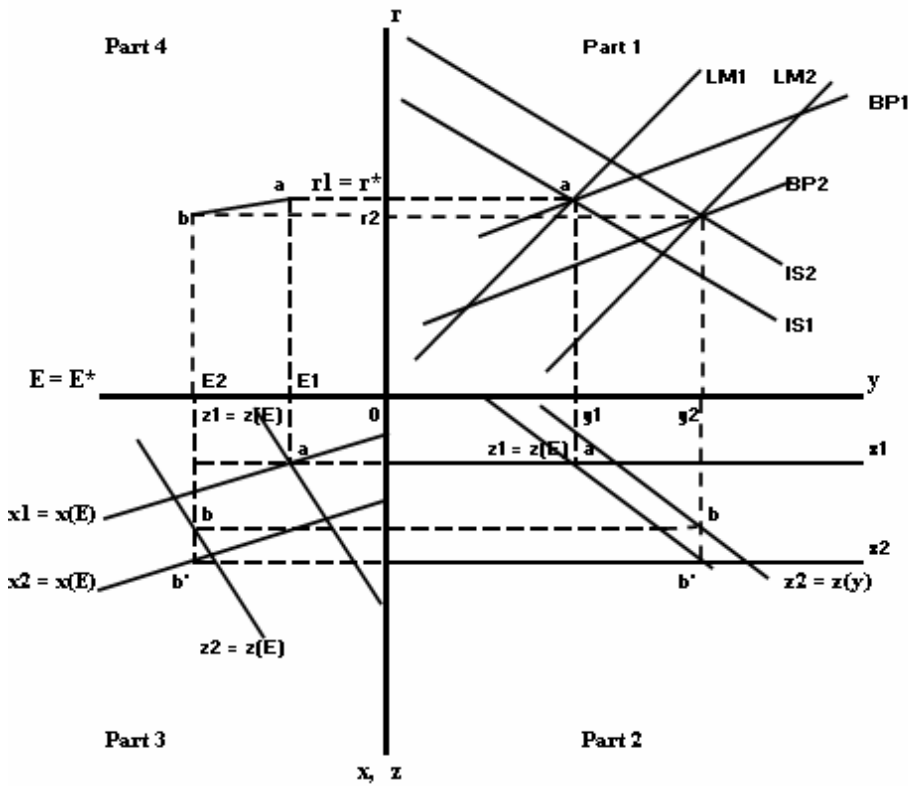


Figure 13.12: Monetary policy, flexible exchange rate, imperfectly elastic capital flows



14 Reassessing Monetary and Fiscal Policy

14.1 Introduction

The neoclassical closed economy macro model claims two great parables with powerful political and ideological messages. The better known is the assertion that the unemployment is the result of trade union or government intervention, and in the absence of these a market economy will automatically generate full employment. The second, complementary assertion is that the full employment outcome is unique because money is neutral.

If these two parables were valid capitalist economies would have no need for either an active fiscal policy or an active monetary policy. Government expenditure need do nothing beyond fund whatever functions society defined as appropriate. Monetary policy could be reduced to an automatic, technocratic rule such as specifying an annual money growth consistent with continuous full employment. The first two parts of this book demonstrated that neither parable is logically valid.

To these closed economy parables can be added a third for the open economy: a flexible exchange rate will ensure that the external sector of the economy is always in equilibrium. These three parables represent the free market dream team: deregulate internal markets and the economy will adjust to full employment; set an automatic, prudent monetary rule and there will be no inflation; and "free" the exchange rate from government manipulation and banish balance of payments problems. The third parable is no more valid than the first two, because the Mundell-Fleming model has a fatal flaw.

In both its simple and complex forms, the Mundell-Fleming analysis of a flexible exchange rate regime ignores an obvious, simple and fundamental economic relationship, the impact of exchange rate changes on the price level. For example, one of the more advanced macro textbooks used in the 1990s explicitly states that exchange rate adjustment has no domestic price impact.¹ In their 2004 textbook, Dunn and Milner point out the domestic price effect of changes in the exchange rate, but explicitly exclude its unavoidable impact on the money supply.²

It cannot be correct either in theory or in practice that adjustment of the exchange rate would reduce a trade gap and have no domestic price effect. The standard stories of monetary policy with a flexible exchange rate in the previous chapter were wrong. A logically complete story would be:

- 1) an increase in the money supply results in a trade deficit; with perfect capital flows this deficit is instantaneously eliminated by depreciation of the currency;
- 2) the depreciation of the currency raises the price level *via* its impact on imported goods;³
- 3) this price increase feeds back to make the real depreciation is less than the nominal; and
- 4) the price increase simultaneously renders the increase in the real money supply less than the increase in the nominal money supply.

Even in the analytically most favorable case, monetary policy would not be completely effective because of the price effect on the real money supply and the real exchange rate. This is obvious if one considers the limiting case of an economy at less than full employment that exports its entire production in return for imports of the same value. In such an economy, monetary expansion would have zero impact on output because the domestic price effect could be equal to any nominal devaluation, implying no change in the real exchange rate.

A typical justification for excluding domestic price effects is the assertion the Mundell-Fleming analysis is within a "fixed price" model, and including the exchange rate effect on prices is not obeying the rules of the story. This argument cannot be correct. By its design the model is not "fixed price" because the comparative statics of adjustment require a change in a price, the exchange rate. The adjustment of export and import volumes to reach equilibrium requires a change in relative prices, to make tradables more profitable. The initial level of income would be the only possible equilibrium if the model were fixed-price, because no relative price change would occur to provoke expenditure switching from imports to domestic substitutes, and no change in the incentive for producers to sell in the external market.

An empirical argument might be made that domestic prices in practice adjust slowly. Therefore, the domestic price level effect of changes in the exchange rate can be

ignored in the short run. This argument is a refutation of the main conclusions of the model. In the absence of an immediate relative price change, the necessary adjustment in export and import volumes would not occur. Whether from a theoretical or an empirical perspective, external adjustment requires changes in domestic prices. The effect of these cannot be ignored. If they are ignored, the analytical result is formally equivalent to the case of a fixed exchange rate.

Finally, it might be asserted that Mundell-Fleming refers to a non-chronological "long run" (see Chapter 3, Section 2), not to short run adjustment. This argument cannot eliminate the need to consider domestic price effects. The first implication of a "long run" argument would be that flexible exchange rates have little importance for short term policy. A balance of payments disequilibrium must be resolved in the short run if the alleged advantages of a flexible exchange rate would be realized.

14.2 Modeling Policy Effectiveness

Part of the reason that the mistakes in standard open economy macro analysis are repeated in textbooks is the consistent absence an explicit algebraic development of the central equilibrium relationships. The typical presentation using mathematics gives the IS, LM and BP schedules in implicit form and with key variables missing, as done in the previous chapter.

That absence is now corrected. For an algebraic presentation of the interaction of the exchange rate and monetary policy, I consider the "small country" case. A small country is defined as one whose demand for imports and supply of exports do not affect world prices.⁴ A change in the nominal exchange rate affects only internal prices, potentially altering the profitability of traded goods relatively to domestic goods.

The balance of payments equilibrium schedule (BP) is defined by the following equation (see annex to Chapter 12), in which the sum of trade and net capital flows is zero:

$$\begin{aligned} 1) \quad & (x - z) + f = 0, \text{ and} \\ & (z - x) = -f \end{aligned}$$

Because of the small country assumption, I measure exports (x), imports (z), and capital flows (f) in constant price units; i.e., in units of the single commodity. The following explicit functions are assumed (see equation 13 in annex to Chapter 12):

$$1.1) \quad [(x^* + a_1e) - (a_2e + a_3y)] + a_4(r - r^*) = 0$$

Real output is y, and e is the real exchange rate (nominal rate divided by the price level, E/P) measured in units of the domestic currency to some composite world currency. The domestic interest rate is r and the “world” rate r^* . I assume the latter, r^* , constant. The parameter x^* is the intercept of the export-exchange rate function. When r^* is constant, the total derivative is:

$$1.2) \quad 0 = (a_1 + a_2)de - a_3dY + a_4dr$$

If capital flows are perfectly elastic, $r = r^*$, and dr is zero. Because the exchange rate is defined as units of the national currency to the "world currency", an increase in e raises exports and reduces imports. If the total derivative is solved for the rate of growth of output, one obtains the following, where y' and e' are the rates of change of output and the real exchange rate, respectively.⁵

$$1.3) \quad y' = (\mathcal{E}_1 + \mathcal{E}_2)e'$$

Define $(\mathcal{E}_1 + \mathcal{E}_2) = \mathcal{E}_T$, so

$$y' = \mathcal{E}_T e'$$

Assuming $x = z$, because $r = r^*$.

The elasticity of exports with respect to the real exchange rate is \mathcal{E}_1 , and \mathcal{E}_2 is the elasticity for imports. Because $\mathcal{E}_1 > 0$ and $\mathcal{E}_2 < 0$, \mathcal{E}_T is positive. Because these elasticities refer to the real exchange rate and quantities of exports and imports, $(\mathcal{E}_1 + \mathcal{E}_2) = \mathcal{E}_T > 0$ insures that a devaluation or depreciation improves the trade balance and appreciation or revaluation worsens it.⁶ When output is below full employment and there are no bottlenecks limiting output, its growth rate is determined by the proportional change in the exchange rate and the sum of the trade elasticities.

In a one commodity model the rate of change of the real exchange rate is the rate of change of the nominal rate minus the rate of inflation. If the prices of domestic goods are constant due to excess capacity, and the market for imports is competitive in the

neoclassical sense, the rate of inflation (p') must be the change in the nominal exchange rate times the marginal propensity to import share ("pass through rate").⁷

$$e' = (E' - P') = (E' - a_3E') = (1 - a_3)E'$$

$$\begin{aligned} 1.5) \quad y' &= \epsilon_T e' = \epsilon_T(E' - p') = \epsilon_T(1 - a_3)E' \\ &= \epsilon_T(1 - a_3)E' \end{aligned}$$

To investigate the Mundell-Fleming analysis of monetary policy I must include money in equation 1.5. Using familiar specifications, the nominal demand and supply for money be:

$$2) \quad M_D = vpy + a_6r \quad (\text{nominal money demand})$$

$$M_S = M^* \quad (\text{nominal money supply})$$

$$M_S = M^* = vpy + a_5r \quad (\text{equilibrium})$$

Where p is the price level, M^* is the nominal money supply set by the "monetary authorities", v is the velocity of money, and a_5 is the derivative of money demand with respect to the domestic interest rate. From equation 2 it follows that if the velocity of money and the interest rate are constant, the inflation rate is

$$\begin{aligned} 2.3) \quad p' &= M' - y' \\ a_3e' &= M' - y' \\ e' &= (M' - y')/a_3 \end{aligned}$$

Substitute for e' in equation 1.5:

$$2.4) \quad y' = [(1 - a_3)\epsilon_T/a_3][M' - y']$$

Again, solve for y' ,

$$2.5) \quad y = (1 - a_3)\epsilon_T/[a_3 + \epsilon_T(1 - a_3)] M'$$

Dividing through by M' completes the algebra for the index of effectiveness of monetary policy in the case of perfect capital flows. The only parameters are the marginal propensity to import and the trade elasticities:

$$3) \quad \epsilon_{y,m} = [(1 - a_3)\epsilon_T]/[a_3 + (1 - a_3)\epsilon_T]$$

Equation 3 is the corrected Mundell-Fleming case of perfect capital flows. It is immediately obvious that the effectiveness of monetary policy declines as the import

share rises (a_3) and the trade elasticities decline (\mathcal{E}_T). The larger is the import share, the greater will be the price impact of a nominal devaluation. The lower is the sum of the trade elasticities, the larger must be the devaluation in order to maintain the balance between imports and exports. In a closed economy, the effectiveness of monetary policy is one (100 percent). Below full employment an increase in the money supply increases output by the same proportion as the increase in the money base. In an open economy, effectiveness is reduced by two mechanisms. First, the depreciation of the nominal exchange rate causes a rise in the domestic price level that makes the increase in the real money supply less than the nominal increase, and simultaneously renders the real depreciation less than the nominal. This effect is determined by the marginal propensity to import. Second, for any real devaluation, the increase in output will be less the lower is the sum of the trade elasticities.

I consider how important these effects are in practice after deriving the analogous measure for fiscal policy. Beginning from the equation for national income equilibrium,

$$4) \quad y = c + i + g + (x - z)$$

Substituting the behavioral relationships produces the following:

$$y = a_6(y - a_8y) + i^* + a_7r + g + [(x^* + a_1e) - (a_2e + a_3y)]$$

$$y = \alpha[i^* + a_7r + g + x^* + (a_1 - a_2)e]$$

The symbol α is the open economy multiplier (see Chapter 12, annex, and Chapter 1 Section 3 for the closed economy case). As before, with the interest rate constant because of perfect capital flows, the total derivative is:

$$dy/y = y' = \alpha[dg/y + [a_1 + a_2]de/y]$$

As before, I convert the trade coefficients to elasticities and substitute to obtain the nominal exchange rate. In the case of fiscal policy imports can exceed exports because of a balancing capital inflow. The relative trade balance as $\beta_1 = x/y < 1$. The sum of trade elasticities is now $\mathcal{E}_T^* = (\beta_1\mathcal{E}_1 + \mathcal{E}_2)$, which is less than \mathcal{E}_T .

$$4.1) \quad y' = \alpha[(g/y)g' + \beta_2\mathcal{E}_T^*(1 - a_3)E']$$

Where g' is the rate of change of government expenditure. β_3 as the share of government expenditure in national income.

$$y' = \alpha[\beta_3 g' + \beta_2 \mathcal{E}_T^* (1 - a_3) e']$$

As before, $a_3 e' = M' - y'$, but there is no change in the nominal money supply, so $M' = 0$. Substituting $e' = -[y/a_3]$, and y' as a function of g' :

$$y' = [\alpha\beta_3 g'] / [1 + \beta_1(1 - a_3)\alpha\mathcal{E}_T^*]$$

As for monetary policy, I divide both sides by the rate of change of public expenditure.

$$\mathcal{E}_{y,g} = y'/g' = [\alpha\beta_3] / [1 + \beta_1(1 - a_3)\alpha\mathcal{E}_T^*]$$

The demand effect of any expenditure is determined by the multiplier and the share of that expenditure in national income. This differs from monetary policy, where the measure of effectiveness is independent of the size of the expansion of the money base. A further complication that does not appear in the measure of effectiveness of monetary policy that the import propensity is one of the determinants of the multiplier. As explained above, when a fiscal expansion occurs, the appreciation lowers domestic prices, which has an expansionary effect via the real money supply, and the trade impact is mitigated by the real appreciation being less than the nominal. However, while a higher import intensity increases both of these effects, it also reduces the impact of the fiscal expansion by reducing the multiplier.

To make the fiscal effectiveness measure independent of the share of government expenditure and account for the decline in the multiplier as the import propensity rises, I use the closed economy multiplier effect as the denominator. The denominator is the measure analogous to that for monetary policy. For a closed economy the denominator is one, and greater than one for an open economy, increasing as the propensity to consume and the trade elasticities increase. Both the effectiveness of monetary policy and fiscal policy take a maximum value of one in a closed economy because \mathcal{E}_T^* would be zero.

$$4.2) \quad \text{EFP} = 1 / [1 + \beta_1(1 - a_3)\alpha\mathcal{E}_T^*]$$

As for monetary policy, the marginal propensity to import (a_3) and the trade elasticities (\mathcal{E}_T) influence the effectiveness of fiscal policy, with the addition of the multiplier.

To summarize, fiscal policy, like monetary policy, is always less effective in an open economy. However, the domestic price effects of exchange rate adjustment that reduce the effectiveness of monetary policy work in the opposite manner for fiscal policy, though this is dampened by the impact of openness on the multiplier. Monetary policy is weakened by the depreciation reducing the real money supply and dampening the real exchange rate movement. These two effects increase as the propensity to import rises and the trade elasticities fall. For fiscal policy, given the trade elasticities, the opening to trade causes a sudden decline in effectiveness, after which it rises as the propensity to import increases. This is the currency depreciation effect working, increasing the real money supply (the nominal supply is constant).

The effectiveness index for both policies as the import propensity rises is shown in Figure 14.1. The figure uses a sum of trade elasticities (.50) found in empirical studies to be typical advanced countries (Kenen 1994, 356; Hooper, Johnson and Marquez 2000, 9). For the assumed sum of trade elasticities the two policies are equally effective (about thirty percent) for an import propensity of .52. At lower import propensities monetary policy is more effective. In Figure 14.2 the import propensity is held constant at .30 and the trade elasticities vary. For elasticities greater than .62 monetary policy is the more effective, and for lower elasticities effectiveness is reversed.

Figures 14.1 and 14.2 use arbitrary numbers, but demonstrate the general rule: for any country, the effectiveness of the two policy instruments can only be determined empirically; no generalization is possible. Effectiveness is determined by the degree of openness, the production characteristics of exports and import substitutes (the short term trade elasticities), and the characteristics of the foreign exchange market (its depth and competitiveness). On the basis of this general conclusion, I consider policy implications in the next section.

Figure 14.1: Effectiveness of Monetary and Fiscal Policy as a function of the import propensity, constant sum of trade elasticities (.5)

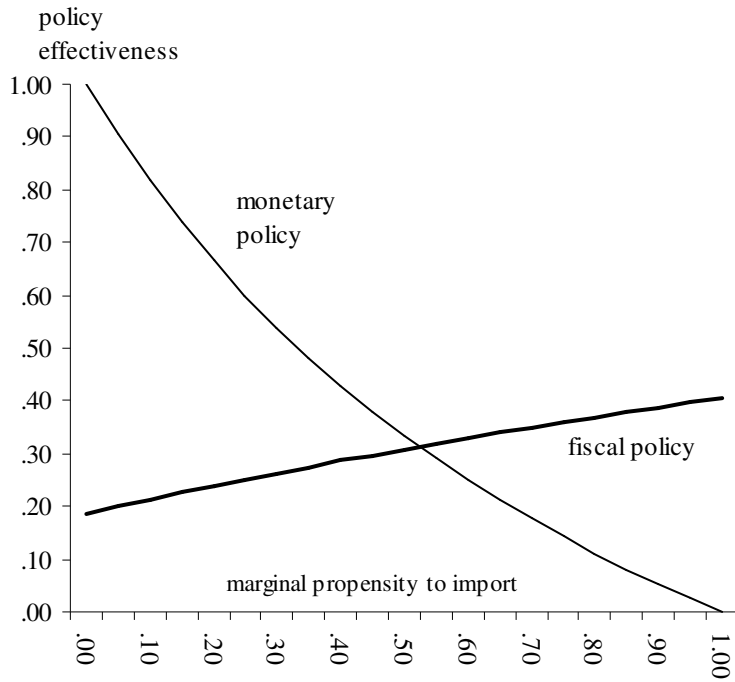
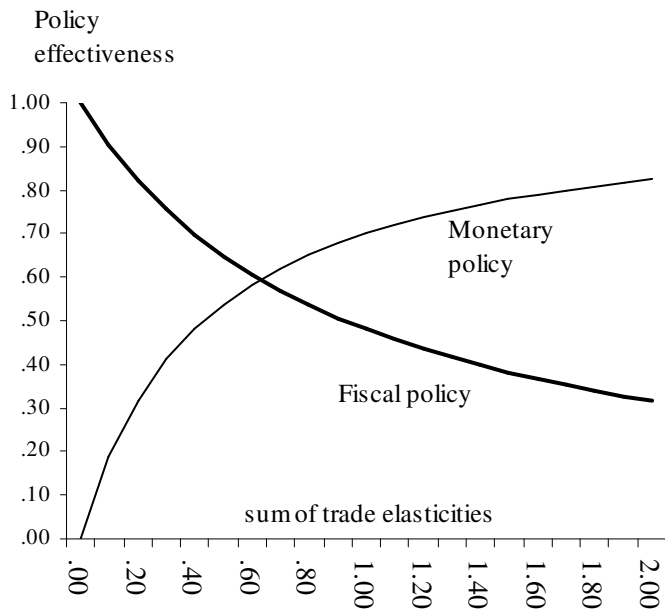


Figure 14.2: Effectiveness of Monetary and Fiscal Policy as a function of the trade elasticities, constant import propensity (.30)



14.3 Policy Implications

Parts I and II of this book dealt with a closed economy with no government sector, and the only variable not the result of the behavior of households and firms was the money supply. Consideration of an open economy required the introduction of a government sector with expenditures and revenues and the choice of exchange rate regimes. With the introduction of policy choices into the model, the critique can no longer be purely logical, and must consider empirical evidence. To explain the importance of considering empirical evidence, I review the conclusions of the last section.

The open economy algebra showed that the net effect of the import share and the trade elasticities are opposite for fiscal and monetary tools. *In the case of monetary policy*, expansion results in a potential depreciation, implying that a higher propensity to import creates exchange rate induced price increases, and these affect both the real money supply and the real exchange rate, such that effectiveness is *reduced*. Higher trade elasticities *increase* the effectiveness of monetary policy by the reducing the depreciation necessary to reach equilibrium. As the sum of the elasticities approaches infinity, the required devaluation approaches zero, and the effectiveness of monetary policy approaches its maximum value of one.

In the case of fiscal policy, because an expansion results in a potential appreciation, a higher propensity to import implies greater exchange rate induced price *decreases*, which raise the real money supply and imply that a nominal appreciation results in a smaller real appreciation. In a closed economy, the higher is the multiplier the greater is the impact of a fiscal expansion on output. For an open economy the opposite is the case. A lower multiplier, for example via a higher marginal tax rate, *raises* the effectiveness of fiscal policy for the same reason that lower trade elasticities do, by reducing the potential demand depressing effect of appreciation through its trade impact. Low trade elasticities *enhance* fiscal policy by reducing the multiplier impact of any appreciation on exports (negative) and imports (positive).

Which policy will be more effective with a flexible exchange rate will depend on the values of the key parameters, the import share and the trade elasticities, which requires explicit consideration of their empirical values. For highly open economies with

low trade elasticities and high tax rates, fiscal policy would tend to be more effective, while the opposite holds for monetary policy.

In addition to these empirical relationships there is another, a government's foreign exchange holdings. The purpose of a floating exchange rate is automatically to equilibrate the external account, or bring it to a sustainable balance, without the need for active exchange rate management. To achieve this purpose, the exchange rate adjustment must be realized in a finite time period. This is in contrast to analyzing relative price adjustments in a closed economy, when is no endogenous variable or process to force consideration of the chronological dimension of the abstract equilibration process.

In the case of an open economy the limiting variable is foreign exchange holdings. For the United States, the European Union and Japan this may not be an immediately binding constraint because the US dollar, Euro and Yen are held as currency reserves by other countries. For the other countries the exchange rate adjustment to a sustainable balance of payments position must occur before foreign reserves fall to a level that threatens macroeconomic stability.

One of those frequently occurring clashes between neoclassical theory and reality appears with the policy shift from fixed to flexible exchange rates, and the associated increase in the ease of capital flows. While in theory this shift brings stability to the balance of payments through automatic adjustment, in reality it requires institutional protection against exchange instability by greater foreign currency holdings. This was pointed out in 2001 by the First Deputy Managing Director of the IMF:

[Hard currency] Reserves matter because they are a key determinant of a country's ability to avoid economic and financial crisis...Following the turmoil of the last few years, crisis prevention has emerged as a central priority... For much of the post-war period, the rule of thumb was that reserves should be sufficient to pay for three or four months of imports... But the growth of capital flows...has prompted a revolution in the way we think about the adequacy of reserves. The availability of capital flows to offset current account shocks should...reduce the amount of reserves a country needs. But access to private capital is often uncertain, and inflows are subject to rapid reversals. (Fischer 2001, 3)

This statement tells us that flexible exchange rates and deregulation of capital flows created exactly the exchange rate instability that theory predicted that they would eliminate. As a consequence, the need for reserves increased in practice.⁸

This change in thinking about reserve adequacy has been matched by what countries are actually doing...In terms of the traditional measure, import coverage has increased from 6 months in 1997 to 7 months in 2000 for emerging market economies. (Fischer 2001, 4)

Table 14.1 shows the level of reserve holdings of selected regions and countries during 2006-2008. Inspection of the table reveals that by the six to seven month criterion, many if not most "emerging market economies" needed to accumulate larger reserves: the sub-Saharan countries, the countries of Central and Eastern Europe, the CIS countries other than Russia, and most of the Latin American countries including Mexico. In addition to its obviously depressing effect on aggregate demand, the need to accumulate reserves implies that the period over which the exchange rate must adjust the balance of payments to a sustainable position would in practice be less than a year.

For such a short time period, one would expect the exchange rate elasticities for imports and exports to be quite low, as assumed in Figure 14.1 (Kenen 1994, Chapter 14). An expansion of manufacturing exports should be achieved faster than for agricultural exports, and even for manufactures it would depend on the period of production in the absence of substantial inventories. Assuming the existence of large inventories would be arbitrary, as well as inconsistent with maximizing behavior. It would be the extension of the Walrasian general equilibrium assumption of exchange but no production to an open economy.

On the import side the elasticity would be determined by the availability of domestic substitutes and the supply conditions governing the production of those substitutes. Empirical evidence indicates that the smaller and less developed a country, the less potential for import substitution, so the lower the import demand elasticity. As for exports, substitution for manufactures should be more elastic in the short term than for agricultural commodities.

As shown in Table 14.1, these empirical factors suggest that if the exchange rate adjustment must be achieved within a few months the combined export and import elasticities, if positive, are likely to be less than unity. Therefore, with some confidence one can conclude that:

1. a floating exchange rate is unlikely to equilibrate the balance of payments of most countries within the time period required to make this a practical policy alternative; and
2. the tendency for short-term trade elasticities to be low implies that for many if not most countries, with *a floating exchange rate and perfect capital mobility* fiscal policy is likely to be more effective than monetary policy.

14.4 Summing up the Open Economy

Neoclassical economics fosters the economic equivalent of the famous quotation of Thoreau, "that government is best which governs least".⁹ It justifies this anti-interventionist dogma by the argument that unregulated markets generate economically and socially efficient outcomes. The first two parts of this book demonstrated that only under extremely restrictive assumptions could this argument be logically sustained in the simplest case of a closed economy with one commodity.

Notwithstanding this analytical failure, the neoclassicals attempt an extension of the closed economy non-interventionism into the open economy, built on two policy assertions: 1) flexible exchange rates are technically superior to fixed exchange rates; and, as a consequence, 2) monetary policy is technically superior to fiscal policy for macroeconomic management. These assertions have no relevance for the economic efficiency which unregulated markets are alleged to achieve, because open economy analysis refers to conditions of less than full employment. If the open economy analysis were strictly equivalent to that of the closed economy, and maintained that unregulated markets resulted in full employment general equilibrium (including balance of payments equilibrium), the result would be no more than the closed economy with one more price (the exchange rate) and a few more variables (exports, imports and capital flows). Because the model remains theoretically limited by the assumption of a single product and unable to distinguish between domestic and foreign commodities except in name, the extension would be to no purpose.

Thus, the two policy assertions refer to what a government should do or not do in circumstances of less than full employment. First, a government should not fix the

exchange rate because this limits its ability to pursue other policy goals. Second, having chosen not to fix the exchange rate, a government cannot use fiscal policy effectively as an instrument of economic management. This chapter demonstrated that both policy assertions are false. In order to be effective in maintaining a sustainable balance of payments, a flexible exchange rate must adjust to an external shock within a short period of chronological time. Its ability to do this is determined by two specific parameters, the marginal propensity to import and the elasticity of trade flows with respect to the real exchange rate. The actual values of the former and likely values of the latter make such an adjustment improbable for most countries.

The same parameters that make an automatically equilibrating exchange rate adjustment unlikely imply that were it achieved, imply that the relative effectiveness of monetary and fiscal policy must be determined empirically, not by theoretical generalization. Once the analysis passes from the abstract to the practical, it produces generalizations that contradict the standard textbook conclusions. The explicit implication of the Mundell-Fleming model is that flexible exchange rates and the greater effectiveness of monetary policy are associated with greater degrees of openness to trade; i.e., a higher import share in GDP. However, the algebra of the model shows the reverse to be the case. As the import share decreases, the price level effect of devaluation also decreases, which increases the effectiveness of monetary policy by reducing the difference between the nominal and real money supplies following adjustment to an increase in the former. This also implies that the difference between the nominal and real devaluation is reduced.

An irony of the Mundell-Fleming model is that while Mundell's version was developed with Canada in mind (a small open economy), its conclusion favoring the use of flexible exchange rates and monetary policy would be more appropriate, if at all, to large, relatively closed economies such as those of the United States, Japan and China. Why the simple and obvious analytical relationship between the exchange rate and domestic prices could be overlooked for so long remains a mystery.

Table 14.1: Foreign Reserve Holdings in Months of Imports,
Selected Regions and Countries, 2006-2008

Region or Country	<u>2006</u>	<u>2007</u>	<u>2008</u>
Africa	8.3	8.6	8.3
sub-Sahara	5.5	5.6	5.2
excl Nigeria&SAfrica	4.7	4.7	4.5
Central&Eastern Europe	4.4	4.4	3.8
Commonwealth of Independent States (CIS)			
Russia	17.0	19.8	13.7
excluding Russia	5.0	5.1	4.5
Asia			
China	15.0	17.8	19.6
India	9.1	11.4	9.5
others	5.1	6.0	5.1
Western Hemisphere	5.4	6.5	6.0
Brazil	8.5	13.7	10.5
Mexico	3.3	4.6	3.4

Source: IMF 2009.

Part V: Paradigm Regained: Reclaiming Policy

Main points

Chapter 15 De-commissioning Policy Tools

1. The overall ideological message of the neoclassical macro model is that policy intervention is not necessary in a market economy. Fiscal policy should focus on balanced budgets, monetary policy should be governed by a non-discretionary rule, and exchange rates should float.
2. The purpose of this policy neutrality is to remove economic policy from public control and oversight, justified by pseudo-technical arguments and dismissal of democratic participation as "populism".
3. A capitalist economy fit for humanity requires rejection of the automatically adjusting neoclassical dogma and introduction of basic reforms to regulate markets in the public interest: countercyclical fiscal policy, public control of the financial sector, a basic income, and protection of the right for workers to organize.

Chapter 16 The Critique Summarized

The purpose of this book was to refute the fundamental macroeconomic "parables" of neoclassical theory:

1. an increase in employment requires a lower "real wage";
2. increases in the price level are proportional to increases in the money supply; and
3. in an open economy with a flexible exchange rate monetary policy is effective and fiscal policy is not.

15 De-commissioning Policy Tools

15.1 Introduction

Macroeconomic analysis divides into are two broad theoretical approaches, the demand constrained and price constrained frameworks. *A price determined economy* is either in a unique full employment general equilibrium, or prevented from achieving that general equilibrium by private or public price "distortions". *An economy is demand determined* when its level of output is limited by one or all of the components of aggregate demand: consumption, private investment, government expenditure, or exports.

What appears as an intellectual division is the ideological manifestation of the fundamental political struggle in almost all advanced capitalist societies, between the tiny minority that controls production and finance, and the vast majority that work for the minority. The price determined framework is non-credible to the point of absurdity and beyond. In no other intellectual discipline would such a chaotic collection of logical inconsistencies and arbitrary assumptions be taken seriously. The price constrained framework is based on an unambiguously false premise: that the normal conditional of capitalist economies is full employment. Yet, the price constrained framework dominates mainstream economics, the media and political debate. The demand constrained framework, as obviously sensible as its opposite is absurd, has been relegated to the margins of the discipline.

This inversion, in which the absurd is embraced as science and science is dismissed as absurd, reflects the great victory of the minority over the majority during the final decades of the twentieth century after a brief interruption during the middle of the century (Foley 2006). For almost sixty years, 1870-1930, a relatively primitive form of the price constrained framework dominated the emerging economics profession. During its early stages of development, the undisguised purpose of leading economists was to refute Karl Marx and justify capitalism.¹

Two great human disasters prompted a rebellion against the free market doctrine, the Great Depression and the Second World War. It was obvious that the first resulted from the excesses of a capitalism unconstrained by public regulation. The second was the

consequence of the first, and denying this chain of causality requires considerable intellectual invention. By the end of the war a broad consensus emerged in Europe and North America that the excesses of capitalism demanded strict regulation of markets, and especially of the financial sector. This consensus could be found in the most prestigious journal of the profession, the *Economic Journal*, where K. W. Rothschild asserted that fascism was the fruit of unregulated markets:

...[W]hen we enter the field of rivalry between [corporate] giants, the traditional separation of the political from the economic can no longer be maintained. Once we have recognised that the desire for a strong position ranks equally with the desire for immediate maximum profits we must follow this new dual approach to its logical end.

Fascism...has been largely brought into power by this very struggle in an attempt of the most powerful oligopolists to strengthen, through political action, their position in the labour market and vis-à-vis their smaller competitors, and finally to strike out in order to change the world market situation in their favour. (Rothschild 1946, 317)

It is now clear that the minority that controlled production and finance considered this consensus a temporary arrangement to be destroyed as soon as possible, because its main economic consequence was to limit the freedom of capital. Those who judged the post war regulated capitalism as a new norm would be quickly proved wrong. The system of international regulation of exchange rates ended in 1970, deregulation of the financial sector in the United States and parts of Europe began in the 1980s, and the decline of the political base for a managed capitalism, the trade unions, fell into secular decline in most advanced countries. The collapse of the Soviet Union complemented these trends, eliminating the global rival to unmanaged capitalism.

The purpose of destructing of the post war regulatory consensus was to liberate capital from civilizing constraints. The macroeconomics of Keynes and those he influenced provided both the theoretical explanation for why these constraints were needed and the practical policy tools to manage an economy within those constraints. The "Keynesian revolution" briefly institutionalized the singularly sensible principle that governments have policy tools that they can use to pursue the welfare of the populations

they were elected to serve. The most important of the tools are fiscal policy, monetary policy and management of the exchange rate. The active use of all these tools was implied by another sensible proposition, the Tinbergen Rule, that achieving several policy goals requires an equal number of policy instruments.² For example, a government seeking internal and external stability would use fiscal policy to reach a desired unemployment rate, monetary policy to make that unemployment rate consistent with a target inflation rate, and adjust the exchange rate to maintain a sustainable balance of payments.

The obviously sensible proposition that governments should use the tools available to them to pursue the public welfare, while enforcing constraints on the excesses of capitalism, would be discredited by repeated ideological attacks beginning in the 1970s. The constraints would be dismantled and tools de-commissioned by increasingly reactionary governments. Against weak internal opposition the economics profession would provide the ideology for the de-commissioning of the policy tools to support those constraints.

15.2 De-commissioning Fiscal Policy

Until the Great Depression of the 1930s macroeconomic policy in the advanced countries mean monetary policy, with exchange rates tied to an international gold mechanism and fiscal policy constrain by the goal to balance public budgets. Fiscal policy was used by a few governments during the depression, notably in the United States, but in an *ad hoc* manner. Perhaps the first clear legal commitment to an active fiscal policy was the US Full Employment Act of 1946 (Stein 1969), the preamble of which states,

The [US] Congress hereby declares that it is the continuing policy and responsibility of the Federal Government to use all practicable means...with the assistance and cooperation of industry, agriculture, labor, and State and local governments...to promote maximum employment, production, and purchasing power.

In the early 1970s, elements in the economics profession would initiate an assault on this legal commitment, with an analytical de-commissioning of fiscal policy. The de-

commissioning story was developed in detail in Parts I and II. In the simple case of a closed, price constrained, one commodity economy with no public sector, all markets clear in an instantaneous process. No exchanges occur at prices other than those in the price set which would prevail at full employment general equilibrium (no 'false trading'). Consumers and producers take prices as 'signals' to determine the quantities they buy and sell. In this system governments have no role except the enforcement of contracts and keeping public order.

Thus, the first argument to decommission fiscal policy is that it is unnecessary. It cannot contribute to employment, which would achieve its maximum possible value automatically. However, this is rather weak argument against fiscal policy, if the economy is plagued by unemployment. The argument that an active fiscal policy is unnecessary is reinforced by two mutually complementary arguments, that the unemployment one observes is almost entirely voluntary, and an active fiscal policy would make unemployment, voluntary or involuntary, worse.

Pre-Keynesian economists argued that the unemployment one observes is voluntary, the result of minimum wages and trade union pressure in labor negotiations. The membership and economic strength of trade unions declined in most advanced countries, and problems of enforcement and erosion through inflation made minimum wages a weak reed for a general theory of voluntary unemployment. Unemployment compensation itself, a major reform arising out the Great Depression, offered an alternative explanation: unemployment persists because payments to the unemployed reduce the incentive to seek work, an argument that would garner the Nobel Prize in Economics in 2010. The argument carries great political power, because it converts involuntary misery into willing avoidance of work, and cautions that well-meaning reforms make matters worse.

The combination of Walrasian general equilibrium and benefit-induced unemployment are necessary elements to de-commission fiscal policy. The sufficient argument is that active fiscal measures, even if they were to temporarily reduce unemployment, are intrinsically undesirable. An active fiscal policy is rendered undesirable through three complementary and equally fallacious arguments, all focusing

on public sector deficits: direct crowding out of private expenditure, inflationary impact and reduction of private confidence.

The possibility that a fiscal expansion might directly reduce private expenditure (crowding out) would be realized through a rise in interest rates. As explained in Chapter 12, if the economy is below full employment, the extent of crowding out depends on how a fiscal expansion is financed and the elasticity of investment with respect to interest rates. In a recession the latter will be low, and crowding out is completely avoided by monetizing the fiscal expansion. The fiscal-expansion-causes-inflation argument is in part designed to rescue the crowding out argument. Financing through bond sales is rejected because of its putative impact on interest rates and private investment. The alternative method of finance, monetization, is slandered as "printing money" and alleged to be invariably inflation causing.³ The neoclassical macro model unambiguously concludes that an increase in the money supply when an economy is below full employment increases output, and the accompanying increase in the price of output is not by any definition inflationary, but a necessary adjustment to a lower real wage (see Chapters 5 and 6).

One is left with the private sector confidence argument, whose great strength lies in its vagueness, making it almost impossible to refute. In 2010 the right wing British government presented this argument under the imaginatively oxymoronic title of an "expansionary fiscal contraction". The essence of this and similar arguments against fiscal policy is that the a public sector deficit and the debt it creates themselves are a direct cause of the reduction of private sector "confidence", which results in a fall in private sector investment. At the end of the 2000s and into the following decade, the marginally more plausible crowding out argument could not be made because nominal interest rates were close to zero and could not fall more.

The more respectable version of this anti-deficit argument suggests that private agents consider that a fiscal deficit is equivalent to a future tax increase, and reduce their expenditures accordingly (so-called Ricardian equivalence).⁴ Even were this the case, the increase in the individual tax burden would be very low, as well as discounted into the future. Irvin demonstrated the absurdity of this argument, pointing out that it opportunistically stresses the cost of public borrowing while ignoring the cost of the

output foregone if the absence of a fiscal stimulus.⁵ All such arguments against public deficits and debt fail to accept that the public bonds held by the private sector are income generating assets. If they represent outside wealth (see Chapter 7), then they should stimulate private expenditure. If the Ricardian Equivalence holds, then they are inside wealth and cancel themselves out.

These ideological arguments against an active fiscal policy have in supported political moves in the US Congress to restrict the federal government from deficit finance, such as the Budget Enforcement Act of 1990. The essential purpose of this and other legislation to restrict public sector deficits is to remove fiscal policy from the democratic process, however flawed that process may be. The de-commissioning of fiscal policy becomes presented as a technical measure, designed to prevent irresponsible politicians from embarking on "populist" vote-buying expenditure programs that undermine the general welfare (Dornbusch and Edwards 1991). The minority that controls production and finance had made considerable progress in de-commissioning fiscal policy by the second decade of the twenty-first century. In the case of monetary policy its de-commissioning was almost complete.

15.3 De-commissioning Monetary Policy

One of the few progressive aspects of US economic policy institutions is the mandated political oversight of the central bank, the Federal Reserve System. This oversight is through required reports to Congress, which typically takes the form of testimony by the FRS chairman. In addition there is a requirement that the board of governors of the Federal Reserve System have "fair representation of the financial, agricultural, industrial, and commercial interests and geographical divisions of the country". Perhaps more important, the Federal Reserve System has a mandate that requires it to consider employment as well as inflation: "to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates" (Mishkin 2007). In practice the effectiveness of the political oversight has waxed and waned.

Conventional wisdom holds that in the final decades of the twentieth century the power of central banks increased dramatically in almost all countries, including the United States. The truth is quite the opposite. The role of central banks in most

countries, advanced and underdeveloped, narrowed substantially towards the end of the twentieth century. The vehicle for this narrowing was their so-called operational independence.

The inherently reactionary nature of neoclassical economics is manifested in a broadly held preference in the profession for the complete separation of central banking from political oversight. This predilection is justified by the argument that political influence will result in central banks pursuing reckless monetary expansion as it is forced to fund populist fiscal policy. Vindication is found in evidence allegedly showing that the more independent a central bank, the lower the inflation rate in a country (Grilli, Masciandaro and Tabellini 1991; Crowe and Meade 2008).

The so-called independence of central banks, a dogma zealously pursued by the International Monetary Fund, is profoundly anti-democratic. The essence of the argument is that monetary policy is a technical matter, and any degree of democratic oversight results in reckless and irresponsible policies. As for fiscal policy, monetary decisions are not a matter for public involvement, but should be under the dictatorship of a technical elite.

15.4 Who Decides Policy?

As shown Chapter 14, the neoclassical version of an open economy reaches the conclusion that flexible exchange rates automatically bring external balance, leaving governments free to concentrate fiscal and monetary policy on domestic goals. However, an active fiscal policy is rejected as unnecessary (the domestic economy will correct itself automatically) and counter-productive (deficits crowd out private expenditure). While monetary policy is necessary, its focus should be control of inflation. Taken together, these allegedly technical arguments produce a profoundly reactionary program of public sector inaction.

The reactionary program is especially pernicious because it need not be defended on its intrinsic merits. Its ultimate justification is the famous TINA principle: there is no alternative. The theoretical conclusion that flexible exchange rates stabilize economies may prove wrong, but would be of no practical consequence because there is no alternative. A balanced public budget may have a pro-cyclical effect on the economy,

depending recessions and exaggerating booms, but deficits would produce worse outcomes. Using monetary policy in the single-minded pursuit of lower inflation may result in persistent unemployment and slow growth, but failing to do so courts disaster.

This book has demonstrated that power of these arguments derives from their repetition, not from their theoretical or empirical validity. They are all based on a theory which is internally contradictory and ideologically driven. Prior to summarizing the critique in the final chapter, the fog of neoclassical ideology can be cleared in a simple manner. The fundamental issue in a democratic society is not whether inflation, deficits or unemployment are too high or too low. The fundamental issue is, who decides? The general rule in democratic societies is that experts advise and democratically elected representatives decide. Mainstream economics provides the ideological foundation for canceling that rule for social policy: elected representatives enact laws that make the advice of neoclassical experts legally binding. Thus is the danger that the many will pressure for policy that limits the privileges of the few is minimized.

15.5 Capitalism Fit for Human Life

There is an alternative to the Hobbesian neoclassical world in which the capitalist minority defines and limits social and economic policy.⁶ As happened in the 1930s in the United States, the crisis of the 2000s demonstrated that a range of government actions could be effective to rescue national economies from collapse. The experience of the United States and Western Europe after the Second World War, during the so-called gold age of capitalism, suggests the component parts of the alternative. However, the reconstruction of that managed capitalism will require the reassertion of the strength of the trade unions in the advanced countries.

Controlling capitalism would require four fundamental reforms, whose purpose would be to severely restrict the economic and political power of capital.⁷ First, because capitalist economies do not automatically adjust to full employment, governments must institutionalize an active countercyclical program. The active element in the countercyclical program would be fiscal policy, supported by an accommodating monetary policy, and, if necessary, with exchange rate management and capital controls to stabilize the balance of payments.

Countercyclical policies, and many other sensible and humane economic measures, are dismissed as impractical because of the alleged affect they might have on "financial markets". This personification of markets, universal in the media and appallingly common in the economics profession, is an essential part of the justification of a capitalist economy free from the constraints of democratic oversight. This personification is general across all types of markets, as if the market itself were an independent actor in society. In the twenty-first century it became integral to the justification of a socially dysfunctional financial system, national and global.

This personification is an abstraction from the real world of speculators and financial fraud, and is an essential part of the mystification of financial behaviour. It facilitates the mythology that the dysfunctional financial system is not the work of men and women (mostly the former) within institutions with socially irrational rules and norms, but rather a manifestation of the inexorable operation of the laws of nature that no government can change. It seeks to hide that it is not "markets" that "want" governments to reduce fiscal deficits, but a specific collection of financial speculators that coerce governments to take actions in their narrow economic interests.

While it is in the interests of capital to exaggerate the reaction and power of finance, the dire warnings about the reaction of financial markets carries some truth. The solution to this threat to humane macro policies to tame those market rather than yield to them. The manner to tame them is public control of the financial sector, in part through direct nationalization and in part by conversion into non-profit or limited profit institutions such as mutual societies and savings and loan institutions (building societies). Even in the United States, the heartland of minimalist public regulation, non-profit and limited profit institutions are or have been common.

Third, government regulation of internal markets would be based on the principle in the constitution of the International Labor Organization that "labor is not a commodity".⁸ The purpose would be to eliminate unemployment as a form of labor discipline. The most effective method to achieve this would be a universal guaranteed minimum income program.⁹ A properly designed universal income program would facilitate labor mobility, and provide an automatic stabilizer at the based of the economy, the labor market.

Fourth, and the basis for all of all others would be the protection of workers' right to organize. The program of fundamental reform of capitalism would be based on the political power of the working class, in alliance with elements of the middle classes. This is the political alliance that brought about major reforms throughout Europe after the Second World War. An effective reform of capitalism that eliminates its economic and social outrages requires a democracy of labor and its allies in which the political power of capital is marginalized.

For three hundred years a struggle has waxed and waned to restrict, control or eliminate the ills generated by capitalist accumulation: exploitation of labor, domestic class and ethnic repression, international armed conflict, and despoiling of the environment. When the great majority has allied, this struggle has brought great strides. When capitalists, the tiny minority, have been successful in creating their own anti-reform and counter-revolutionary majority much is lost. The last thirty years of the twentieth century and into the twenty-first was such an anti-reform period during which capital achieved a degree of liberation it had not enjoyed since before the Second World War. With the rise of capital many of the madder elements of neoclassical economics, such as financial speculation, manifested themselves in reality, nature imitating bad art.

At the beginning of this chapter I pointed out that the sufferings caused by the Great Depression of the 1930s, quickly followed by the horrors of the Second World War, generated a broad consensus in the developed countries of the need for public intervention to protect people against the instability and criminality that results from the accumulation of economic and political power by great corporations. Franklin Roosevelt, four times elected president of the United States, had this dangerous power in mind when he addressed the US Congress in 1938:

Unhappy events abroad have retaught us two simple truths about the liberty of a democratic people. The first truth is that the liberty of a democracy is not safe if the people tolerate the growth of private power to a point where it becomes stronger than their democratic State itself. That, in its essence, is fascism—ownership of government by an individual, by a group or by any other controlling private power. The second truth is that the liberty of a democracy is not safe if its business system does not provide employment and produce and distribute goods

in such a way as to sustain an acceptable standard of living. Both lessons hit home. Among us today a concentration of private power without equal in history is growing.

The advanced industrial countries, especially the United States and the United Kingdom, reached the point early in the twenty-first century in which private power was stronger than "their democratic state". This private power manifested itself in unconstrained corporate power that over-rides democratic decisions, justified by an ideology of self-adjusting markets. Reject of that ideology and fundamental reform of those markets is required to prevent unconstrained corporate power from a latter-day fulfillment of Roosevelt's warning against fascism.

16 The Critique Summarized

16.1 Purpose of this Book Restated

The purpose of this book has been to analyze critically neoclassical macroeconomics *as it is taught*. The presentation went into considerable detail, and the reader might have lost track of the basic purpose, especially in the political argument of the last chapter. The basic purpose was to refute the fundamental macroeconomic "parables" of neoclassical theory: other things equal, (1) more employment requires a lower "real wage" (commodity wage); (2) increases in the price level are proportional to increases in the money supply; and (3) in an open economy with a flexible exchange rate monetary policy is effective and fiscal policy is ineffective.

Each parable can be restated in the more journalistic and ideological form in which one frequently encounters them: (1) cutting wages will bring full employment; (2) inflation is the result of increases in the money supply; and (3) monetary policy is effective and fiscal policy is not.

Before summarizing the critique, I should be clear exactly what I mean by 'refute'. No attempt was made at an empirical refutation. Whether in practice increased employment can be found to be associated with a reduced value of price-deflated wages (for example) is largely irrelevant to the issue considered here: can it be demonstrated in theory (logic) that the former follows from the latter? If a theory is logically flawed, empirical evidence for its predictions is no support. It implies that the theory may occasionally yield the appropriate prediction, but has the wrong explanation. Geocentric celestial theory yielded roughly accurate predictions of major astronomical events, but it was wrong; the sun does not circle the earth.

More important, it was the wrong framework in which to consider those events. In a sentence, the purpose of this book has been to provide *prima facie* logical evidence that the basic neoclassical model is the wrong way to think about economies in the aggregate. This is not to say that the theory is totally wrong or that it does not provide useful insights. But notwithstanding advanced and esoteric qualifications, the heart of standard macroeconomics, as evidenced by the way its wisdom is distilled and passed on to each new generation, is the single commodity supply side, neutrality of money, and Walrasian

market clearing. These were the basic principles of pre-Keynesian ("classical") economics, and remain the core of synthesized macroeconomic wisdom to this day. Any textbook, undergraduate or graduate, which does not base itself on these principles is considered an eccentric curiosity unworthy of serious notice.

16.2 Self-adjusting Full Employment

In Chapter 1 the critique began with the manner in which neoclassical economics conceives of the circulation of commodities and money in a capitalist society, "the circular flow of income". Treatment of the supply side as consisting of only one commodity has its basis in this stylized interpretation of the economy. It ignores intermediate production, a necessary step towards justifying an aggregate production function.

More important for its ideological purpose, the circular flow model initiates the analysis of a parallel and symmetric treatment of the two major classes in capitalist society, those who own productive property (capitalists and rentiers) and those that do not (blue and white collar workers). This counter-factual treatment of social and economic relations is a fundamental characteristic of all neoclassical theory, in microeconomics as well as macroeconomics. The interpretation is that households supply a variety of services. These services correspond to factors of production, allegedly flowing from laboring activity, the ownership of capital, the ownership of land, and the abstinence from consumption. The symmetry is fallacious. In order to obtain a claim on income, wage and salary workers must sell their ability to work and do so repeatedly. "Capital services", by contrast, are not for the most part bought and sold. What is bought and sold is a claim on income from the ownership of capital. The service sellers in the case of capital are stockholders or their agents. While a business firm must continuously enter into transactions with its workers in order to obtain a work force, no exchange in the usual sense is required to set its machinery in motion. xx

This strongly ideological treatment of capital and labor plays a subsidiary role in the neoclassical model if the analysis is restricted to the demand side. The stress on demand as the determinant of national income allows for considerable flexibility of analysis and ideological orientation. Integral to this emphasis is the non-dogmatic view

that the economy is at less than full employment. An obvious line of inquiry is to place heavy emphasis on the social and economic cost of unemployment, as Keynes did. A somewhat more radical approach has stressed the fundamental distinction between consumption and investment, the former being what workers do and the latter what capitalists do. In a demand-determined system the level of national income is determined by the level of capitalist spending (investment). This results in Nicholas Kaldor's famous aphorism that "workers spend what they get and capitalists get what they spend".¹

These left-wing tendencies had limited respectability within the neoclassical tradition, and the vehicle for writing them out of the distilled wisdom of the mainstream has been the introduction of a supply side for the model (Chapter 2). The heart of the supply side is the aggregate production function. Rare is the textbook that omits it. The only consistent way to construct this aggregate relationship is by assuming a single commodity, which has fundamental implications for the model. Most obvious, it eliminates the distinction between consumption and investment, which is formally completed by use of the IS (commodity market equilibrium) curve. xx

The most profound effect of the aggregate output/value added function is to introduce a stylized Labour market into the analysis. The familiar parable that more employment requires a lower real wage derives from the introduction of this aggregate function, giving it a central analytical and ideological role in the model. Once an aggregate labor market is included, all else in the model is derivative: the values of all variables are unique once the real (commodity) wage is determined. The real wage is determined either by the "clearing" of the labor market or by assigning an arbitrary lower limit to this key variable, with the lower limit given the ideological interpretation that it reflects trade union monopoly or state intervention. The clearing of the Labour market establishes an imaginary result called the "real solution", which serves as a benchmark for all more complicated models. The allegation is that agents make their decisions on the assessment of "real" (price-deflated) variables, and to do anything else would result in irrational behavior (to suffer from "money illusion").

For this book the REH is important in two ways: (1) by carrying the logic of the neoclassical macroeconomic model to its extreme, it unwittingly provides a parody of the synthesis school considerably better than any critic could create; and (2) it indicates the

extent to which full employment general equilibrium is a special case. The central conclusion of the new classical economics, that agents armed with rational expectations behave to nullify any policy action by governments, is a special case in the extreme. It assumes that the economy is continuously in full employment general equilibrium, and that money is neutral so that the equilibrium is unique. These assumptions avoid all the difficulties associated with adjustment to equilibrium and the theoretical problems with assuring neutrality. That such a special case based upon the pseudo-science of complete knowledge of future outcomes could be influential in the economics profession indicates the intrinsically conservative nature of the discipline.

Chapter 10 took up an issue which had been lurking in the background throughout the critique: the severe limitation placed upon the neoclassical model by virtue of assuming a one-commodity supply side. A bit of simple algebra and graphics demonstrates that the hypothesis that a lower real wage calls forth a higher level of employment cannot be generalized even to the two commodity case. In general, multi-commodity models yield multiple full employment real wage levels. It is not true even in theory that an excess supply of labor implies that the real wage should fall in order to clear the labor market. None the less, the parable that more employment requires a lower real wage is repeated as if it were a natural law of economics.

Chapter 11 indicated the periodic dissatisfaction in the economics profession with Walrasian general equilibrium analysis by reference to seminal works critical of this approach. Important as the anti-Walrasian critique was its reception in the profession, which has been to trivialize it. Again, the conservative nature of economic science is indicated by a comparison of the reception of the disequilibrium Keynesian critique and the rational expectations "revolution". The insights of the former contribution are rarely incorporated into textbooks, implicitly judged as insufficiently important to be passed on to students of macroeconomics.

The entire purpose of the first eleven chapters of this book has been to undermine the judgment that capitalist economies tend automatically to full employment. This judgment was undermined by several basic arguments, and all are found in the more advanced economic literature: (1) the mechanism of Walrasian market clearing is no guide to the operation of real economies; (2) if there were a satisfactory theory of

disequilibrium adjustment, it would not necessarily imply that full employment involved a reduction in the real wage; and (3) were there an automatic tendency to full employment and were this associated with a lower real wage, the result would not be unique because money is not neutral.

All textbooks do not take as a serious practical conclusion the argument that capitalist economies tend automatically to full employment. But virtually without exception standard undergraduate and graduate works repeat that full employment is correct in theory. The standard textbook position is that the pure theory is correct in logic and provides an analytical benchmark against which the second-best achievements of the real world can be judged. This compromise position perpetuates an unsubstantiated dogma and its powerful ideological message. It is an ideological incantation, unsupported empirically and a special case in logic. It is grist for the mill of right-wing ideologues and a barrier to the development of theory which would address the fundamental problems of a capitalist economy.

16.3 Open Economy Models

The neoclassical approach to open economy analysis builds on the logical mistakes in the closed economy model and adds ones unique of itself. As a result, the standard textbook stories of monetary policy with a flexible exchange rate are wrong. The logically complete story would be:

- 1) an increase in the money supply results in a trade deficit; with perfect capital flows this deficit is instantaneously eliminated by depreciation of the currency;
- 2) the depreciation of the currency raises the price level *via* its impact on imported goods;
- 3) this price increase feeds back to make the real depreciation is less than the nominal; and
- 4) the price increase simultaneously renders the increase in the real money supply less than the increase in the nominal money supply.

The logically correct models contradiction the standard policy rules. In general, monetary policy is not more effective than fiscal policy under flexible exchange rates. This implies that there is no general theoretical support for the conclusion that monetary

policy should be preferred in an open economy, or that flexible exchange rates should be preferred to fixed exchange rates.

16.4 Theory and Ideology

The many supporters of neoclassical economics present it as 'value free' in the sense that encapsulates eternal truths of economic behavior and natural law that are as independent of human perception and will as the law of gravity. The truth is that economics has always been highly political discipline, and twenty-first century mainstream theory no less so than economics in the past. Recognizing that neoclassical theory is heavily laden with ideology does not invalidate its insights, but it does require a serious attempt to distinguish that part of the theory that is scientific and that which is essentially propaganda. One example demonstrates the distinction: the hypothesis that there exists a rate of unemployment in the aggregate for which the rate of change of the price level would be zero (and that this relationship is stable) is a scientific proposition in that can be derived theoretically and empirically verified or rejected. Calling such a rate of unemployment "natural" and associating it with full employment is propaganda, placing theory in the service of ideology.

With a few notable exceptions, as it is taught neoclassical macroeconomics conveys the following messages to the student. Capitalist economies are essentially self-regulating, with major problems resulting from mismanagement by governments. Inflation should be feared more than unemployment, because the self-regulating economy will tend to eliminate unemployment automatically, but cannot correct the errors of governments. Exchange rates should be left to market forces and capital flows should not be regulated. Along with this distrust of government intervention goes a negative assessment of the role of trade unions in capitalist societies, viewed as instruments to create monopoly power in labor markets rather than the vehicle by which workers have collectively protect themselves against the power of capital. While many mainstream economists would disagree with this crude characterization of the political message of mainstream economics, it what the pure theory teaches.

Due to its methodology economics is the most conservative of the social sciences. For the first one hundred years of its existence (*circa* 1750-1850), conservatism was not

inherent in the methodology due to the importance of the hypothesis that labor was the source of expanded value. During this period the advocates of unregulated markets, such as Ricardo, could operate within the same broad framework as critics of capitalism, such as the Ricardian socialists, the French socialists (Proudhon and Sismondi), and Marx. After a few decades of theoretical turmoil, the discipline coalesced around a new paradigm based upon individual optimizing behavior, marginal productivity theory of production, and Walrasian general equilibrium. Subsequently economic inquiry dedicated itself to demonstrating the inherent stability of capitalist economies and the tendency of unregulated market economies to generate socially optimal outcomes.

The Great Depression briefly undermined that sanguine approach, with the attack led by Keynes. For only a brief period did Keynes's basic message, that capitalist economies tend to produce socially unacceptable outcomes if not controlled and regulated, find a receptive audience in the profession. The free market conservatives of the profession again seized the theory by the early 1970s. If a consensus existed in the profession in favour of intervention in markets and the necessity for public macroeconomic management, it lasted for no more than twenty-five years.

The conservatism that characterizes mainstream economics is based on unsound theoretical foundations. The models from which the fundamental macroeconomic parables derive suffer from serious flaws of internal logic that cannot be resolved. The acceptance of these models and proceeding as if they were analytically sound is an act of ideologically-motivated faith. That is the message which this book conveys to students of economics.

¹ This standard definition can be found at (<http://economics.about.com/cs/economicsglossary>).

² See the online dictionary "Encarta" (<http://encarta.msn.com/>).

³ See Shaikh (1999), Diskall (1980) and Dooley (1979)..

⁴ The International Monetary Fund had the task of monitoring the system of fixed exchange rates. For a historical review, see Eichengreen (1992).

⁵ The categories were (with number of countries in parenthesis): no independent currency (10), currency board (13), "conventional fixed" (70), pegged in a band (5), crawling peg (6), crawling band (1), managed float (48), and independent float (23). If one eliminates the first category and takes the Euro Zone as one currency, there are 166 currencies. (IMF 2007, Appendices, page 10).

⁶ The independent floating category included all major trading countries except China.

⁷ See, for example, Dornbusch and Fisher (1994, 167ff) or the more advanced Kenen (1994, 376-393). Neither derives the basic model mathematically. The best is Kenen (1994), to which frequent reference will be made.

⁸ A detailed critique is presented in the next chapter. The basic references are Fleming (1962) and Mundell (1963). In this chapter secondary presentations from textbooks are treated.

⁹ "Since the early 1960s, the dominant policy paradigm for studying open-economy monetary and fiscal policy issues has been the Keynesian framework developed by Mundell and Fleming". (Obstfeld & Rogoff 1996, 609).

¹⁰ "In the Fleming-Mundell model...a permanent interest rate difference causes a permanent capital flow" (Kenen 1994, 378).

¹¹ For example, Kenen uses "temporary" and "permanent" (Kenen 1994, 384ff).

¹² An increase in expenditure is simpler diagrammatically, because it involves a parallel shift in the IS schedule, while a change in the tax rate would alter the slope of the function.

¹³ In the initial equilibrium the public hold their desired amount of bonds. Lower bond prices, a higher interest rate, are required to induce additional bond purchase.

¹⁴ In his text book Kenen implies that the monetary expansion results in an equilibrium with a domestic interest rate below the world rate (see Kenen, Figure 15-7, 391, where the BP schedule is not represented). His characterization of this equilibrium with less than perfect capital flows goes on as follows, "Capital mobility strengthens [the shift of the IS curve], because the reduction in the interest rate induces a capital outflow, causing a greater depreciation of the currency" (Kenen, *ibid.*). However, this logic implies a *downward* sloping BP schedule.

¹⁵ Dunn and Mutti wrote, "There is now relatively little serious discussion of abandoning flexible [exchange] rates" (Dunn and Mutti 2004, 431)

¹⁶ In 2005 in the IMF journal, *Economic Issues*, a review of exchange rate policy issued the following warning about governments shifting to a flexible exchange rate regime:

Country experiences indicate that four ingredients are generally needed for a successful transition to exchange rate flexibility:

- a deep and liquid foreign exchange market;
- a coherent policy governing central bank intervention in the foreign exchange market (the practice of buying or selling the local currency to influence its price, or exchange rate);
- an appropriate alternative nominal anchor to replace the fixed exchange rate; and
- effective systems for reviewing and managing the exposure of both the public and the private sectors to exchange rate risk. (Duttagupta, Fernandez and Karacadag 2005, 1)

¹ In a discussion of fiscal policy, Romer wrote,

...[T]he exchange rate does not affect money demand...

The fact that the LM curve is vertical means that output for a given price level – that is, the position of the AD curve – is determined entirely in the money market... [S]uppose that government purchases rise. This change shifts the IS curve to the right... At a given price level this leads only to appreciation of the exchange rate and has no effect on output. (Romer 1996, 207)

² "Since the exchange rate, rather than the balance of payments, moves constantly, domestic prices of traded goods are affected" (Dunn & Milner 2004, 434). On the following and subsequent pages exchange rate changes are analyzed assuming all prices are fixed. For example, they wrote, "...depreciation also increases domestic prices of tradable goods...*The original increase in the domestic money supply remains intact...*" (*Ibid.*, 436, emphasis added).

³ That this effect is ignored in macro analysis is all the more surprising because it is dealt with in detail in trade theory (for example, see van der Ploeg 1994, 53ff).

⁴ Agenor and Montiel call this the "dependent economy" model (1996, 48-52).

⁵ Equation 1.3 is obtained as follows:

$$dy/y = y' = [(a_1 + a_2)/a_3]de/y$$

For the first term, multiply numerator and denominator by e/x and substitute $a_3y = z = x$. This produces:

$$y' = (\epsilon_1 + \epsilon_2)e'$$

⁶The Marshall-Lerner condition. I do not derive it. Those interested, should see <http://www-personal.umich.edu/~alandear/glossary/m.html>.

⁷The price level, p , is equal to the weighted average of domestic prices (p_d) and import prices.

$$p = (1 - a_3)p_d + a_3e$$

When domestic prices are constant and product markets competitive, the rate of change of the price level is the import share in income times the change in the exchange rate (see Agenor and Montiel 1996, 44-45).

⁸ The term "emerging market economies" is a synonym for the World Bank category "middle income countries", used in Table 13.1.

⁹ The quotation is from *Civil Disobedience*, see <http://www.bartleby.com/73/753.html>.

¹ See the discussion in Henry (1983), which focuses on the American economist John Bates Clark.

² Jan Tinbergen shared the 1969 Nobel Prize for Economics with Ragnar Frisch. Jan Tinbergen has the unique distinction of being a Nobel in a family with another Nobel Prize winner, his brother Nikolaas (in physiology).

³ While monetization is formally equivalent to printing currency notes, this is also the case when a commercial bank uses its excess reserves to extend a new loan. No one calls what a bank does "printing money".

⁴ It is so called because of an article by David Ricardo, "Essay on the Funding System", which might be interpreted as implying this equivalence.

⁵ See Irvin's article at <http://www.guardian.co.uk/commentisfree/2010/nov/07/myths-swallowed-by-george-osborne>.

⁶ Thomas Hobbes, with more insight than Adam Smith, recognized that pursuit of individual self interest result in a "state of war," and lives that would be "solitary, poor, nasty, brutish, and short" (*Leviathan* I, 13).

⁷ The four measures are much the same as those in the program of the British Labor Party in 1945, which was more radical than what was implemented during 1945-1951. http://www.unionhistory.info/timeline/1945_1960.php

⁸ This principle can be found at <http://www.ilo.org/ilolex/english/iloconst.htm>.

⁹ A universal guaranteed income scheme would be paid to the employed as well as the unemployed. Possible specifications for such programmes are explained in detail at <http://www.basicincome.org/bien/>

¹ Along with Joan Robinson, Nicholas Kaldor was a distinguished economist not awarded the Nobel Prize. His approach to Macroeconomics is shown in Kaldor (1957), which was elaborate by Pasinetti (1962).