FISCAL POLICY AND THE EXTERNAL CONSTRAINT*

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Summary

This paper studies the link between budget deficits and current account deficits both from a theoretical and empirical point of view. The main conclusion obtained is that this link is far from automatic and only exists when budget deficits are transitory and debt financed. This is empirically validated by the experience of a group of European countries (Germany, France, United Kingdom and Spain) and of the United States, all of which have suffered mayor fiscal changes in recent years. The most important policy implication of the paper is the following: it is possible to manage fiscal policy to reach the desired internal balance goals without damaging the external position of the economy.

Resumen

En este trabajo se analiza la conexión entre déficit público y déficit de la balanza corriente desde un punto de vista teórico y empírico. La principal conclusión obtenida es que la conexión entre ambos no es automática, produciéndose tan sólo cuando el déficit público tiene un carácter transitorio y es financiado mediante la emisión de deuda. Esta conclusión viene sustentada empíricamente por la experiencia de un grupo de países europeos (Alemania, Francia, Reino Unido y España) y de los Estados Unidos, todos los cuales han sufrido cambios fiscales y presupuestarios de envergadura en el pasado reciente. La implicación más relevante para la política económica es que es posible gestionar la política fiscal de forma que se logren los objetivos internos deseados sin perjudicar la posición exterior de la economía.

1. Introduction

High unemployment is, without any doubt, the most important problem faced by European economies at present. It is by now widely accepted that the increase in unemployment rates during the 1970s had much to do with the stagflationary supply shocks faced by these economies and –to some extent– with the macroeconomic policies used to offset their unwanted effects. The story of the 1980s is quite different, however. It is a fact that European economies have succeeded over these past years in reducing the very high rate of inflation inherited from the previous decade. Unfortunately, this has happened at the same time as unemployment rates have increased even further.

Nowadays, although the social magnitude of the unemployment problem is recognized in each of these countries, their respective economic authorities feel constrained in the pursuit of expansionary policies. These constraints are basically of two types: (a) the internal constraint, which refers to the erosion of the inflationary gains that could be caused by an attempt to fight unemployment through an expansion of demand, and (b) the external constraint (Drèze and Modigliani (1981)), which refers to the possible negative repercussions on the external balance of the economy.

Although these two "constraints" are not independent and both seem to be important in policymaking discussions, the internal balance constraint has received a lot more attention than the external balance constraint recently (Layard et al. (1984), Blanchard et al. (1985)).

An often heard popular belief is that a fiscal expansion causes output and employment to increase, possibly at the cost of increasing inflation, but that it leads to a deteriorating current account balance (internal/external balance tradeoff). Moreover, when the fiscal expansion takes the form of a budget deficit (negative public net saving), the current account deterioration (negative domestic net saving) seems even more automatic.

Thus, a recent study by the OECD (1983) states the presumed connection between budget deficits and the current account as follows:

"... because of the high integration of OECD economies through international trade, such [budgetary] actions will be associated with current balance of payments deficits... fiscal action may then lead to a form of 'exchange rate crowding out' where the budget deficit has its counterpart in a deficit of the current (account) balance of payments" (p. 40).

The 1984 U.S. Economic Report of the President also agrees that:

"A reduction in the level of the current and future budget deficits automatically stimulates investment and net exports..." (p. 40).

Finally, a similar view is expressed by Governor Henry Wallich:

"... (the strong dollar) and large external deficits are partly symptoms, themselves damaging, of large budget deficits" (p. 298).

This paper examines the conventional belief that increased government spending raises employment at the cost of an increased current account deficit, and which is the basis for governments claims that external constraints prevent expansion. As it will be shown, things are considerably more complicated than this and, indeed, there is no a priori reason to believe in such a constraint. Specifically, the constraint becomes binding only for the case of temporary debt financed fiscal expansions, as the theoretical framework to be developed implies and the recent macroeconomic performance in a number of European countries and the United States tends to confirm.

The paper is structured as follows: Section 2 examines the existing views regarding the precise nature of the external balance constraint and explains how it may influence economic policy. Section 3 discusses the linkages between fiscal policy and internal and external balance, carefully considering the role played by exchange rate policy and the nature of unemployment. Section 4 then applies the analysis of the previous sections to a number of European countries and to the United States. Section 5 summarizes the main conclusions.

2. The External Balance Constraint

(a) The long run

It is a fact that policymakers care not just about internal balance effects but also about external balance effects when setting macroeconomic policies. Nevertheless, although the achievement of non-inflationary full employment

growth is generally accepted as the valid internal balance goal, things are not so clear-cut regarding external balance.

The standard textbook open economy macromodel defines external balance as the situation where the balance of payments is zero. It also stresses that, while external balance is automatically achieved in an economy with a flexible exchange rate, this automaticity is lost whenever the authorities intervene in the foreign exchange market to peg the exchange rate. That is, for a given current account balance, the exchange rate policy followed by the monetary authorities determines the breakdown between private and official net liability changes.

From this point of view, the "zero balance of payments" criterion -and the balance of payments itself- looses relevance as an indicator of external balance in favour of the current account. For example, two countries that continuously attain balance of payments equilibrium may show dramatic differences in their respective saving rates, represented by their current account balances. Consequently, it seems reasonable to single out the current account balance as the relevant 'external' variable.

In fact, the long-run external balance constraint of the economy can only be understood in terms of the current account. In a stationary economy, the 'long-run' current account balance must be zero. To illustrate the economic meaning of this long-run constraint, consider a two-period stationary economy with zero initial net foreign debts. Suppose that the economy runs a balance of trade deficit in the first period as a result of the excess of domestic absortion over domestic production. Then it must borrow this amount in world capital markets -through the

private sector or through the Central Bank. However, if the economy is to remain solvent in the long-run, it must repay the principal plus the interest of this debt in the second period. This means that the economy will have to show a surplus in the second-period trade balance of the appropriate magnitude. That is, the long-run solvency constraint or long-run external balance constraint of the economy establishes that the present value of the sum of the current and future trade balances be zero. Moreover, notice that the long-run solvency constraint applies regardless of whether the monetary authority lets the exchange rate fluctuate freely or not and -in the second case- of whether the country has been sticking to a zero balance of payments position in each of the two periods or not.

Of course, in a context of many periods, nonzero growth and an initial net foreign debt position, the solvency constraint has to be redefined. In this case, whenever the real interest rate of the external debt exceeds the growth rate of the economy's foreign exchange earnings, the debtor country will have to run a sequence of future trade balances such that:

External Debt = Present Value of Future Trade Balances

Therefore, a solvent economy must 'live within its means' and macroeconomic policies have to be set to respect the long-run external balance constraint of the economy[1].

There is one possible exception to this, however, in a growing economy. As pointed out recently by Cohen (1985), if the rate of growth of the foreign currency earnings of an indebted country is larger than the real

interest rate of the external debt, then the country's wealth is infinite and there is no solvency problem, since an infinitely small fraction of its net foreign exchange earnings can pay back any level of initial debt in finite time[2]. In what follows, we assume that this case does not apply and that the economy is bound by the long-run solvency constraint.

(b) The short-run

From time to time, however, policymakers insist on the need for 'maintaining external balance', 'improving the current account', 'increasing international competitiveness', 'avoiding the external leakage of domestic expansion', etc... The impression one gets from all this is that the long-run external constraint is not the only external constraint that policymakers care about. The concern with the shorter-run evolution of the current account is reflected in the following quote from the OECD's Economic Outlook regarding Italy's economic performance in 1984:

"... the recovery of domestic demand soon run up against the external constraint... The response of the monetary authorities was to try to curb domestic demand growth..." (pg. 117).

In what follows, we analyze how justified it is for the authorities to seek short-run current account goals, and to restrict their macropolicies so as to obey short-run constraints on the current account.

If we lived in a perfectly functioning economy, with fully flexible prices and wages, certainty and no

distortions, the long-run constraint would be the only true external constraint faced by the economy. In such a world, the net saving of the economy would be the result of the optimizing decisions of producers and consumers. In turn, the path of the current account and foreign debt levels will be optimal and the authorities should not care particularly about them as long as the long-run solvency constraint is met.

Unfortunately, this is not the world we live in, and this explains why governments care not only about the long-run external balance constraint just described but also about the short-run evolution of the current account. Once markets are ridden by imperfections and distortions, besides the authorities' worry that the long-run external balance constraint be met, there are several reasons that can -in principle- justify their concern with the short-run behavior of the current account:

(i) Divergences between private and social costs. The current account should be set at a level which permits: (a) financing domestic investment projects with a positive present value at world interest rates (which cannot be financed by domestic saving), (b) smoothing the marginal utility of consumption over time so as to achieve the optimal path of consumption. However, there may be reasons to believe that privately evaluated costs and benefits do not accurately reflect the true social costs and benefits. In such cases, the actual current account balance produced by the market may not be adequate. Consider, for example, a situation where investors systematically underestimate the true costs to society of borrowing in world markets (due to taxes, intergenerational externalities, etc...) and, as a result, undertake investment projects that do not generate

enough resources for society as a whole to repay the debt. In this case, since the debt has to be paid back in the future, this can only be achieved by a reduction in consumption, which the private sector did not expect. As a result, 'belt-tightening' policies have to be implemented in the future. All in all, the country will be better off by borrowing less at present, ie. improving its current account balance relative to the free market outcome.

Another good reason for limiting the size of (negative) fluctuations in the current account balance is that sometimes it may not be easy (or not cheap) to borrow in world capital markets when in need of financing[3]. It may be that the sources of foreign financing dry up or that the cost of borrowing becomes higher as the amount of accumulated foreign debt increases and as the speed of borrowing increases. As is well-known, foreign banks often use economy-wide information (total country debt, current account prospects, etc...) as well as specific information about potential borrowers in setting credit terms. Therefore, as Harberger (1985) has stressed, there is an externality being imposed on the country as a whole (and on future borrowers) by the marginal borrower. In this case, each new additional loan has the effect of increasing the country risk premium that must be paid for new loans and for the renewal of old ones. All this justifies trying to avoid sharp worsenings in the current account.

Another related problem is that public foreign borrowing may crowd out private foreign borrowing in those cases where a country does not have unlimited access to world capital markets. If public borrowing does not fulfill a useful social role (ie. social costs exceed the benefits), then there is a good reason for limiting the current account

deficits that directly go to finance useless projects. In this respect, it is quite surprising to observe that borrowing limits are much more stringent on private than on public borrowing in many countries.

(ii) Sticky wages and prices. A worsening of the current account balance is very often interpreted as a leakage in demand that boosts the foreign economy. As long as output is demand determined at home, this is seen as an unfavourable development, since it tends to reduce output. It is then reasonable for the authorities to care about the current account because of the 'intermediate target' nature of this variable (see Salop and Spitaller (1980) for a further elaboration of this point).

(iii) Future flexibility. The short-run path of the current account becomes relevant when there is a loss in flexibility for future macroeconomic policy that results from a series of very negative current account balances, which lead to a relatively high level of current external debt. If past deficits went to finance profitable investment projects, this problem will not arise. On the other hand, if they went to finance (private or public) consumption without helping increase future income, then this implies a future reduction in (private or public) consumption which may be hard to bring about. At the same time, as pointed out by Cooper and Sachs (1985), living with a substantial net foreign asset position makes exchange rate policy pay excessive attention to the potential capital gains and losses that arise from exchange rate fluctuations.

Two recent examples of this are the important current account improvements of two neighbour countries: France and Spain. In the first case, the sharp deterioration

of the external accounts during the first Mitterrand years (1981-83) led to policies specifically aimed at restoring the lost external flexibility. In Spain, after a decade-long predominance of current account deficits where external debt grew quite rapidly, policies where implemented since 1983 in order to correct this basic disequilibrium and regain some external flexibility for the future.

(iv) Financial markets care about the current account

The evolution of the current account is also important as it affects market sentiment and the capital account in the short-run.

Consider the case of an economy following a fixed exchange rate policy. As is well known, for the chosen exchange rate to be sustainable, macroeconomic policies must be set right. It is clear that a country can borrow without any problem to sustain well justified, credible macropolicies. However, if this is not the case and macropolicies are clearly not consistent with the official exchange rate, a series of current account deficits may be generated. The market will soon come to realize that either the policies must be changed or the exchange rate devalued. In the second case, this triggers a speculative attack against the currency, leading to reserve losses: a 'bad' current account is accompanied by a 'bad' capital account. If the authorities do not want this process to take place, they must start by improving the current account performance of the economy through a suitable change in their basic policies. Alternatively, they may try to prevent the speculative attack by regulating short-term capital outflows[4], like it happened in France at the time of the March 1983 crisis of the French Franc.

If, on the other hand, the economy follows a flexible exchange rate policy, it will be the exchange rate –rather than official reserves– that will move following the deterioration of the current account and the speculative attack triggered by the expectation of a depreciating exchange rate. If the exchange 'overshoots', then this means large short-run volatility for the nominal (and presumably, the real) exchange rate, which has negative effects for resource allocation. As before, this process can be avoided by suitably altering macroeconomic policies so as to improve the current account. Alternatively, the authorities may try to restrict short-run exchange rate volatility by regulating short-run capital flows. The external balance constraint is still there, although it shows up in a different form.

(v) Potential debt crisis and protectionism. To this list of reasons for worrying about the shorter-term performance of the current account balance we could add two others. The first one, is the danger of running into a debt crisis, something which although very important for Latin American countries and other Third World debtors, does not seem to apply to most Western countries. The second one, is the protectionist threat that may emerge after a period of current account deficits and which is currently exemplified by the attempts to introduce protectionist legislation in the United States in light of the substantial trade balance deficits of this country.

(c) Summary

In this section we have tried to examine the authorities' concern with external balance constraints. The current account balance seems to be a crucial variable to

care about both in the long-run and the short-run. In the long-run, because a healthy economy cannot 'live beyond its means' and, consequently, must respect a long-run solvency constraint. In the short-run, because of a number of market failures -like imperfectly flexible prices and divergences between private an social costs-, market sentiment, and because of the fact that sometimes you have to pursue short-run current account targets in order to reach long-run goals.

3. Does a fiscal expansion lead to an increase in employment and to a worsening of the current account balance?

According to the analysis of the previous section, it may be reasonable for the authorities to try to achieve a domestic output expansion with the minimum current account deficit. To give some structure to the discussion, it is therefore necessary to model how policy influences internal and external balance.

We now examine whether open economy macromodels support the popular belief that a fiscal expansion causes output and employment to expand, although at the cost of a deteriorating current account balance. Specifically, is it true that a fiscal expansion in the form of an increased budget deficit leads to a current account deficit?

(a) The simple Mundell-Fleming model

The Mundell-Fleming model is, twenty-five years after it was developed, still the most widely used 'back of the envelope' model in policymaking discussions.

As is well-known, the "fixed price-fixed interest rate" static (no price adjustment, no expectations, no wealth effects) version of the simple Mundell-Fleming model (see Appendix I) makes pure fiscal policy fully effective in controlling the level of output without producing current account effects under fixed exchange rates. Namely, a balanced budget expansion leads to a one-for-one increase in domestic output, with the current account being unchanged (since disposable income is not changed either).

Things are quite different however, when the authorities let the exchange rate fluctuate freely. As is well-known, the level of domestic output is now determined in the money market and the exchange rate adjusts to restore equilibrium in the output market. In this case, when a balanced budget expansion takes place, there is an excess demand for domestic output which leads to an appreciation of the exchange rate. This, in turn, worsens the competitiveness of the country and produces a current account[5] deficit, which must be as large as is required to compensate for the increase in total absortion in the face of an unchanged output. In contrast to what happened with a fixed exchange rate, now domestic output is unchanged and the current account is in deficit.

As can be seen in Table 1, while a balanced budget change can be used to increase output with no cost in terms of the current account under fixed exchange rates, it can be used to achieve current account targets without output losses under flexible exchange rates. The Table also shows the effects of bond and money financed increases in government spending[6].

Summarizing, there are two important policy implications coming from the simple Mundell-Fleming model:

First, the often-heard presumption that an economy can always expand through fiscal expansion if it is willing to accept a worsening of the current account is not always valid.

Second, while a budget deficit (however financed) necessarily leads to a current account deficit under fixed exchange rates, this only happens for debt financing under flexible exchange rates. On the other hand, a 'no-deficit' expansionary fiscal policy leads to a current account deficit under flexible exchange rates only.

(b) Two qualifications: macroeconomic disequilibrium and intertemporal aspects.

Right or wrong, the Mundell-Fleming model remains the most widely used model in policy discussions and, very often, policies are chosen so as to obtain the qualitative internal and external balance adjustments predicted by the model. Of course, one can think of many ways of ammending the Mundell-Fleming model, and the evolution of open economy macroeconomics for the last twenty years can be understood as a series of extensions and improvements upon the basic model (see Dornbusch (1980) and Branson-Buiter (1983)). Here, we focus on two qualifications, which we believe to be particularly important in discussing the effects of fiscal policy on employment and the current account.

The first one has to do with the responsiveness of output to fiscal shocks. Conventional models tell us that the response of real output to macroeconomic disturbances depends on the degree of slack or unemployment in the economy. Standard macroeconomic disequilibrium models à la

Table 1: Internal and external balance effects of fiscal policy in the Mundell-Fleming model

	fixed exchange rates		flexible exchange rates	
	output/employment	current account	output/employment	current account
An increase in government spending:				
(a) Tax-financed (bond)	+	0(-)	0	-
(b) Money-financed	+	-	+	±

* The signs in brackets give the differential effects of bond financing relative to tax financing.

Barro and Grossman (1971) or Malinvaud (1977), in turn, make the point that the output response critically depends on the causes of unemployment. Accordingly, output will respond very differently to a fiscal stimulus when the economy is suffering from Keynesian unemployment (demand is too low) as compared to the case where it experiences Classical unemployment (the real wage is too high). At the same time, since the current account is just the difference between output and absorption, current account behavior will also be quite different in each of these two cases.

The second qualification has to do with intertemporal aspects. That is, the potentially very different response of aggregate demand depending on whether fiscal policies are perceived as temporary or permanent (consisting of a current and an expected future component).

(c) A simple intertemporal disequilibrium model

In what follows use is made of a simple intertemporal disequilibrium model of a monetary economy to study the effects of fiscal policy and how they depend on the type of disequilibrium suffered by the economy and on the perceived duration of the policy. The model used here draws on recent joint work by the author and John Cuddington[7].

Consider an economy which is perfectly well integrated in world capital markets and which produces two goods –tradeables and nontradeables– by using a single variable factor of production (labor). The time dimension collapses into two periods: the 'present' or 'short-run' and the 'future' or 'long-run'. Although all wages and prices

adjust to their full employment (Walrasian) equilibrium levels in the long-run, the domestic nominal wage and the price of nontradeables are predetermined in the short-run, which causes unemployment, which can be Keynesian or Classical at the margin (see Appendix II).

Since the economy is small in the world tradeables market, the economy never faces quantity constraints when buying or selling tradeable goods in the world market, the domestic currency price of tradeables varying one-for-one with the exchange rate. Firms maximize their profits and consumers purchase tradeables and nontradeables in each period to maximize intertemporal utility subject to the relevant budget constraints. The government purchases nontradeables[8] which finances by raising taxes[9], borrowing and printing money. Money is needed to purchase goods and all goods are paid for in the seller's currency. All agents have perfect foresight.

It is important to notice that the separation between Classical and Keynesian unemployment is not clearcut in the case where several goods markets exist. For example, while it is true that producers of nontradeables may want to restrict production either because real product wages are too high or demand for nontradeables is too low, producers of tradeables never face a demand constraint. Keeping this in mind, it is clear that, even if the overall economy suffers from excessive real wages, demand measures can also be used to depreciate the exchange rate, thereby reducing the real wage in the tradeable sector and increasing total output and employment. On the other hand, even when the economy experiences a demand problem, a reduction in nominal wages can still be used to expand output and employment, through the increased production of tradeables which takes

place. Consequently, although we use the labels "Classical" and "Keynesian" in what follows, they should not be interpreted too rigidly.

(i) The Keynesian Unemployment Case

We describe first the case of an economy suffering from Keynesian unemployment in the short-run (See Appendix III, parts a and c).

Let us start by describing production. Since the price of nontradeables is fixed in the present, the short-run output of nontradeables is demand determined. Since the present nominal wage is also given, the output supply of tradeables increases as the real exchange rate (measured by the relative price of tradeables in terms of nontradeables) depreciates. In the future period, tradeables supply increases and nontradeables supply decreases as the real exchange rate depreciates.

As shown in Appendix III, private consumption depends on private wealth, which equals the present value of output minus the present value of government spending. In turn, through the intertemporal government budget constraint, the present value of government spending must equal the present value of tax revenues and money creation (seignorage).

We now turn to examine the effects of fiscal policy on output, employment and the current account starting with the flexible exchange rate case first (See Appendix IV).

Consider a temporary (ie. current period only) tax financed increase in government purchases of nontradeables. This has the effect of increasing demand for nontradeables at the existing real exchange rate. To restore equilibrium, the output of nontradeables must rise, which leads to an excess demand for money which causes an exchange appreciation to maintain equilibrium in the money market. In the new equilibrium, there is an increase in current nontradeables output and an appreciated real exchange rate, which reduces current tradeables output. Moreover, since the drop in the relative price of tradeables increases net domestic demand for tradeables, the current account worsens in the present (and improves correspondingly in the future to satisfy the economy-wide solvency contraint).

Summarizing, a tax financed temporary purchase of nontradeables causes a change in the composition of output of ambiguous effects for employment and a worsening of the current account balance.

Notice, however, that if the government finances the increase in spending with money rather than taxes there is no excess demand for money in the economy at the initial real exchange rate. Now, all that happens is a one-for-one increase in nontradeables output and employment, without any change in tradeables output or the current account.

Consequently, a money financed increase in government purchases of nontradeables can effectively increase output and employment while leaving the current account unchanged.

What would be the effect of a permanent increase in government purchases? Clearly, since a permanent change is

the sum of a current change plus a future expected change, all we need to do is to look at the added effects coming from an expected increase in future government purchases of nontradeables.

Although this future expected change does not alter the demand for nontradeables by the government in the current period, private consumption drops as soon as consumers realize that higher taxes are coming in the future[10]. As a result, the demand for nontradeables drops in the current period, causing an excess supply of money which leads to a real depreciation. All in all, there is a reduction in nontradeables output and an increase in tradeables output as a result of the policy. At the same time, the real depreciation causes an increase in the net supply of tradeables which improves the current account. Hence, although the effects on employment are ambiguous, the current account balance improves. Therefore, a permanent (present plus future) increase in government spending leads to an ambiguous current account effect.

As the previous paragraphs have shown, the effects of fiscal policy on internal and external balance may differ greatly depending not just on the financing, but also on whether the policy is just temporary or expected to continue in the future (see columns three and four in Table 2).

To examine the sensitivity of these results to the exchange rate policy followed by the authorities, we analyze how these effects change when a fixed exchange rate is maintained through official intervention.

As before, a temporary tax financed increase in government purchases of nontradeables increases the demand

and output of nontradeables in the present. This leads -as before- to an increase in money demand. Now, however, the exchange rate remains unchanged[11] and there is a reserve inflow that increases the money supply by enough to restore monetary equilibrium. Consequently, the output of nontradeables increases one-for-one with the increase in spending and neither the real exchange rate nor the current account are affected. All in all, the temporary balanced budget expansion increases domestic employment while leaving the current account balance unchanged.

Observe that this result coincides with the one obtained under flexible exchange rates with money rather than tax financing. Intuitively, now there is also a money supply increase coming automatically through a reserve inflow. Notice also that if the increase in spending were money rather than tax financed, the output and current account effects would be the same, the only difference being the absence of the reserve inflow, since there would be no excess demand for money to begin with.

How different are things in the case of an <u>expected future</u> increase in government spending? As before, there is a drop in current nontradeables demand as a result of the reduction in private wealth caused by the expected tax increase. At the initial real exchange rate, there is now an excess supply of money which leads to a loss of reserves. As a result, the new equilibrium is characterized by an unchanged real exchange rate -and tradeables output- and lower nontradeables output, which reduces total employment. In turn, as a result of the drop in wealth, current tradeables consumption is reduced, which improves the current account balance. As with flexible exchange rates, the current account balance shows a surplus. However, employment goes down unambiguously.

The left half of Table 2 summarizes the employment and current account effects of the policies discussed under fixed and flexible exchange rates. It is quite evident from looking at the Table that the success of fiscal policy in reaching the desired internal and external balance goals crucially depends on the duration of the policy, on its financing and on the exchange rate policy followed by the authorities.

As the Table shows, a temporary increase in government purchases of nontradeables can achieve an output expansion without a current account deficit if it is properly financed. That is, money financed under flexible exchange rates and money or tax financed under fixed exchange rates. If such policy mix is followed, an adverse output-current account tradeoff can be sucessfully avoided. As the Table also shows, it is quite crucial for the success of these policies that they are believed to be temporary. Otherwise, the favourable output and employment effects may be diminished or even reversed in some cases. It seems reasonable, anyway, that a temporary demand expansion be used to solve a temporary (i.e. short-run but not long-run) problem.

Having finished the discussion of the Keynesian version of the intertemporal disequilibrium model, it seems worthwile to look back and compare it with the simple Mundell-Fleming model. Of course, the comparison should only apply to the temporary part of fiscal policy since, as explained, the static version of the simple Mundell-Fleming model cannot say anything about the distinction between temporary and permanent policies. By looking at Table 1 and the left half of Table 2, it can be noticed that the effects generated by both models are qualitatively similar in all

Table 2 - Employment and Current Account Effects of Fiscal Policy

	Keynesian Unemployment				Classical Unemployment			
	fixed exchange rates		flexible exchange rates		fixed exchange rates		flexible exchange rates	
	employment	current account	employment	current account	employment	current account	employment	current account
An increase in current government spending								
(a) tax financed. (bond)	+	0(-)	±	-	0	0(-)	0	0(-)
(b) money financed.	+	0	+	0	0	0	+	+
An increase in future government spending.	-	+	±	+	0	+	0	+

cases but one. While the Mundell-Fleming predicts that a money-financed temporary increase in government spending causes a deterioration of the current account balance (under fixed exchange rates), the intertemporal model predicts a zero effect for the reasons already discussed.

One can interpret these similarities as saying that the Keynesian version of the intertemporal model can capture the main pieces of the transmission mechanism of temporary fiscal policy in a rigorous way, while also being able to handle the case of policies which are expected to continue in the future. Recall nevertheless that all these results correspond to an economy which suffers from Keynesian unemployment. But, do they carry over to an economy suffering instead from Classical unemployment?

(ii) The Classical Unemployment case

Consider now a situation where the fixed wage and fixed price of nontradeables in the present lead to Classical, rather than Keynesian unemployment; ie. the real wage constraint is binding at the margin in that sector (See Appendix III, part b). This means that the current output of nontradeables is fixed by the constant real product wage. At the same time, government demand is assumed to take priority over private- sector demand in the Classical unemployment case where, by definition, notional supply falls short of total private and government demand. Accordingly, the amount of nontradeables which will be effectively consumed by the private sector in the current period is just the difference between total production and government consumption.

The right half of Table 2 summarizes the effects of fiscal policy on employment and the current account in the Classical Unemployment case. As can be observed, the internal and external balance responses of the economy to a given fiscal shock show some important differences between the Keynesian and Classical cases.

First of all, in the Classical Unemployment economy, total employment does not rise as a result of an increase in current of future government spending unless this leads to a lasting increase in the current quantity of money in the economy. As can be observed in Table 2, this just happens under money financing in the flexible exchange rate case.

The basic intuition is that total employment can only expand following a fiscal expansion when this leads to an increase in the output of tradeables, since nontradeables output is given. However, for tradeables output to increase, the real exchange rate must depreciate, which -with the rationing rule considered- can only happen when there is an increase in the supply of money <u>and</u> the exchange rate is allowed to change. This is why the expansion of output and employment is accompanied by a current account improvement in this case.

Morevoer, as the Table also shows, the expansionary fiscal policies pursued do not lead to current account deficits in most cases. How come?

Consider first the case of a <u>transitory</u> increase in government spending. As explained, a tax financed increase in government spending will have no effects on employment or the real exchange rate, even when the exchange rate is

allowed to vary. That is, the current account will not change.

The expected future part of a permanent balanced budget expansion is also interesting in the Classical unemployment context. Since, as explained, the first period real exchange rate is determined by the money market alone, there is no variation in total output or employment in the current period. On the other hand, since private wealth drops as a consequence of the expected future tax hike, there is a reduction in current (and future) private consumption of all nonrationed goods. With an unchanged output of tradeables in the present, a decrease in tradeables consumption leads to a current account surplus. Therefore, an expected future increase in government purchases leads to no present output or employment changes and to an improvement in the current account balance.

From our discussion of the money and tax finance case, it is quite clear that changing the level of government spending in a temporary or permanent (the sum of a current and an expected future change) fashion is not useful to achieve an expansion of output and employment. The only thing that can help in this case is an increase in the money supply that depreciates the currency and increases tradeables' output and employment under flexible exchange rates. There is then a rationale for switching from tax financing to money financing in this case, even if a cut in taxes has no positive supply-side effects. If it had, then this substitution in financing would be advisable –regardless of the exchange rate regime– to promote nontradeables' output and employment also.

As can be checked out, the results of the Classical unemployment economy presented in the Table differ quite

sharply from those of the Mundell-Fleming model, even where only temporary policies are concerned.

(iii) Bond financing of deficits

So far, we have not considered bond financing of deficits. The clearest difference between bond and tax financing is the worsening of the current account in the bond-financing case, relative to the tax-financing case summarized in the first row of Table 2. Intuitively, if government bonds are regarded as net wealth[12] by the public, then there will be an increase in total absorption resulting from a bond-financed tax-cut which will tend to worsen the current account. Consequently, one would expect a negative current account effect as a result of a bond-financed temporary increase in government spending across Keynesian and Classical unemployment regimes. The signs in brackets in Table 2 represent the changes implied by bond financing relative to tax financing.

(iv) Summary

There are a few important policy implications coming from the intertemporal disequilibrium model:

First, an economy suffering from Keynesian unemployment can expand output and employment without a worsening of the current account through a temporary increase in government purchases of nontradeables financed by money creation (flexible exchange rates) or also by taxes (fixed exchange rates).

Second, changing the level of government spending on nontradeables is a useless policy to expand output and employment in an economy suffering from Classical unemployment. However, if the economy follows a flexible exchange rate policy, a temporary tax cut financed by money creation can expand output and employment while improving the current account balance.

Third, once we allow for government bonds being net wealth, there is a strong connection between bond-financed (temporary) budget deficits and current account deficits. This connection still fails to hold with generality in the case of money-financed budget deficits.

4. A look at the empirical evidence

The previous section reached several conclusions regarding the effects of fiscal policy in the economy. In order to see whether there is any empirical support for these theoretical conclusions, this section examines some recent empirical evidence regarding fiscal policy changes and macroeconomic performance in the United States and Europe.

Clearly, a first-best answer to these questions would imply using quite sophisticated econometric techniques. Unfortunately, the difficulty of obtaining national income accounting quarterly data for European public finances for a long enough period, and the fact that budgetary changes are usually annual ones, makes us quite skeptical about results obtained from any econometric analysis. Consequently, the second-best route taken here

consists in describing the basic facts for a number of countries during the periods of major changes in fiscal policy and checking whether these facts are consistent with the implications of the model. Among the countries reviewed we choose a subset of them to be studied in more detail: United States, United Kingdom, Germany, France and Spain. These countries, in principle, exhibit enough differences in fiscal policy, exchange rate policy, and unemployment regimes to be useful benchmarks to test the empirical implications of the intertemporal disequilibrium model.

(a) Major fiscal policy changes in the 1980s

Table 3 summarizes some of the most important examples of fiscal policy changes in recent years. The numbers in the Table correspond to the budget balance figures, both as normally measured and adjusted to take into account the effects of the cycle and of inflation. Using the adjusted figures as a proxy for the fiscal stance, it can be observed that while several countries experienced major fiscal expansions (United States, France and Spain), others went through contractionary fiscal policy experiences (Germany and United Kingdom). Table 4 provides more detailed information about each of these major fiscal policy changes.

Let us start with the countries which experienced a major fiscal expansion in recent years. The most widely recognized recent expansionary fiscal policy change took place in United States under the Reagan Administration. As can be seen in Table 4, there was a switch from (adjusted) surplus to deficit following the introduction in 1981 of the Economic Recovery Tax Act, which moderated the burden of personal income taxation. Although there were also certain

TABLE 3: Actual and Adjusted(*) Budget Balances
(%GNP/GDP)

	1978	1979	1980	1981	1982	1983	1984
Fiscal Expansion							
United States							
Actual	0.2	0.6	-1.2	-0.9	-3.8	-3.9	-3.1
Adjusted	0.5	1.3	1.1	1.4	-0.4	-1.2	-1.4
France							
Actual	-1.9	-0.7	0.2	-1.8	-2.6	-3.2	-3.5
Adjusted	-2.1	-1.0	0.7	-0.3	-0.7	-0.8	-0.2
Spain							
Actual	-1.8	-1.7	-2.0	-3.0	-5.8	-6.0	-5.7
Adjusted	-2.5	-1.6	-1.2	-1.3	-3.1	-3.1	-2.6
Fiscal Contraction							
Germany							
Actual	-2.5	-2.7	-3.1	-3.8	-3.5	-2.7	-1.4
Adjusted	-2.9	-3.3	-3.2	-3.0	-1.6	-0.4	0.8
United Kingdom							
Actual	-4.2	-3.2	-3.5	-2.8	-2.1	-3.7	-2.8
Adjusted	-2.1	0.6	4.0	4.4	4.5	1.5	1.8

Source: Muller and Price (1984)

(*) The adjusted figures are corrected by the effects of inflation and the cycle (% mid-trend GNP/GDP).
. (+) surplus, (-) deficit.

Table 4: Major Fiscal Policy Changes

	Base year	Period of Fiscal Policy Change
Fiscal Expansion		
United States	1981	1982-84
b	1.4	-1.0
g	31.2	31.3(1)
t	32.9	31.4(1)
d	20.3	27.2(2)
m	7.2(3)	6.1
France	1980	1981-83
b	0.7	-0.6
g	46.0	48.7
t	46.8	48.2
d	9.1	15.0
m	10.2(3)	9.3
Spain	1981	1982-84
b	-1.3	-1.9
g	32.1	33.8(1)
t	30.8	30.2(1)
d	10.5	22.4(2)
m	17.2(3)	13.1
Fiscal Contraction		
Germany	1981	1982-84
b	-3.0	-1.2
g	46.1	43.6(1)
t	43.6	43.4(1)
d	17.5	21.7(2)
m	4.2(3)	4.9
United Kingdom	1980	1981-83
b	-2.1	3.4
g	41.4	41.0
t	37.6	41.2
d	54.1	47.2(2)
m	9.8(3)	3.8

Sources and Definitions:

(b): budget balance (General Government) corrected by the cycle and inflation as a percentage of mid-trend GNP/GDP. From Muller and Price (1984). (+) surplus, (-) deficit.

(g), (t): cyclically corrected expenditures and revenues (General Government) as a percentage of potential GNP/GDP. From Muller and Price (1984).

(d): end-of-period net public debt (General Government) as a percentage of GNP/GDP. From OECD.

(m): money base growth (end of period). From IFS and Bank of Spain. (1) annual average excludes year 1984; (2) corresponds to the last year of the period; (3) annual average of the precendent five-year period.

reallocations on the spending side between defense and nondefense items, the share of government spending in the economy remained practically unchanged. This, together with the legislated tax cuts, led to an average (adjusted) deficit of 1% (of trend output) during the 1982-84 period from a 1.4% surplus in the year 1981. The last two rows in Table 4 show that the resulting deficit led to an important increase in the public debt-output ratio of the economy.

Another example of fiscal expansion is provided by France. During the initial Mitterrand years, the (adjusted) budget balance went from an surplus of 0.7% in 1980 to an average deficit of 0.6% during the 1981-83 period, as a result of the relatively larger increase in government spending than in tax revenues (see Table 4). As a result of this, and of the overall non-accomodating stance of French monetary policy, the deficit led to a significant increase in the public debt-output ratio of the economy, as shown in Table 4.

Spain also seemed to embark on a path of larger government spending after 1981 -one year before the Socialists were elected to office- which doubled the (adjusted) deficit in one year. As in the above two cases, Table 4 shows that the fiscal expansion was accompanied by a nonaccomodating monetary policy, which explains the sharp increase in the public debt-output ratio of the economy.

The two most striking cases of fiscal <u>tightening</u> were those of Germany and the United Kingdom, which show very significant improvements in their budget balance positions. In Germany, the move towards fiscal contraction is particularly acute since 1982: the (adjusted) deficit was

almost halved in that year and progressively transformed into a surplus in the following two years, as shown in Table 2. All in all, the average deficit for the 1982-84 period was less than half what it was in 1981, and, as the second and third rows of Table 4 show, this fiscal tightening was achieved mostly through the moderation of government spending. Given that the Bundesbank did not monetize the deficit, the budgetary improvements showed up in a deceleration of the increase in the public debt-output ratio of the German economy.

But, the most spectacular case of fiscal tightening was that of the United Kingdom, as can be seen in Tables 3 and 4. In this country, an (adjusted) budget deficit of 2.1%, in 1978 was converted into a 4% surplus by 1980. This sharp fiscal change coincided with the introduction by the Thatcher Government of the Medium Term Financial strategy (MTFS) which had as one of its main targets the improvement of the budget deficit outlook. As the second and third rows of Table 4 show, the turnaround in the budget was mostly the product of the very substantial increase of the share of tax revenues in the economy, while the share of government spending was slightly reduced. All this led to an average surplus of 3.4% during the 1979-82 period which, as shown in Table 4, caused a significant decline in the public debt-output ratio of the economy.

(b) <u>The links between budget deficits, current account deficits and employment: the evidence</u>.

So far, we have just identified several of the major shifts in fiscal policy which have occured both in Europe and the United States in recent years. It is now the

time to analyze whether the fiscal policy changes and the employment and current account movements which followed conform to the popular believes and how useful is the theoretical model in reconciling theory and facts. Specifically, we want to concentrate on the following questions:

First, are expansionary (contractionary) fiscal moves systematically associated with an expansion (a drop) in employment?.

Second, is there a systematic connection between budget deficits and current account deficits?

Table 5 summarizes the macroeconomic performance of the countries considered during the periods of major fiscal policy changes. The Table gives for each country the behavior of employment and the current account balance. This is combined with information about adjusted budget balance figures from Table 4 and is graphically represented in Figure 1. In the figure, point A represents the year inmediately before the fiscal policy change, and point B the average during the period of fiscal change.

How accurate are the popular believes in light of the empirical evidence summarized by Figure 1?.

Starting first with the employment effects of fiscal policy represented in the lower half of the pictures, a positive association is found between adjusted budget deficit changes and employment changes for all countries but France. As the pictures show, the fiscal tightening of Germany and the United Kingdom –represented by the

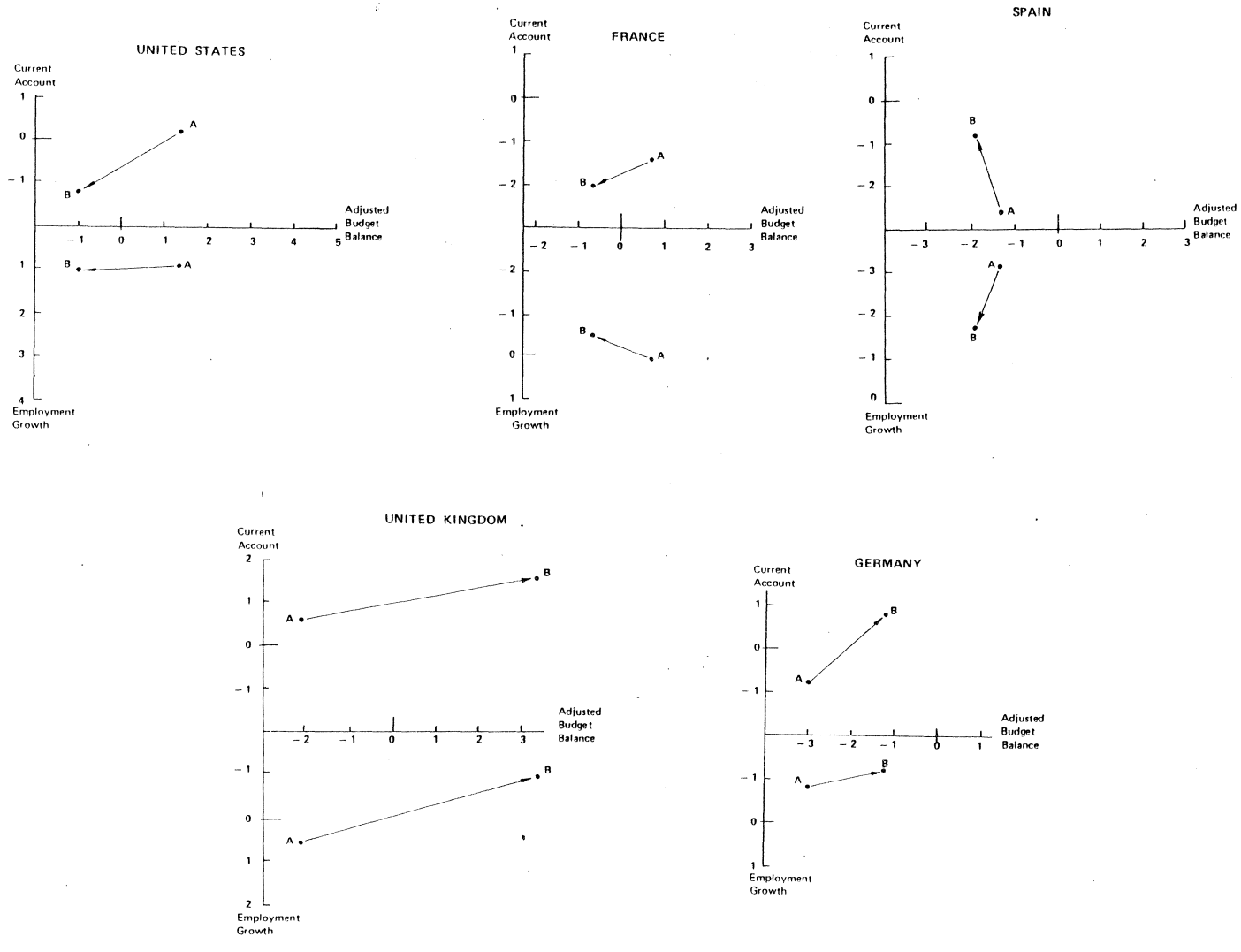
Table 5: Macroeconomic Performance

	Base year	Period of Fiscal Policy Change(a)
Fiscal Expansion		
United States	1981	1982-84
Employment Growth	0.9	1.0
Current Account	0.2	-1.3
France	1980	1981-83
Employment Growth	0.0	-0.4
Current Account	-1.4	-2.0
Spain	1981	1982-84
Employment Growth	-3.1	-1.7
Current Account	-2.6	-0.8
Fiscal Contraction		
Germany	1981	1982-84
Employment Growth	-0.8	-1.2
Current Account	-0.8	0.8
United Kingdom	1978	1979-82
Employment Growth	0.6	-1.0
Current Account	0.6	1.6

Sources: European Economy and National Sources.

(a) period average

Figure 1.


UNITED STATES
Current Account
Adjusted Budget Balance
Employment Growth
FRANCE
Current Account
Adjusted Budget Balance
Employment Growth
SPAIN
Current Account
Adjusted Budget Balance
Employment Growth
UNITED KINGDOM
Current Account
Adjusted Budget Balance
Employment Growth
GERMANY
Current Account
Adjusted Budget Balance
Employment Growth

improvement in their respective budget balances—was accompanied by a worsening of the employment situation, as shown by the upward-sloping lines. In the case of the United States and Spain, the fiscal expansion which took place since 1982 —which showed up in an enlarged budget deficit— was accompanied by an improvement in employment conditions. In the case of France, the absence of an upward sloping line in the lower part of the figures indicates the lack of a positive connection between fiscal expansion and employment.

Passing now to examine the current account effects of fiscal policy, it is interesting to see that the often expressed view that budget deficits and current account deficits go together is almost always confirmed by the evidence, failing to hold for Spain only.

(c) An attempt to explain the evidence: Country analysis.

In what follows, use of made of the theoretical model developed in Section 3 in order to explain why in some cases the popular believes were borne out by the facts and why in some other cases they were not.

As can be seen from looking at Table 2, the model predicts different adjustments following fiscal policy changes as a function of differences in the nature of unemployment, the exchange rate regime and the perceived duration and financing of such changes. To systematically read the evidence we make use of published estimates of the sources of unemployment in the countries considered (Coe (1985), Grubb et al. (1983), Layard et al. (1984), Bruno (1985), plus other country- specific evidence) and make a rough division between "fixed" and "flexible" exchange rate

countries according to whether they belong[13] to the EMS (Germany, and France) or not (United States and the United Kingdom[14]). Spain, although not belonging to the EMS, has pursued a policy of continuous intervention in the foreign exchange market during the 1982-84 period. Consequently, we take Spain as belonging to the "fixed" exchange rate group during these years.

(i) Fiscal Expansions

United States

As already mentioned, the United States embarked on a program of ambitious tax reform under the Reagan Administration. The introduction in 1981 of the Economic Recovery Tax Act was aimed at the reduction of personal income taxation by a cumulative 23% over the following three years. At the same time, the initial intentions regarding the elimination of "waste" in government spending no more than compensated for the significant increases in certain types of spending (ie. militay spending). The budget deficits that emerged (Table 4) were quite significant during the 1982-1984 period and -given the tough nonacommodating stance of the Federal Reserve engaged in the fight against inflation- led to an increase in public debt issues. Simultaneously, as shown in Table 5, the current account balance was deteriorating and employment growth was slightly increased, while the Administration was publically committed not to intervene in the foreign exchange market.

After having identified the United States as a flexible exchange rate country during the period considered, it is necessary to find out how close is this country to the "Keynesian" and "Classical" unemployment versions of the

Table 6: Short-Run Real Wage Rigidity*

	Private Sector	Manufacturing Sector
United States	0.67	1.09
Germany	0.58	1.54
France	1.52	0.51
United Kingdom	1.94	1.17
Spain	2.18(1)	2.39(2)

Sources: Grubb et al. (1983) for the manufacturing sector and Coe (1985) for the private sector. Dolado et al. (1985) for Spain.

(1) overall economy
(2) industrial sector

* The definition of real wage rigidity corresponds to the amount of unemployment which would result from a shock to the economy.

Table 7: NAIRU Estimates

	Period	Coe (1985)	Layard et al. (1984)	Actual unemployment rate
United States	1974-81	7.3	6.8	6.9
	1982-83	4.2	-	9.7
Germany	1976-80	3.1	3.7	3.6
	1981-83	8.0	5.3	6.3
France	1976-80	3.3	5.3	5.2
	1981-83	9.0	6.9	8.3
United Kingdom	1976-80	7.3	4.6	5.4
	1981-83	5.9	9.5	0.6
Spain	1973-79	6.6(1)		3.4
	1980-84	11.3(1)		11.4

(1) From Dolado et al. (1985) for the industrial sector.

Table 8: Real Wage Gaps

		1970	1976	1979	1981	1982	1983	1984
United States	(1)	0.1	6.0	6.8	8.1	8.6	8.4	-
France	(1)	-3.4	7.9	10.7	14.3	17.4	-	-
	(2)	-	-	0.8-1.0	1.6-2.3	3.4-3.9	6.4-7.0	10.5-11.2
	(3)	-	-	-	7.2-8.5	7.8-8.8	7.6-8.8	5.6-6.9
	(4)	-	-	9.3-9.8	3.8-4.7	0.4-10.8	9.3-10.9	12.5-14.2
Spain	(5)	-	-	-	46.0	46.4	48.1	44.7
Germany	(1)	1.5	13.0	15.3	19.1	15.9	12.9	-
United Kingdom	(1)	2.2	11.0	16.4	24.1	25.0	26.4	-

Sources: (1) Bruno (1985) for manufacturing sector (1965-69 base year).
(2) Sachs and Wyplosz (1985) estimates for manufacturing (1976-78 base year).
(3) Sachs and Wyplosz (1985) estimates for building and construction (1976-78 base year).
(4) Sachs and Wyplosz (1985) estimates for retail and wholesale trade (1976-78 base year).
(5) Spains' estimates are for the overall economy (1974 base year).

model. Table 6 presents estimates of the degree of short-run real wage rigidity in the United States and other countries for the manufacturing sector (Grubb et al., (1983)) and the private sector of the economy (Coe (1985)). The evidence shows that the United States is a country with a relatively flexible real wage in the short-run, which squares quite well with the previous findings of Sachs (1979), Branson and Rotermberg (1980) and Gordon (1982). Also, the estimates of the NAIRU in Table 7 show that it dropped in the 1982-83 period as compared to the 1974-81 period, which suggests a reduction of structural unemployment during the expansionary fiscal years. Finally, Bruno's (1985) estimate of the wage gap in the manufacturing sector (the excess of the actual real wage over the full employment real wage) in Table 8 is relatively small when compared to European countries and did not vary much during this period.

All of the above evidence seems to support the findings of larger econometric models. According to these models, the United States is an economy where demand fluctuations play an important role in generating employment fluctuations.

On the basis of this evidence, the United States would fit in the Keynesian unemployment, flexible exchange rate scenario of the intertemporal disequilibrium model of Table 2. Can the model then explain the employment-current account evolution which accompanied the fiscal expansion?.

Yes, it can. The explanation that fits best with the evidence is that the expansionary fiscal change and the deficit that followed were not regarded as 'permanent' changes, since the deficits were too large and, sooner or later, some adjustment (more likely in taxation than

spending) would have to be made. In fact, one can only have a permanent deficit as a result of a tax cut when this leads to a future increase in monetization, something not likely to happen in the United States.

Recall that the public was confronted with a basically unchanged government spending and with a tax cut which led to a bond-financed deficit. On the basis of Table 3, and of our discussion of bond-versus-tax financing in section 3, a bond financed tax cut -by increasing wealth-puts (nontradeables) demand pressure in the economy and worsens the current account as people consume more tradeables.

Therefore, the fiscal policy change is consistent with the worsening of the current account and the rise in employment that took place. It is also probably true that the tough monetary policy of the Fed during the period, by appreciating the real exchange rate, deepened the worsening of the current account and lowered the employment gains.

France

The initial years of the Mitterrand Presidency were characterized by the implementation of a "new" economic policy aimed at reversing the rising unemployment trend of previous years, while making France a more just society. However, as Sachs and Wyplosz (1985) describe in the last issue of this journal, the 1981-83 fiscal expansion of the Socialist Government and their socially-oriented labor market policies have been sharply reversed since 1983. The analysis of French fiscal policy of previous sections showed that during the 1981-83 period there was a fiscal expansion

in France that, although short-lived, did nevertheless imply significant increases in spending and taxation in the economy (Tables 3 and 4).

As an EMS member, France is a "fixed" exchange rate country according to the convention used in this section of the paper. Regarding French unemployment, Table 6 shows that France is an economy with a particularly rigid real wage in the short-run in the private sector, and not so rigid in manufacturing. Other two relevant pieces of evidence are the sharp rise of the French NAIRU in the 1981-83 period shown in Table 7 and the sizeable and growing wage gap during the same period shown in Table 8. This preliminary evidence points towards the existence of a Classical unemployment situation in France during the fiscal expansion years of 1981-83, something that is confirmed by the analysis of Sachs and Wyplosz (1986).

"... Our study of the wage gaps further implies that an expansion could not even proceed very far as firms were unlikely to hire more labor at the existing labor costs, ..." (p. 48).

"... The evidence would then suggest that, at best as a consequence of the limited expansionary policy France left the Keynesian regime..." (p. 50).

Therefore, if we accept a rough characterization of the French economy as a Classical unemployment, fixed exchange rate economy, can the intertemporal model explain the simultaneous worsening of employment and the current account which took place during the expansionary fiscal period?.

Table 2 indicates that a short-lived, unsustainable fiscal expansion like the one that took place in France in the form of a government spending increase, financed in part by taxes and in part by debt, has no expansionary effect on employment and worsens the current account. Therefore, although the current account worsening is explained, the fiscal action does not seem, at first sight, to have had negative employment effects. These effects have to be found somewhere else in the overall economic policy package of these years. The growing wage gap during the period, probably enlarged by the cost increasing effects of the tax and labor changes that were implemented (increase in minimum wages and paid vacation time, shortening of work-week), were very likely to be of such importance as to very significantly influence the employment performance of the French economy.

Spain

The fiscal expansion started in Spain one year before the Socialist Government came to power. Although Spanish public finances had been showing a tendency to worsen in the second half of the seventies, the biggest recent worsening (see Table 3) was started by the Democratic Center Union Government during the 1982 election year and has been continued so far under Socialist tenure. During these years the expansion of government spending has been the dominant fenomenon, as can be seen in Table 4.

Spain has just recently become an EEC member and, therefore, did not belong to the Comunity countries which followed the exchange rate policies of the EMS. However, the Bank of Spain has intervened to smooth out exchange rate fluctuations (Viñals (1983)). Spain officially devalued the

peseta in December 1982, right at the start of the new Socialist Government period, in order to set relative prices "right". Once set, the exchange rate policy followed during the 1982-84 period has sought to stabilise the real exchange rate. Consequently, as a first approximation we can think of Spain as a "fixed" exchange rate country.

Regarding the nature of Spanish unemployment, recent work by Dolado et al. (1985) for the overall economy give an average short-run degree of real wage rigidity for the 1970-84 period which is larger than the values for the other countries in Table 6. These authors also estimated a substantial increase in the NAIRU (Table 7) during the 1980-84 period, the average values for the actual unemployment rates and the NAIRU being almost identical. Although Spain was not included in the group of countries used by Bruno (1985) in his wage gap estimation, it is possible to construct a rough wage gap measure for the Spanish economy. By assuming a Cobb-Douglas technology, a given path for the capital stock and a 2% trend productivity growth, it is possible to arrive at the gap estimates shown in Table 8. As can be observed, the numbers are quite large and, although directly not comparable with the numbers obtained by Bruno for other countries, they indicate that Spain still had a wage problem in 1981 which did not dissapear during the fiscal expansion years. Finally, in explaning the increase of industrial unemployment from 1973-79 to 1980-84, Dolado et al. (1985) also find that of a 7.46 percentage points increase in (explained) unemployment between these two periods, demand accounts for 3.20 pp. and the cost push factors for 4.26 pp.

All this evidence can be read as saying that, the Classical unemployment component was still very large in the Spanish economy in these last years.

Taking Spain as a managed exchange rate, Classical unemployment economy we now try to interpret the employment and current account evidence during the fiscal expansion 1982–84 period. This expansion took the form of a debt financed increase in the budget deficit, primarily due to an increase of government spending, as shown in Table 4.

Perhaps, a most distinctive characteristic of Spanish government spending increases since the late seventies is their irreversible nature. The reason behind this explanation is that, with the coming of democracy to Spain, there was a large increase in budgetary demands by those components of society which were discriminated against in the previous four decades. This "catching up" effect (new pensions, higher spending on social programmes, etc...) was substantially augmented by the fairly large set of transfers that was made to nationalized industries and which did not seem transitory either. Therefore, differently from the other countries considered in the sample, Spain did have something which looks a lot more like a 'permanent' fiscal change which rapidly accentuated since 1982. Unlike in the other countries considered, a permanent budgetary expansion leading to an increase in future money creation was not an implausible scenario in the Spanish case.

As was shown in Figure 4, Spain experienced a relative improvement in employment conditions and a marked improvement in the current account balance during the very expansionary fiscal period of 1982–84. Can the intertemporal model explain this?.

The fixed exchange rate, Classical unemployment version of the intertemporal disequilibrium model (see Table 2) would predict no effects on employment and an improvement

of the current account balance as a result of a permanent tax-financed increase in government spending. Since the increase in spending was debt financed in the case of Spain, this may have offset to some extent the improvement in the current account balance (due to the higher tradeables demand caused by the positive wealth effect).

But how can the model explain the relative improvement in employment conditions that took place during the period?. In spite of policies to improve the efficiency of the productive sector of the Spanish economy, NAIRU's and wage gaps still remained quite high, as seen in the Tables. On the other hand, one must not forget that, even in the classical unemployment case, an employment cum current account improvement is possible as a result of a real exchange rate depreciation. In the Spanish case, this occurred with the December 1982 devaluation which, by modifying the real exchange rate, increased the labor demand of the tradeables sector which improved the employment situation and the current account at the same time.

All in all, in the Spanish case, the lack of a direct link between the budget deficit and the current account deficit can be explained because the (debt financed) fiscal expansion was not temporary and because there was a devaluation.

(ii) Fiscal Contractions

Germany

As shown in Tables 3 and 4, the Federal Republic of Germany made an effort to improve its budgetary position since 1982, through stronger control of government spending.

As a result of the improved budgetary situation, the debt/output ratio of the economy reduced its rate of increase.

Germany is the anchor country in the EMS and, therefore, can be considered a fixed exchange rate country. Regarding the nature of German unemployment, Table 6 shows that while there is quite a bit of real wage rididity in manufacturing in the short-run, the overal real wage seems not very rigid, being even less rigid than in the United States. Manufacturing wage gap measures in Table 8 also show that Germany had quite a large gap in 1981, although it has been gradually decreasing over the following two years, meaning that during the fiscal contraction period the "wage problem" was not so severe as it was before. However, Bruno's estimates of the rise in German unemployment for the overall economy since 1965-69, establish that in 1982, 1.9 percentage points of this increase were due to the wage gap problem, while 3.4 percentage points were due to aggregate demand. Also, a recent study by Franz and König (1985) reveals that:

"Summing up, in contrast to the usual claim that real wages are too high to regain full employment these results indicate the importance of the distinction between both dimensions of employment: marginal costs of overtime work are comparatively too low and normal wage costs of a full-time are, at least since OPEC II, to high for full employment".

Although there is no unique way to read the evidence, a plausible interpretation is that, even if Germany had a "wage problem" and Classical unemployment in the 1970s, it probably left the Classical regime in the

first few years of the 1980s, as the wage problem was reduced and the fiscal tightening measures were implemented.

In fact, by looking at Germany during the 1982-84 period as a "locally" Keynesian, fixed exchange rate economy, it is possible to explain the employment and current account adjustments that took place simultaneously with the fiscal contraction.

The German fiscal change can be basically described as an adjusted government spending cut which slowed down the public debt increase of former years. Even if all of the drop in spending had corresponded to a drop in taxes, Table 2 would have predicted a drop in employment without any change in the current account balance following a temporary change. However, the cut in spending showed up as a reduction in debt creation. Accordingly, there was a negative wealth effect in the economy, which put downward pressure on (nontradeables) demand, lowering employment, at the same time as it helped reduce tradeables demand, further improving the current account balance.

The model explains the data best when the change in policy is taken as temporary, rather than permanent. Again, this may have been due to the initial skepticism by the private sector that a long-lasting remedy for the budget deficit problem could be implemented, given the upward trend followed by government spending and taxation in the past.

United Kingdom

Fiscal tightening began in the United Kingdom with the MTFS of the Thatcher Administration, which really

started with the 1980 budget and was specially intense during the following two years. From our previous discussion of the British fiscal change in Tables 3 and 4, it can be summarized as a set of spending halting and tax increasing decisions which significantly improved the budget and, consequently, reduced the debt/output ratio of the economy as seen in Table 4. Indeed, this description seems to be the mirror image of what happened in the United States in recent years. But before examining how well can the intertemporal disequilibrium model explain what happened, it is necessary to discuss which exchange rate and unemployment combination best fits British reality during the 1979-82 period.

It is well-known that the desire to maintain a large degree of flexibility in exchange rate decisions has made the United Kingdom not to join the EMS so far. However, the empirical evidence regarding the causes of unemployment is not as clearcut in this case as in the United States.

If we look at Table 6, the United Kingdom seems to show quite a large degree of real wage rigidity in the short-run (ie. price changes do not easily translate into real wage changes). Also, Bruno's (1985) empirical estimates of the adjusted wage gap finds a relatively sizeable gap at the beginning of the MTFS, a gap which continually increases during the following years and which indicates a potential supply side problem in manufacturing. However, work by Buiter and Miller (1983), Layard et al. (1984) and Layard and Nickell (1985) seem to indicate that, in spite of all this, aggregate demand played a major role in shaping unemployment in the United Kingdom during the fiscal contraction years.

As Buiter and Miller (1983) point out:

"By Keynesian principles of the determination of aggregate demand and output, the depth of the depression in the United Kingdom can be partly explained by the tight fiscal stance induced by the MTFS" (p. 327).

This seems to be confirmed by Layard and Nickell's estimates of the underlying factors behind unemployment changes. They show that while demand factors played a nonnegligible role in the 1970s, they became most important in explaining the recent increase in the British unemployment rate, as can be seen in Table 9. In fact, as the authors point out:

"But when we go from 75-79 to 80-83 we see that "demand" actually fell by more than three times what was required for unchanging inflation, with the obvious consequences. Of this remarkable fall in demand half was due to competitiveness and half was due to fiscal policy" (p. 35).

The simultaneous drop in employment and the improvement in the current account balance which occured in the United Kingdom during the fiscal contraction period can be explained in the context of the Keynesian, flexible exchange rate version of the intertemporal model. In fact, the fiscal change in the United Kingdom can be basically understood as a bond financed tax increase. As Table 2 shows, the policy, by reducing net private wealth, does contribute to the improvement of the current account while reducing total demand and employment.

Of course, this would be the explanation if the fiscal moves were mostly perceived as temporary, which is not implausible, given the initial skepticism about the

Table 9: Change in UK'S unemployment rate (males)

	1967–74 to 1975–79			1975–79 to 1980–83		
	(1)	(2)	(3)	(1)	(2)	(3)
Push factors	2.32	2.78	2.76	1.45	1.23	0.54
Demand	0.82	0.67	0.20	5.14	4.49	6.74
Total explained	3.14	3.45	2.96	6.59	5.72	7.28
Actual change	3.01	3.01	3.01	7.00	7.00	7.00

Source: Layard and Nickell (1985), Tables 8, 10 and 14. Columns (1), (2), and (3) correspond to alternative model specifications.

determination of the economic authorities to reverse the large deficits which were originated under previous governments. In fact, since 1983 the actual deficit has increased again and the most recent adjusted budget balance figures show much smaller surpluses than those of the 1979-82 period.

(f) Summary

It is true that the empirical evidence presented in previous sections is still very informal and needs to be refined further before it can be claimed that the simple version of the intertemporal disequilibrium model is a useful way of interpreting reality. Nevertheless, Table 10 indicates that there is a grain of truth in the model. The Table compares the actual employment and current account effects which occurred during the periods of major fiscal policy changes with the effects that would have been predicted by the model (Table 2), given knowledge about the exchange rate regime and unemployment regime for each country.

As can be observed, the model does not do too badly in the cases examined, especially regarding the fiscal policy-current account link. While it is true that there may have been other things at work too, the evidence seems to be on the whole consistent with fiscal policy playing an important role in United States and European macroeconomic performance in the 1980s.

Table 10: The model and the facts

Country	Structure	Fiscal Change*			Employment Effect		Current Account Effect
		Δg	Δt	Δd			
United States	Keynesian, non EMS	0	-	+	(a)	+	-
					(b_1)	+	-
France	Classical, EMS	+	+	+	(a)	-	-
					(b_1)	0	-
Spain	Classical, non EMS	+	-	+	(a)	+	+
					(b_2)	0	+
Germany	Keynesian, EMS	-	0	-	(a)	-	+
					(b_1)	-	+
United Kingdom	Keynesian, non EMS	-	+	-	(a)	-	+
					(b_1)	-	+

* Simbols are defined in table 4. In Germany Δd is negative to capture the reduction of the rate of increase of public debt.
In the case of the United States and Germany, Δg and Δt are set to zero in the table although in practice there were minimal changes: 1 and 2 per thousand, as a fraction of GNP/GDP respectively.
(a) : actual outcome (Table 5)
(b_1): model prediction with temporary change (Table 2), (b_2) model prediction with permanent change (Table 2).

5. Conclusions

Although unemployment is nowadays the major economic problem in Western countries, there is a reluctance on the part of policymakers to pursue expansionary demand policies. This is both because of fear that most of the expansion will translate into higher prices with little or no effect on output and employment, and because of the fear about the negative effects of such policies on the external balance of the economy. While the fear of inflation is quite understandable, it is not so clear why policy should be subjected to external balance constraints too. However, as our discussion showed, the current account balance seems to be a crucial variable to care about both in the long and short-run. In the long-run, because a healthy economy cannot live 'beyond its means' and, consequently, must respect a long-run solvency constraint. In the short-run, because of uncertainties, market imperfections and adjustment problems, besides the fact that sometimes short-run goals have to be pursued to reach long-run goals.

Therefore, it makes sense to select macroeconomic policies to achieve a given output or employment target with the smallest current account deficit. Now, if one were to make use of this paper as a guide (however imperfect) for policymaking, what would be the major lessons to be learned regarding fiscal policy?.

What this paper has shown is that unless a fiscal stimulus takes the very specific form of a temporary debt financed budget deficit, it is not generally true that it leads to a deterioration of the current account balance. That is, the short-run external constraint need not be binding if careful policy decisions are taken. The paper

also has several implications regarding the effectiveness of fiscal policy in fighting unemployment:

First, in economies which suffer from a lack of effective demand like it may be the case in the United States, Germany and the United Kingdom, temporary fiscal policies are always more effective than permanent policies in the fight against unemployment. Moreover, it is always possible to get an increase in employment without a current account deterioration through a temporary increase in government purchases financed by money creation (when flexible exchange rates) or also by taxes (when fixed exchange rates).

Second, in economies which suffer from excessive real wages like it may be the case in France and Spain, nothing short of supply-side fiscal policies will be helpful, although a money-financed tax cut (even whithout supply-side effects) will help both employment and the current account in those countries which do not strictly adhere to a fixed exchange rate policy.

Finally, a few cautionary notes. While it is true that these conclusions apply to each country individually, they may be modified to the extent that different countries simultaneously pursue other policies. Also, as has been pointed out already, the "Keynesian" versus "Classical" unemployment distinction is not as rigid in practice as in theoretical models, especially when several goods markets exist. This means that in most cases, neither purely demand or supply policies will be able to solve the unemployment problem unless they are well coordinated.

Notes

1. Tecnically, the long-run external constraint of the economy should be written as an inequality ($\leq$).

2. In fact, a necessary and sufficient condition for the solvency constraint is that the interest rate of the external debt be larger than the growth rate of the debtor and creditor country. Otherwise, the debt becomes a small and decreasing fraction of debtor or creditor's wealth. See Cooper and Sachs (1985).

3. See Cooper and Sachs (1985) and Gersovitz (1985) for a rigurous analysis of international borrowing issues.

4. The recent papers by Rogoff (1985) and Giavazzi and Giovannini (1986) show the relevant role played by French and Italian capital controls within the European Monetary System.

5. In what follows we refer to the trade balance and the current account interchangeably.

6. Although Table 1 refers to the bond-financed case, bond financing is not really in the simple model of Appendix I, and can only be interpreted as such in a residual manner, where government spending changes are neither financed by taxes or money.

7. See Cuddington and Viñals (1986a, 1986b). Other intertemporal disequilibrium models are those of Persson (1982) and Van Wijnbergen (1985a, 1985b).

8. This is equivalent to the assumption of domestic good purchases by the governement in the Mundell-Fleming model.

9. Taxes are lump-sum.

10. In the future walrasian period, it can be shown that variation in the tax/money financing mix leave current and future real variables unchanged.

11. Since the present nontradeables price is given, fixing the nominal exchanges rate also fixes the real exchange rate.

12. The model described in Appendix III embodies certain assumptions that make government bonds and taxes perfect substitutes. Although this can be formally relaxed as in Blanchard (1985) or Frenkel and Razin (1984b), we just consider in the text the differences introduced by government bonds being net wealth.

13. One should bear in mind, nevertheless, that part of the EMS countries' trade is with countries whose exchange rates are not fixed.

14. The United Kingdom's currency forms part of the European Currency Unit (ECU), which is part of the EMS. The United Kingdom does not belong, however, to the group of countries in the EMS that are subject to the discipline mechanisms of exchange rate policy.

APPENDIX I.- The simple Mundell-Fleming model

The "fixed-price fixed- interest rate" version of the model ($p=i=i^*=1$), can be easily represented by the following three equations:

$$y = \underset{+}{E(y-t)} + g + \underset{- \quad +}{BT(y-t,\ e)} \qquad \text{Output Market} \qquad (A1)$$

$$M = \underset{+}{L(y)} \qquad \text{Money Market} \qquad (A2)$$

$$e = \bar{e} \ \text{ or } (3')\ M = \bar{M} \qquad \text{Exchange Rate Policy} \qquad (A3)$$

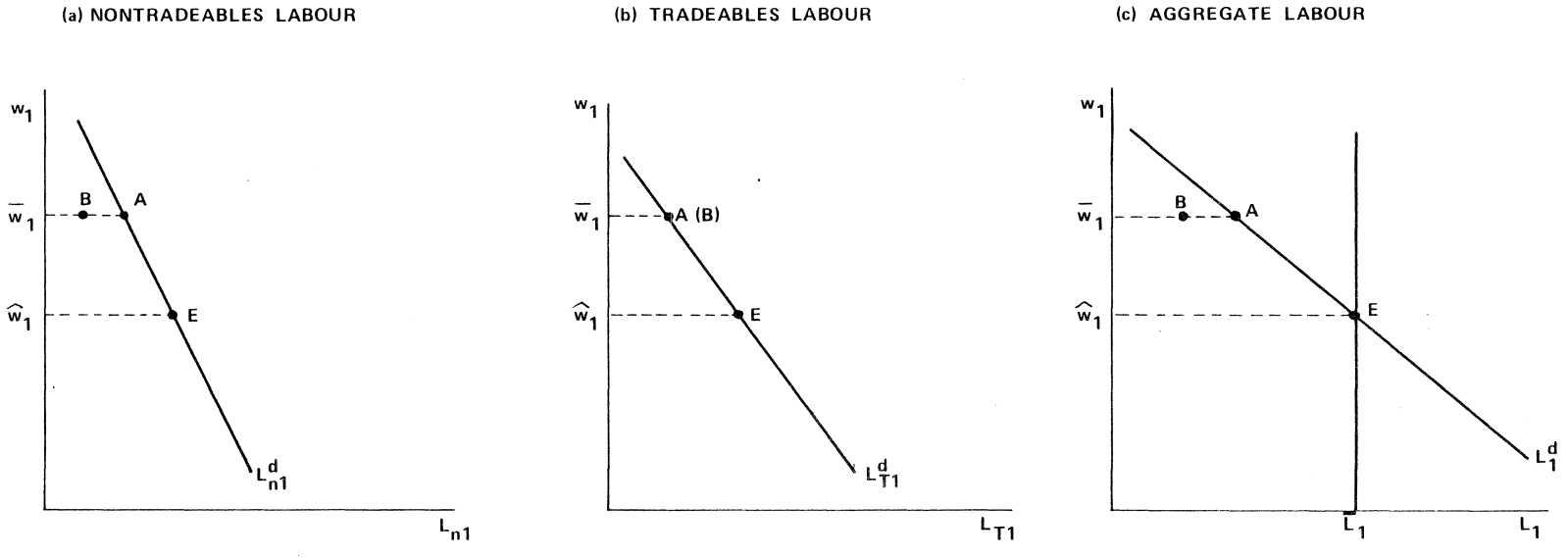
where y is domestic output, e the exchange rate, t tax revenues, g government spending, M the quantity of money, and where E(.) and BT(.) represent domestic absortion and the trade balance respectively. The foreign price level, and foreign income are also taken as given.

APPENDIX II.- Price-Wage Rigidities, and the Labor Market in the Two-Good Model

In such an economy, although there is unemployment, this can be Keynesian (demand-constrained output and employment) or Classical (supply-constrained output and employment)

Figure A1 represents the labor market in the first period. If there were no short-run price and wage rigidities, the labor market would be in equilibrium at point E in part (c) of the Figure, with all the workers being employed at the nominal wage w_1. Total employment will be allocated between the tradeables and nontradeables sector, depending on the relative position of their labor demand schedules (L^d_{n1}, L^d_{T1}), which in turn depend on the relative price of tradeables.

FIGURE A1: KEYNESIAN AND CLASSICAL UNEMPLOYMENT



Consider now a situation where both the nominal wage and the price of nontradeables are too high relative to their full-employment values. This makes firms in the tradeables sector demand at point A a smaller amount of labor than before, since the nominal wage is now higher ($\bar{w}_1 > \hat{w}_1$). Simultaneously, in the nontradeables sector firms demand a smaller amount of labor than before, because the wage is too high and demand is too low. If the first rigidity dominates, then firms will be at a point like A. If, on the other hand, the second rigidity dominates, firms will be off their notional labor demand curve and will be at a point like B. The economy as a whole will be at a point like A in the first case, the unemployment being Classical at the margin. In the second case, it will be at point B, the unemployment being Keynesian at the margin.

APENDIX III.- The intertemporal disequilibrium model

(a) The flexible exchange rate, Keynesian version of the intertemporal disequilibrium model used in the text can be fully represented by the following set of relationships (See Cuddington and Viñals (1986a)).

Production Sector (Nontradeables (n) and Tradeables (T))

y_{n1} is demand determined (B1)

$$y_{T1} = y_{T1}(\rho_1) \qquad \delta y_{T1}/\delta\rho_1 > 0 \qquad \text{(B2)}$$

$$y_{T2} = y_{T2}(\rho_2) \qquad \delta y_{T2}/\delta\rho_2 > 0 \qquad \text{(B3)}$$

$$y_{n2} = y_{n2}(\rho_2) \qquad \delta y_{n2}/\delta\rho_2 < 0 \qquad \text{(B4)}$$

ρ_t = relative price of tradeables in terms of nontradeables.

Household Sector

$$\max U = \alpha \ln C_{n1} + (1-\alpha)\ln C_{T1} + \frac{1}{1+\delta}(\alpha \ln C_{n2} + (1-\alpha)\ln C_{T2}) \tag{B5}$$

s.t.

$$P_t C_{nt} + e_t C^H_{Tt} = M^H_t \qquad t=1,2 \tag{B6}$$

$$C^{*H}_{Tt} = M^{*H}_t \qquad " \tag{B7}$$

$$C_{Tt} = C^H_{Tt} + C^{*H}_{Tt} \qquad " \tag{B8}$$

$$e_t \cdot M^{*H}_t + M^H_t = (p_{t-1}\, y_{nt-1} + e_{t-1} y_{Tt-1}) - T_{t-1} + e_t B_t$$

$$- (1+i^*_{t-1}) e_t B_{t-1} \qquad " \tag{B9}$$

$$B_o = B_2 = 0 \tag{B10}$$

Government Sector

$$p_t \cdot g_t = M^g_t \qquad t=1,2 \tag{B11}$$

$$M^g_t = T_{t-1} + X_t + e_t B^g_t - (1+i^*_{t-1}) e_t B^g_{t-1} \qquad " \tag{B12}$$

$$B^g_0 = B^g_2 = 0 \tag{B13}$$

Foreign Sector

$$e_t C^F_{Tt} = M^F_t \qquad t=1,2 \tag{B14}$$

Interest Rate Parity

$$(1+i_t) = (1+i^*_t).\ \frac{e_{t+1}}{e_t} \qquad t=1,2 \qquad \text{(B15)}$$

Equations (B1)–(B4) represent the output supply functions (y_{jt}, j=T,n) of the economy, given the constant nominal wage and price of nontradeables prevailing in the first period ($w_1=p_1=1$). Equations (B5) to (B10) describe the optimizing behavior of the representative consumer, which must obey the cash-in-advance restrictions every period ((B6), (B7)), relating the domestic demands for domestically produced and foreign- produced tradeable goods (C^H_{Tt}, C^{*H}_{Tt}) and the household's demands for domestic and foregin money (M^H_t, M^{*H}_t). Since there is certainty and a positive interest rate is assumed, bonds dominate money as a vehicle for saving. The money is obtained by the representative consumer at the beginning of the period from: (1) receipts of the after-tax income generated in the previous period ($Y_{t-1}-T_{t-1}$), and (2) net increases in borrowing (domestic or or foreign), [$e_t\ B_t - (1+i^*_{t-1})e_t.B_{t-1}$], as indicated by equation (B9). Also, by equation (B10), consumers must fully repay their debts (B_t) by the end of their lives.

The government sector is contained in equations (B11) to (B13), which state that the government is bound by the cash-in-advance constraint, and must fully repay its debts. At the beginning of the period, the government raises the required quantity of money (M^g_t) needed to carry out its purchases from taxation (T_{t-1}), money creation (X_t) and debt issues (B^g_t). Finally, equations (B14) and (B15) respectively describe the foreign demand for domestic money (M^F_t) and the interest parity condition; i_t, i^*_t, and e_t being the domestic, foreign interest rate and nominal exchange rate respectively. Because of the assumption of perfect foresight, the expected and actual exchange rates are equal.

The model can be solved by combining equations (B6) to (B10) with equation (B15), which yields in equilibrium an overall budget constraint for the household (after internalizing the government budget constraint) of the form:

$$(C_{n1} + e_1 C_{T1}) + \frac{1}{1+i}(p_2 C_{n2} + e_2 C_{T2}) \tag{B16}$$

$$= W_o = (y_{n1} - g_1) + e_1\ y_{T1} + \frac{1}{1+i}\ [p_2(y_{n2} - g_2) + e_2\ y_{T2}]$$

This allows a very simple treatment of the maximization problem, as shown in Helpman (1981): maximization of (B5) subject to (B16). Of course, in the log-linear utility case, the commodity demand functions take the following convenient form:

$$C_{n1} = \alpha \frac{1+\delta}{2+\delta} W_o \qquad C_{T1} = (1-\alpha) \frac{1+\delta}{2+\delta} \frac{W_o}{e_1}$$

$$C_{n2} = \alpha \frac{1+i}{2+\delta} \frac{W_o}{p_2} \qquad C_{T2} = (1-\alpha) \frac{1+i}{2+\delta} \frac{W_o}{e_2} \tag{B17}$$

The desired demand for domestic and foreign money by the household can then determined recursively using (B6) and (B7).

In turn, the intertemporal budget constraint of the government can be obtained by combining equations (B11) to (B13) and (B15):

$$g_1 + \frac{p_2 g_2}{1+i} = (T_o + \frac{T_1}{1+i}) + (X_1 + \frac{X_2}{1+i}) \tag{B18}$$

where the present value of spending equals the present value of taxation and of money creation.

It can be shown that the aggregation of the demands for domestic money by the household, the government and foreigners, yields the unitary velocity version of the quantity theory of money:

$$M_t = y_{nt} + \rho_t \, y_{T_t}(\rho_t) \tag{B19}$$

Also, the wealth constraint can be writen in equilibrium as:

$$W_o = \frac{e_1}{1-\alpha} \left[y_{T1}(\rho_1) + \frac{1}{1+i^*} \, y_{T2}(\rho_2) \right] \tag{B20}$$

A compact presentation of the model is given by the following equations (substituting (B17) and (B20) in):

$$y_{n1} = C_{n1} + g_1 \qquad \text{Nontradeable} \tag{B21}$$

$$y_{n2}(\rho_2) = C_{n2} + g_2 \qquad \text{Goods Markets} \tag{B22}$$

$$M_1 = y_{n1} + \rho_1 \, y_{T1}(\rho_1) \qquad \text{Money Market} \tag{B23}$$

$$BT_1 = y_{T1}(\rho_1) - C_{T1} \qquad \text{Current Account Balance} \tag{B24}$$

where only the equations needed to determine present output (y_{n1}, y_{T1}), the real exchange rate (ρ_1) –M_1 with fixed exchange rates– and the current account balance (BT_1) are included.

The first two equations (B20, B21) describe the equilibrium in the first and second period nontradeable goods markets. As indicated, the consumption demand for nontradeables depends on relative prices and wealth, which in turn depends on government spending in the current and future period (g_1, g_2).

The first and second period nontradeables market equilibrium conditions, (B21, B22) can be combined to yield:

$$y_{n1} = y_{n1}(\underset{+}{\rho_1}, \underset{+}{\rho_2}(\underset{-}{\rho_1}, \underset{-}{g_2}), \underset{+}{g_1}) = y_{n1}(\underset{+}{\rho_1}, \underset{+}{g_1}, \underset{-}{g_2}) \tag{B25}$$

Finally, by using (B20) the first period current account balance ($BT_1 = y_{T1} - C_{T1}$) can be specifically writen as:

$$BT_1 = \frac{1}{2+\delta} [y_{T1}(\rho_1) + \frac{1+\delta}{1+i^*} y_{T2}(\rho_2)] \tag{B26}$$

(b) The <u>Classical</u> unemployment version of the model presented in the text is based on Cuddington and Viñals (1986b) and can be obtained from equations (B2) to (B15), after replacing (B1) by:

$$\bar{y}_{n1} = y_{n1}(\bar{w}_1/\bar{p}_1) \tag{B1'}$$

and incorporating a new equation in the household sector that reflects the fact that households face a quantity constraint (C_{n1}) on their purchases of nontradeables in period 1. The resulting effective demand functions for nonrationed goods take then the following form:

$$\begin{aligned} C_{T1} &= \frac{(1-\alpha)(1+\delta)}{1+(1-\alpha)(1+\delta)} \frac{\tilde{W}_o}{e_1} \\ C_{n2} &= \frac{\alpha(1+i)}{1+(1-\alpha)(1+\delta)} \frac{\tilde{W}_o}{p_2} \\ C_{T2} &= \frac{(1-\alpha)(1+i)}{1+(1-\alpha)(1+\delta)} \frac{\tilde{W}_o}{e_2} \end{aligned} \tag{B17'}$$

where $\tilde{W}_o$ ($\tilde{W}_o = W_o - C_{n1}$) is residual wealth.

A compact presentation of the model, amended to take into account the presence of Classical unemployment (substituting (B17') and (B20) in), is the following:

$C_{n1} = \bar{y}_{n1} - g_1$	Nontradeable	(B21')
$y_{n2}(\rho_2) = C_{n2} + g_2$	Goods Markets	(B22')
$M_1 = y_{n1} + \rho_1 \, y_{T1}(\rho_1)$	Money Market	(B23')
$BT_1 = y_{T1}(\rho_1) - C_{T1}$	Current Account Balance	(B24')

It can be easily checked that equations (B18), (B20), (B25) and (B26) of part (a) of the Appendix continue to hold.

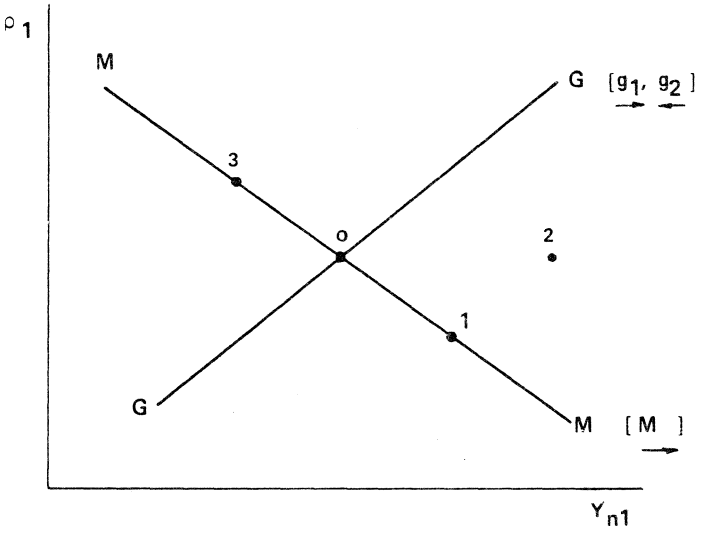
(c) The fixed exchange rate versions of the previous models can be obtained quite straightforwardly by distinguishing between monetary injections coming from budget deficit financing, and monetary injections coming from Central Bank intervention in the foreign exchange market (the debts resulting from intervention must also be repaid).

APPENDIX IV.– Graphical Apparatus.

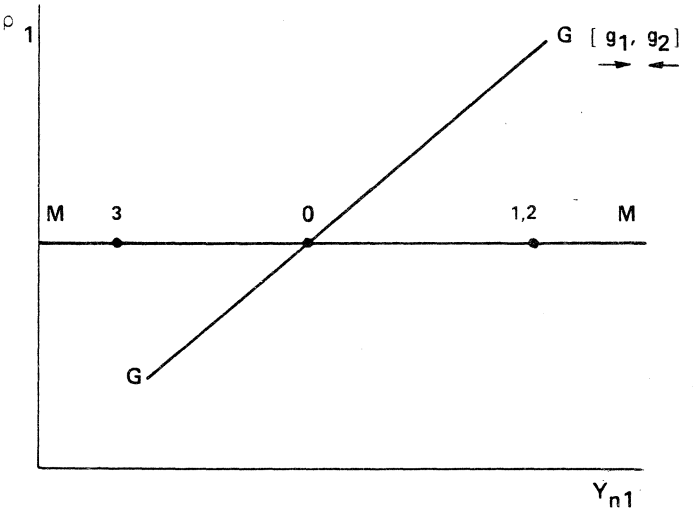
Figure A2 represents the basic workings of the Keynesian version of the model, composed by a "goods market" (GG) and a "money market" equation (MM). The GG schedule in Figures A2 (a) and (b) associates a depreciation of the real exchange rate (ρ_1 increases) with an increase in the output of nontradeables, y_{n1}, after

FIGURE A2: THE EFFECTS OF FISCAL POLICY IN THE KEYNESIAN ECONOMY

(a) FLEXIBLE EXCHANGE RATE



(b) FIXED EXCHANGE RATE



accounting for expected future price (ρ_2) effects. Intuitively, a depreciation of the real exchange rate makes nontradeable goods relatively cheaper, which increases nontradeables demand and output in the first period. Moreover, the GG schedule shifts with fiscal policy. A temporary increase in current government purchases of nontradeables (g_1) leads to an expansion of current nontradeable output at every real exchange rate, since the direct increase in demand is larger than the drop in private consumption that results from higher taxes (GG shifts rightwards). On the other hand, an expected increase in future government purchases of nontradeables (g_2) causes a drop in current nontradeable demand and output at every real exchange rate, since there is a drop in wealth and private consumption without any direct increase in current demand by the government (GG shifts leftwards).

The MM schedule represents monetary equilibrium in the first period. Since all prices and wages are fully flexible in the long-run, the second period monetary equilibrium condition just helps determine nominal, not real variables, and it is excluded from here. As can be seen, the schedule is downward sloping. Intuitively, an increase in nontradeables output creates an excess demand for money. If the exchange rate is flexible, this causes a (nominal and) real appreciation to restore monetary equilibrium. If the exchange rate is fixed (Figure (b)), the quantity of money must then increase through a reserve inflow (MM horizontal).

Once the equilibrium values of output and the real exchange rate are determined, it is immediate to know the value of the trade balance as the difference between the production and consumption of tradeables. Moreover, since there are no initial foreign debts, the first period trade balance and current account are equal. Finally, by the overall budget constraint of the economy, the present value of the first and second-period trade balance is equal to zero.

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