STABILIZATION POLICIES IN AN OPEN ECONOMY UNDER ALTERNATIVE EXCHANGE RATE AND WAGE RATE CONDITIONS

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by

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This thesis was prepared under the direction of the candidate's thesis advisor, Dr. Milton Redman, Department of Economics. It was submitted to the faculty of the College of Social Science and was accepted in partial fulfillment of the requirements for the degree of Master of Arts.

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ABSTRACT

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This thesis examines how the various instruments of monetary and fiscal policy work in the presence of fixed and flexible exchange rates. Based on the pioneering work of Mundell and Fleming, the traditional view assigns fiscal policy as being highly suitable for a fixed exchange rate regime, while stimulative monetary policy is effective in raising output under floating exchange rates. Once the implicit assumptions of constant prices and wages are relaxed, the conclusions of the original model no longer hold. With the introduction of wage indexation as a mean to adjust nominal wages to changes in the price level, the initial results of policies of the Mundell-Fleming type are reversed. Finally, it was examined how the practical implications of policy actions of the United States and West Germany could be applied to the theoretical models.

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CHAPTER I

INTRODUCTION

The main purpose of this thesis is to demonstrate how the various instruments of economic policy function in open economies. The effectiveness of fiscal and monetary policy thereby depends in large parts on the prevailing exchange rate regime and the interest elasticity of capital flows.

The first part of this study deals with the case in which, on the basis of the simple Keynesian assumptions, macroeconomic policy will affect income with a given price level for domestic goods. The traditional view of the Mundell (1968) and Fleming (1962) papers is that expansionary monetary policy, under the assumptions of constant wages and prices, is effective in raising output and employment by inducing depreciation of the real exchange rate. Expansionary fiscal policy, on the other hand, is seen as less effective.

With fixed exchange rates fiscal policy is reinforced by international capital mobility, whereas the effects of a monetary expansion do not show any sustainable effect on the level of income. These results however hold only when real wages can be altered by nominal exchange rate movements.

In the second part of this paper, the assumption of price rigidity is released, and the more realistic case of price changes over time is introduced.

When wages are responsive to changes in the general price level, it can be demonstrated that the initial results of a countercyclical macroeconomic policy of the Mundell-Fleming type are reversed (Sachs, 1980).

In an open economy, price stability must be defined in terms of an average of domestic and foreign prices. This implies that the relevant prices for workers and producers are different. Producers, in their employment decisions, are mainly concerned about the price of domestic output, whereas workers look at the consumer-price-index (CPI) with imports in it as well. Since labor markets are characterized by the existence of nominal contracts that result in some stickiness of nominal wages, the introduction of wage-indexation is intended to adjust the nominal wage to changes in the behavior of domestic-goods prices and traded-goods prices, thereby reducing the undesirable consequences of the stickiness of wages. Nevertheless, there is enough evidence that a general reduction in prices is not necessarily accompanied with a corresponding downward flexibility of nominal wages. At the end of the second part, it shall be examined how foreign disturbances affect the domestic economy.

Part three intends to give a short description of how two developed countries, the U.S. and West Germany, applied the theoretical framework, and how actual policy in recent years responded to variations of economic parameters.

The last chapter summarizes the main results and gives some conclusions.

CHAPTER II

THE EFFECTS OF MONETARY AND FISCAL POLICY IN THE MUNDELL-FLEMING MODEL

Looking at the primary considerations involved in the macroeconomic analysis of the open economy, the rationale for government intervention has to be taken into account. The first issue that must be addressed concerns what possible goals policymakers could have.

Two main objectives come to mind: internal balance and external balance.

The attainment of full employment and price stability may be expressed as the main goals for internal balance. Since unemployment bears a considerable momentum of political instability in it, internal balance is considered a priority goal by most governments.

External balance refers to the case where there is no surplus or deficit in the balance of payments. The practical implication of the theory shows that a country under fixed exchange rates cannot continuously finance a balance of payments deficit without eventually running out of foreign exchange reserves. This would force a devaluation of the exchange rate because the depletion of the reserves would imply

the inability of the government to intervene in foreign exchange markets and to peg the currency at the fixed level. And likewise, with a balance of payments surplus, there would be a tendency for the exchange rate to appreciate, which the central bank restrains by accumulating stocks of foreign exchange.

Mundell (1968) assumes that monetary and fiscal policy can be used as independent instruments to achieve the objectives of internal and external balance if capital flows are sensitive to interest rate differentials.

The degree of capital mobility is a crucial point in determining the consequences of different policies on the balance of payments. In a situation where the economy faces perfect capital mobility, domestic investors can borrow or lend in capital markets with a domestic interest rate that is identical with the world interest rate. A small increase in the domestic interest rate above the world level causes a huge inflow of foreign funds into the economy. This would lead to a massive capital-account surplus that would swamp any current account deficit. The resulting balance-of-payments surplus would force the domestic currency to appreciate in order for the current account to worsen and to eliminate the payments surplus. External equilibrium will be reached when domestic and world interest rates are equal.

Under imperfect capital mobility, domestic interest rates and world interest rates are not identical. This divergency induces capital inflows or outflows depending on whether the domestic interest rates are higher or lower than the world rates.
Following Mundell and Fleming assumptions, perfect capital mobility shall be presumed, a fact that is not far from the truth when we notice the strong interrelation between the world capital markets of the advanced industrial countries.
Based on a Keynesian framework, the underlying conditions for the achievement of simultaneous internal and external balance by means of fiscal and monetary policy shall be described, first for a system with fixed exchange rates.

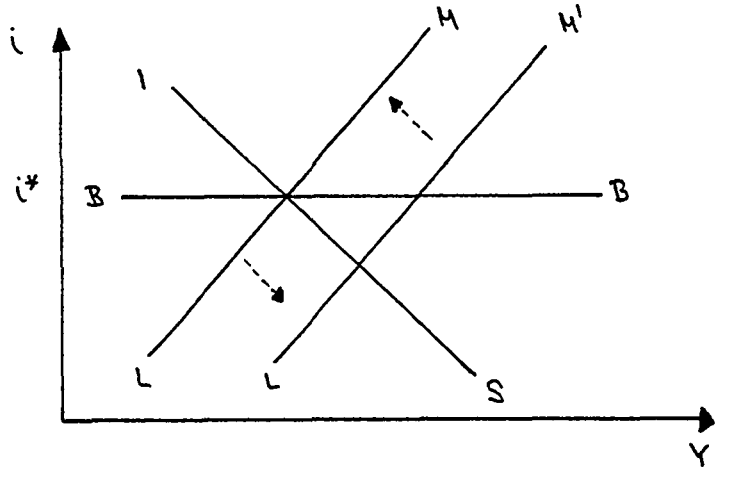
2.1 Monetary Policy Under Fixed Exchange Rates

It is assumed that monetary policy takes the form of open-market purchases. This would increase the supply of money through the creation of excess reserves. The decline in the velocity of circulation puts downward pressure on the interest rates, thereby stimulating investment and output. But if the domestic interest rates were to fall below the prevailing world interest rate, a significant capital outflow would occur, moving the capital account and the balance of payments into deficit. Furthermore, as domestic income increases, eventually

the balance of trade would deteriorate through an increase in imports. To restrain the demand for foreign exchange and to prevent the exchange rate from falling, the central bank has to intervene, selling foreign exchange and buying domestic money. The adjustment process of the economy will stop at that point when there is no more pressure on domestic interest rates, that is, when the accumulated foreign exchange deficit is equal to the open market purchase. Since the monetary base did not change, the loss of international reserves restored the domestic money supply at the level existing before the government engaged in the open market operations.

Diagrammatic Illustration

Fig. 2.1 Monetary Policy Under Fixed Exchange Rates



Source: Rivera-Batiz, 1985

Perfect capital mobility, represented by the horizontal BB schedule, means that there is only one rate of interest at which the balance of payments can be in equilibrium (external balance).The LM schedule represents the monetary equilibrium. Higher income levels raise the demand for money and the interest rate will have to rise to contain money demand to the existing level of supply.

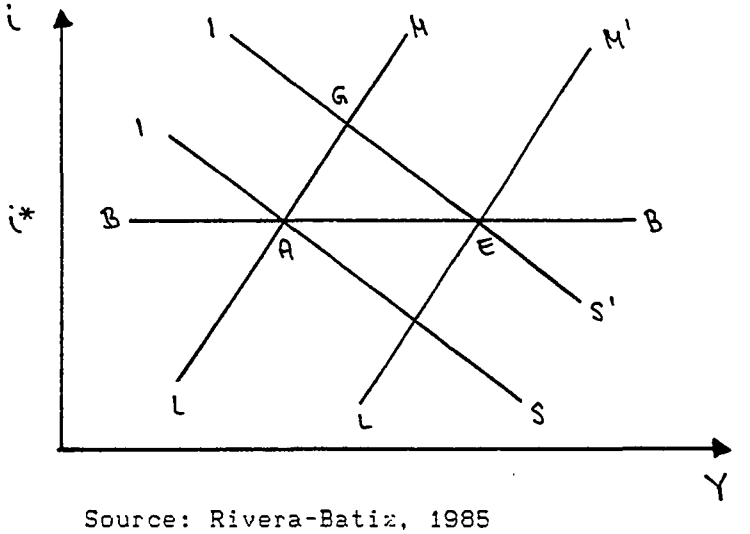
The IS schedule plots the relation between the interest rate and income along which there is no excess demand in the goods-and-services market (internal balance).

2.2 Fiscal Policy Under Fixed Exchange Rates

The next government policy to consider is fiscal policy. If the government decides to pursue an expansionary budgetary policy, it will either raise taxes, create new money, or the additional spending is financed by selling government bonds to the general public. The increase in public expenditure will stimulate aggregate demand for domestic goods and this will have a multiplier effect on domestic income, thereby increasing savings, taxes and imports. Since money demand also increases, upward pressure on interest rates will accumulate. This is illustrated in Figure 2.2 by the upward shift of the IS-curve to IS'.

Diagrammatic Illustration

Fig. 2.2 Fiscal Policy Under Fixed Exchange Rates



Source: Rivera-Batiz, 1985

Under the assumption of a sufficient sensitivity of capital movements to interest rates, a balance of payments surplus is induced through capital inflows. As the monetary authorities buy the excess supply of foreign exchange, they indirectly increase the money supply through the back door of exchange-rate policy.

The increase in the domestic money supply is depicted in Fig.2.2 by a rightward shift of the LM-curve, such as that from LM to LM`.

In the absence of sterilization, the LM-curve will shift to the right, until equilibrium is reached at point E. The new equilibrium at this point represents an increase in output and

income at the same level of the domestic interest rate as it was before the fiscal expansion. The increase in income will be associated with higher imports and therefore will lead to a worsened trade balance. The deterioration of the current account is financed by an improved capital account, which itself, through capital inflows, increases the domestic money supply and further generates increases in income. It is more likely that the capital-account surplus would dominate the current account deficit under perfect capital mobility, the lower is the marginal propensity to import.

Since the interest rates remain unchanged and thus no negative impact on domestic investment occurs, fiscal policy can be regarded as very effective in moving the economy toward internal balance.

2.3 Monetary Policy Under Flexible Exchange Rates

Under flexible exchange rates, monetary authorities are not obliged to intervene in foreign exchange markets in order to peg the exchange rate at the desired level. The exchange rate is determined by supply and demand of the home currency in the foreign exchange market. Therefore monetary authorities no longer face a balance of payments problem, because any excess

demand or supply in the private sector would have to clear by itself through an exchange rate adjustment. The monetary authorities determine the nominal money supply, which now is no longer affected by the balance of payments situation of the country.

This implies that the money market is in equilibrium when the domestic demand and supply of money are equal.

(1) MS = LD (i,Y)

This condition has the important property to determine the equilibrium output of the economy under flexible exchange rates and perfect capital mobility.

(2) MS/P = aY - bi with a as an exogenous parameter, representing the positive response of money demand to income and with b representing the responsiveness of money demand to the interest rate.

With i as the given world interest rate and rigid domestic prices, equation (2) specifies the equilibrium level of income Y*.

(3) Y* = MS/aP + bi/a

Y* can be completely determined by the knowledge of the three variables MS, P, i. In the present context, the money supply is fixed, domestic prices are rigid, and the world interest rate can be regarded as given.

The fact that the money market plays an important role in determining output in an economy suggests that monetary policy under flexible exchange rates can be regarded as a powerful instrument to bring about economic recovery.

An open market purchase of domestic securities will increase bank reserves and, in consequence, via the multiplier, the money supply will expand at the prevailing income and exchange rate.

In order to absorb the excess supply of money, the interest rate has to fall, but the interest rate is prevented from falling because domestic investors shift their portfolio towards foreign assets. The resulting deficit in the capital account causes the exchange rate to depreciate in order to exert an expansionary effect on aggregate demand. The result is an improvement in the balance of trade and a stimulation of domestic income and employment. This development induces an increase in the demand for money and

"a new equilibrium is established when income has risen sufficiently to induce the domestic community to hold the increased stock of money created by the banking system" (Mundell, 1968).

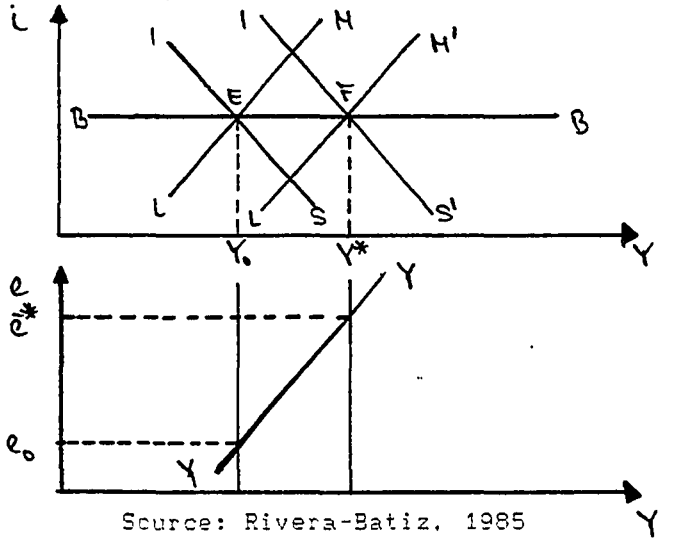
It can be concluded that expansionary monetary policy has a strong effect on the level of income and employment, not because of reductions in interest rates, but because of an

expansion of the domestic exports sector connected to a depreciation of the exchange rate.

It is worthwhile noting that monetary policy does not work by raising the interest-sensitive components of spending, but rather by generating a depreciation and thereby a surplus through the net-export component of demand.

Diagrammatic Illustration

Fig. 2.3 Monetary Policy Under Flexible Exchange Rates



Source: Rivera-Batiz, 1985

From E an increase in the money supply shifts the LM-curve to LM', implying at the original interest rate and income level excess liquidity; this causes capital outflow.

The excess supply of domestic currency in foreign exchange markets reduces the price of domestic currency, or in other words, results in an increase in the exchange rate (from e_0 to e^*).

The depreciation causes an improvement in the trade balance and shifts the IS-curve to the right.

The new equilibrium is at point F with an improved trade balance and greater capital outflow.

2.4 Fiscal Policy Under Flexible Exchange Rates

This section shall examine the effects of an increase in government spending on the economy's equilibrium, and it shall be determined whether under flexible exchange rates such an increase can stimulate output growth.

The initial impact of an increase in government spending, financed by government borrowing, is the creation of an exess demand for domestic goods and an increase in income. But this would raise the demand for money and upward pressures on domestic interest rates would build up. The attraction of domestic assets would generate capital inflows, followed by an appreciation of the exchange rate, since the excess supply of foreign exchange would reduce the price of foreign currencies, which means nothing but an appreciation of the domestic

currency. This, in turn, would have a depressing effect on income because aggregate demand would switch out of domestic goods and the current account balance would deteriorate.

To assure equilibrium in the capital- and the goods market, it is necessary that the currency appreciation exactly offsets the positive effect on income of the original rise in government spending.

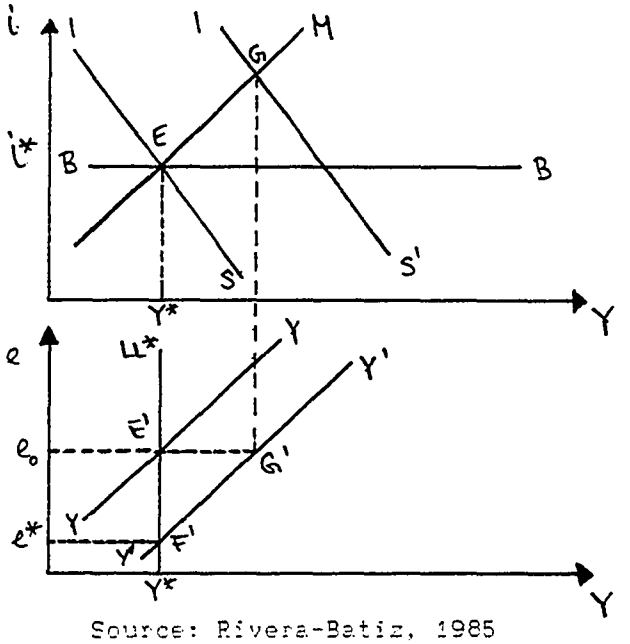
Income cannot change unless the money supply or the interest rate changes. Both, however, are constant, if we assume non-intervention of the monetary authorities and the case of perfect capital mobility.

Fiscal expansion has no effects on the level of income, because the initial rise in aggregate demand is followed by a currency appreciation, which deteriorates the price competitiveness of domestic goods in world markets and consequently reduces net domestic exports.

As long as the money supply is held constant, the fluctuation of the exchange rate prevents fiscal policy from acting as a domestic stabilizer.

Diagrammatic Illustration

Fig.2.4 Fiscal Policy Under Flexible Exchange Rates



Source: Rivera-Batiz, 1985

The initial increase in government spending shifts the IS-curve in Fig. 2.4 from IS to IS'. In the exchange rate determination diagram this development is depicted by the shift of the YY locus to Y'Y'. The upward pressure on domestic interest rates induces a currency appreciation, shown by the movement from point G'to F'. The deterioration of the current account forces the IS-curve to shift back to IS.

Therefore, as long as the LL*-curve remains unaltered, output will also remain unchanged at the Y* level.

2.5 Stabilization Policies and Imperfect Capital Mobility

An economy under imperfect capital mobility is characterized by the fact that the domestic interest rate will no longer be constrained to equal the world interest rate. A rise in domestic interest rates would still generate a capital inflow from abroad but not to such an extent as to require a return to the world rate.

Similarily, if the domestic interest rates were below the world level, domestic residents would lend funds abroad, but not in such massive amounts as it was in the case with perfect capital mobility.

In such a situation, expansionary monetary policy would shift the economy's equilibrium to a point with a higher output as well as with a lower interest rate.

But the increase in output is not as strong as obtained with perfect capital mobility, because the currency depreciation required to eliminate balance of payments equilibria will be smaller.

Fiscal policy will also have a positive net expansionary effect on output

"but tends to increase domestic interest rates and to appreciate domestic currency, crowding out to some extent both the investment and export sectors of the economy" (Rivera-Batiz, 1985).

The effects of an increase in government spending become stronger as the degree of capital mobility declines.

CHAPTER III

MACROECONOMIC STABILITY AND EMPLOYMENT POLICY

Introduction: The primary objective of this chapter will be to examine the way in which fiscal and monetary changes affect real output and prices. The second purpose will be to describe the manner in which the level of employment, as well as the average price level, are affected by external changes under flexible exchange rate conditions.

In the previous chapter it was shown that the effectiveness of fiscal policy under flexible exchange rates was reduced by the presence of capital movements while the effectiveness of monetary policy was increased by capital mobility and the reverse was true under fixed exchange rates.

Those results, however, did not devote attention to the problem of price stabilization. It was assumed that prices would remain constant, a consideration that does not seem to hold in any modern nation Especially in the early and end 1970's high rates of inflation prevailed in most industrialized countries. Additionally the assumption of fixed prices seems to be reasonable only in the presence of unemployment; at some point economies will run into full capacity constraints and then

increases in aggregate demand will not raise output but will generate shortages and, as a consequence, rising prices.

The supply of goods in an economy is affected by the combination of some factors of production that are combined by means of a certain technology. Very often the state of technology and the availability of capital are more or less given and, as a result, the economy can alter its output primariliy through variation in labor employment. The direct relationship between employment and output shows the importance that the behavior of domestic and import prices play in the determination of an equilibrium wage rate.

In periods with price stability workers and employers are concerned about the development of the nominal wage rate. Labor contracts are influenced by several factors, for example scarcity of a particular type or even all types of labor, the profitability of an industry, the degree of oligopolization of particular industries, the level of organization of wage and salary earners, et cetera. The result of the employer-employee bargaining is the existence of nominal contracts that result in some stickiness of nominal wages.

In the case of a sudden increase in the domestic price level, a huge part of the economy's labor force is covered by existing contracts, and hence, since the nominal wages are fixed, the real wages would decline. In this situation, employers tend to overemploy workers, because consistent with the theory of the

firm, profits are maximized by the hiring of labor until the marginal revenue product equals the nominal wage. Therefore, the short-run result of a domestic price increase will be an increase in employment. The labor's heightened awareness of purchasing power considerations ensures over the long-run an upward adjustment of the nominal wage quotes in order to regain the loss of real purchasing power. The response of nominal wages to the increase in prices may be partial or total, but in any case, must be taken into account in evaluating the impact of fiscal and monetary policies or of exchange rate changes.

Fiscal policy works rather effectively in an economy with high unemploxment and low interest rates since there is, for a given supply of real money balances, enough money in speculative balances that can be drawn out to finance a higher level of transactions by a small increase in interest rates. However, at a higher level of capital and labor utilization and high interest rates, the money supply will be the restraining factor, and speculative balances will be very small. Thus, the increase in the demand for money serves mostly to raise interest rates, thereby reducing investment. Fiscal policy in an open economy with different degrees of money illusion opens up a divergence between the change in the foreign price level and the change in the domestic price level. Therefore, the use of the consumer-price-index as a means to evaluate the real wage and the change of the domestic price of output as a

reference for the producers act as important variables in determining the volume of employment. The effects of expansionary policies depend to a large extent on the results they show in achieving full employment. The labor market acts as a key variable for the supply side of the economy and is strongly involved in the division of the effects of stabilization policies between prices and output. Further implications of fiscal policy will be given later in a more detailed form.

At this point it shall be stressed that monetary policy, on the other hand, works with shorter decision lags and that its instruments have the advantage of a more effective fine-tuning. Furthermore, as it was concluded earlier, an expansionary monetary policy tends to work more successfully under flexible exchange rates and perfect capital mobility than fiscal policy. However, the inclusion of the labor market, and the thereby resulting implications of the wage behavior will give a somewhat different picture of the effectiveness of monetary policy than it was described in the previous chapter.

3.1 Effects Of Monetary Policy Under Different Degrees Of Money Illusion

The exposition of the following sections mainly refer to a variant of the Argy/Salop model (Argy/Salop, 1979) and the corresponding statements of Rivera-Batiz (Rivera-Batiz, 1985). For graphical explanation I will use the usual IS-LM graphs in connection with the AS-labor market curve, but this time the graphs are displayed in a P,y space. For each market a relationship may be derived between output and domestic prices for every value of the exchange rate. In order to reach an overall equilibrium in the economy, certain conditions have to be accomplished:

a) The market for domestically produced goods has to be in equilibrium, i.e. the quantity demanded must equal the quantity supplied;

b) In the same way, the money market reaches its equilibrium when the demand for real money balances equals the supply. The negative slope of the LM-curve can be explained as follows: if the price level in the economy goes up, real money balances will decrease and consequently the supply of money will go down; therefore income will also have to be reduced in order to assure that supply will match demand.

c) On the demand side of the labor market, we have a production function and a marginal productivity condition which yield the required labor force for the supply of output and the labor's wage demands on the supply side of the labor market; These wage demands vary under different degrees of money illusion.

The case of complete money illusion is referred to in the literature as the extreme Keynesian case or as nominal wage rigidity. Hereby, the labor supply function depends only on the nominal money wage rate, whereas in the other extreme, that is, in the absence of money illusion, the supply of labor only depends on the real wage rate. That means that movements of the domestic price level do not affect employment, because workers are able to adjust their nominal wages very rapidly to changes in prices.

Since we deal with an economy that is engaged in foreign trade, the revelant price level for workers comprises imports.

The average price level is then a weighted average of the behavior of domestic prices and import prices.

One possibility for a complete adjustment of wages is wage indexation. Full indexation takes place when wage and salary earners protect themselves against inflation by achieving a rise in nominal wages proportionately with the weighted average of home-goods and import prices.

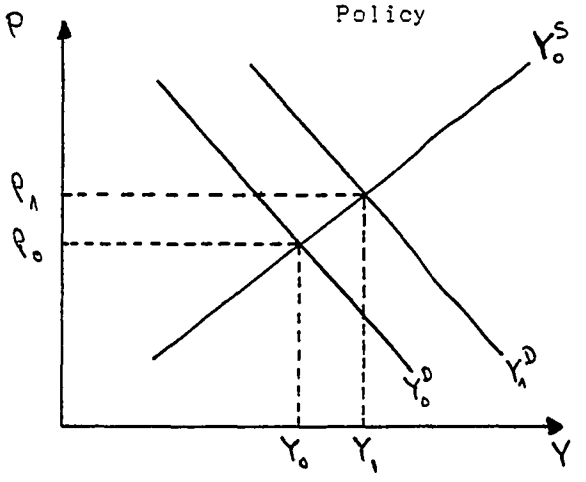
In countries where long-term labor contracts or less powerful labor organizations prevail, we can normally assume some kind of nominal wage rigidity.

I shall consider first the effects of monetary policy on the level of output, prices and the exchange rate in such an environment.

I shall also assume that the Central Bank purchases Federal bonds, thereby increasing the money supply. The resulting excess supply of money tends to push down domestic interest rates. Asset holders are encouraged to switch into foreign assets, causing an outflow of capital, and as a necessary result under floating rates, a depreciation of the home currency. The depreciation increases the relative price of foreign goods in terms of domestic goods which, in turn, strengthen the home country's competitiveness. Owing to the shifting competitive margin, expenditures switch toward domestic goods. This is shown in Figure 3.1 by the shift of the aggregate demand curve$\not$ to the right.

Diagrammatic Illustration

Fig. 3.1 Short-Run Effects of Expansionary Monetary Policy



Source: Argy/Salop, 1979

The increase in domestic output occurs at the cost of rising prices. With nominal wages unable to respond to that price increase, the monetary expansion results in a real wage decline.

Producers of domestic goods regard this development as an incentive for higher production, since their labor costs have dropped. As a result, the range of goods that can be competitively produced expands and net exports will increase. Despite the initial price hike, the exchange rate depreciation associated with the monetary expansion will increase domestic

output in the short-run because domestic prices do not immediately rise in equal proportion to the exchange rate.

It shall be noted at this point that a monetary expansion which leads to a rise in aggregate demand by improving the trade balance may have a negative impact on the trading partner if both countries are working under similar business cycles. Since the depreciation in one country's currency, an expansionary domestic monetary policy can rapidly act as a beggar-thy-neighbor policy: The country whose currency appreciates will face deteriorating net exports, a decline in aggregate demand and a reduction in real income. Therefore the competitive money expansion at home can export unemployment abroad. The negative results of rising foreign prices are reinforced in economies close to full employment, whose main worry already is inflation.

Monetary policy may be considered by policy makers as an instrument to offset the negative effects of an external supply shock.Suppose there is a sudden increase in the price of traded inputs. The initial impact is an increase in the costs of production and of domestic prices. In the presence of fixed nominal wages, the rise in import prices will lead to a reduction of aggregate supply. In the short-run, the inflationary effects of a sudden shock will reduce real wages. As a mean to counteract the stagflationary tendencies, the government may decide to stimulate aggregate demand.

By increasing the money supply, the aggregate demand curve will shift to the right, and the economy will move towards full employment. Unfortunately, this policy is accompanied with an increase in domestic prices, and therefore, economies which are already struggling against inflation might not regard an expansionary monetary policy as very appropriate.

Besides the overall conditions of the economy, the degree of money illusion plays an important role for the effectiveness of an increase in the nominal money supply.

If rising prices do not reduce real wages, employers will not increase employment and, thus, output will not rise.

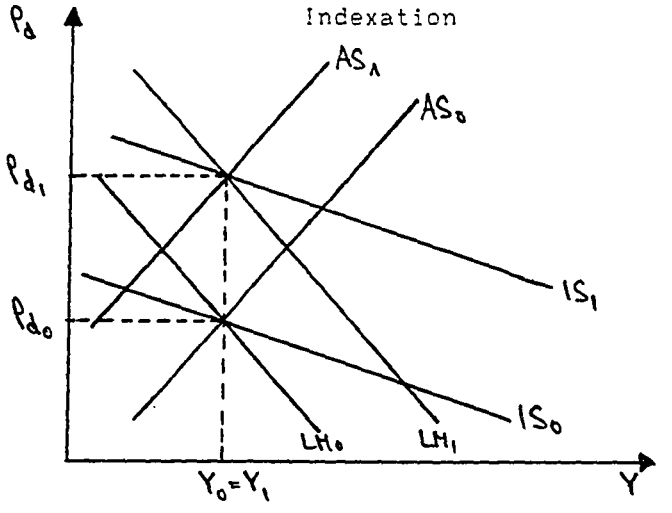
In an economy with automatic wage indexation or frequent renegotiations of labor contracts workers are in the position to adjust their nominal wages very rapidly to changes in prices. Therefore the initial result of an increase of the money supply, the rightward shift of the LM and IS curve, will be offset by an leftward shift of the AS curve.

Real wage rigidity means that nominal wages would immediately rise to match the price increase. Thus, as a result, expansionary policy would not be able to move the economy toward full employment. Output does not change because the domestic price level and the exchange rate change proportionately to the change in the money supply (In association with the doctrine of purchasing power parity, the real exchange rate, as the relative price of foreign goods in

terms of domestic goods, has to remain unchanged, and this implies that the exchange rate depreciation has to be of the same magnitude as the rise in prices).

Diagrammatic Illustration

Fig. 3.2 Expansionary Monetary Policy with Full Wage Indexation



Source: Argy/Salop, 1979

An undesirable effect for the economy may arise if the monetary authorities increase the rate of change in the money supply to finance the initial increase in nominal wages and prices.

Let us assume the case that labor unions are powerful enough to raise real wages to expectations of future inflations; This serves to place upward pressure on prices and downward pressure on employment. The government will then try to follow an accomodating policy and increase the money supply in order to offset any negative effects on real money balances. This, however, sanctions the price increase and is correspondingly associated with a depreciation of the home currency to ensure competitiveness in international markets. The rising prices, in turn, may serve for the labor-force as an incentive to bargain for further upward adjustments in nominal wages as a compensation in response to cost-of-living increases. If the Central bank responds to the wage-price-spiral by increasing the money supply by the same percentage, this process will take on the appearance of a vicious circle.

Therefore the flexibility in the labor-market and the stickiness of inflationary expectations have a strong impact on the effectiveness of monetary policy.

If nominal wages were downward flexible, a contractionary monetary policy could be a useful instrument to control inflation over short periods of time. A reduction of the money supply would reduce prices for a given level of output, and

with downward real wage flexibility, producers would face reduced labor costs. Both, the declining nominal wages and the monetary contraction would place downward pressure on domestic prices and could help to slow down inflation.

When nominal wages respond immediately to offset changes in prices, a monetary contraction would immediately be associated with lower nominal wages. The reduced real labor costs would then serve as an incentive for domestic producers to increase aggregate supply. With rigid real wages the direct negative effects of a decline in aggregate demand on domestic output may be compensated by the stimulation on aggregate supply through the decline of nominal wages.

With rigid nominal wages the decline of domestic prices through the monetary contraction would not be translated into lower labor costs and hence domestic production would decline in the short-run. As a final conclusion we can state that an expansionary monetary policy can adjust the economy toward higher levels of output only if nominal wages are upwardly rigid (complete money illusion), whereas contractionary monetary policy must be considered as a strong tool to control inflation if nominal wages are downwardly flexible.

3.2 Effects of Fiscal Policy Under Different Degrees of Money Illusion

A different way to engage in a policy of raising aggregate demand is to increase government spending or to cut taxes.
Still concentrating on a flexible exchange rate regime, I want to recall the familiar Fleming-Mundell result for an economy with complete money illusion.
An expansion of government expenditure raises aggregate demand for domestic goods, shifting the IS-curve to the right. The resulting upward pressure on domestic interest rates generates incipient capital inflows and improves the capital account. The excess supply of foreign exchange reduces the price of foreign currencies, or in other words, forces the domestic currency to appreciate. This movement of the exchange rate diminishes the competitiveness of domestic producers in international markets and worsens the current account. The final result would be a crowding-out of the private export sector and a substitution effect in the composition of GNP through the fiscal intervention without any positive effects on output.
A different solution yields the model of Argy and Salop. In their model, the real money supply is deflated by the price of domestic output and imports, whereas the Fleming-Mundell

analysis only contains the domestic price level as the deflator of money balances.Thus, if the appreciation of the domestic currency in response of the fiscal expansion is strong enough to more than offset the initial price hike, the reduction of import prices will have effects on the consumer-price-index that ensure an increase in output, even with constant nominal money wage rates. Necessary for this result is of course the assumption that the interest elasticity of capital flows is sufficiently large; only
"in this case, the reduction in the domestic price of imports tends to offset the increase in the price of home goods" (Casas, 1975).

I now want to discuss the case of an increase in government spending in the presence of full wage indexation.The rise in aggregate demand will increase output and the domestic price level. The excess demand for money and the upward pressure on interest rates will result in an appreciation of the exchange rate. The upvaluation of the domestic currency will ease real money balances mainly through the decrease in the domestic price of imports. The resulting decline in the overall price level will tend to lower wage demands of the labor force.
In sum, the domestic price level is subject to the appreciation of the exchange rate which tends to push it down and to the increased demand in the goods market which tends to raise it.
An expansion of output is consistent with the equilibrium conditions for the whole economy.

The goods market can reach a higher output if the positive effects of the increase in government expenditure exceeds the countereffects of the appreciation and the increase in domestic prices. The money market can expand if the deflationary effects of the appreciation more than offset the restrictive effects of the increase in the domestic price level. The labor market can also be in equilibrium at a higher level because the appreciation of the exchange rate raises aggregate supply by lowering real wages faced by producers. With complete indexation of wages, the fall in the exchange rate ensures constant real wages for workers, since their relevant deflator is the overall price level.

"In short, with full wage indexation, or simply no money illusion, wages rise in proportion to the overall price level but rise proportionally less than the increase in domestic prices" (Argy/Salop, 1979).

The effect of an increase of government expenditure on the domestic price level, however, are ambiguous.

Initially the IS-curve shifts to the right, due to the increase in aggregate demand. With the interest rate assumed to be constant, the following appreciation of the exchange rate would shift the LM-curve to the right, because at any given level of the interest rate, aggregate real income and spending would have to increase to eliminate the excess supply of real balances, arising from the deflationary effects of the appreciation.

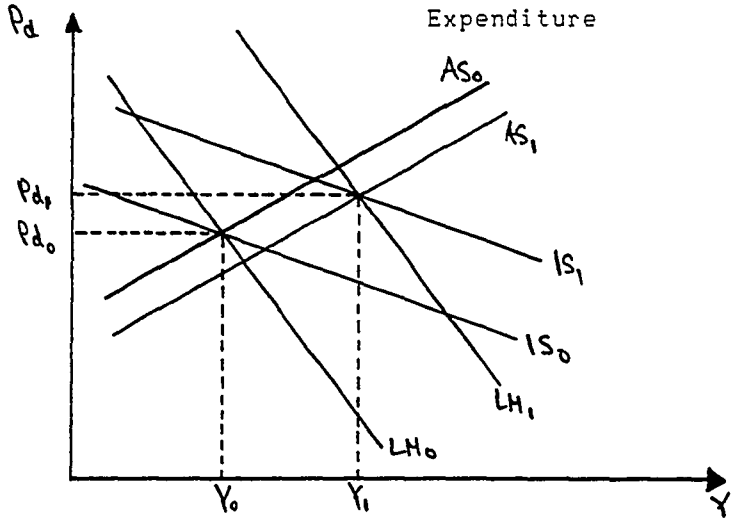
The AS-curve also shifts to the right, since producers employ more labor and at the same time the real wage for workers need not fall because the price of imports has declined.

The revaluation of the exchange rate, however, will shift the IS-curve backwards to the left.

If the combined effects of the increase in government spending and the appreciation show a result as depicted in Fig. 3.3, the government intervention results in higher output in connection with higher prices.

Diagrammatic Illustration

Fig. 3.3 Effects of an Increase in Government Expenditure



Source: Argy/Salop, 1979

If, on the other hand, the deflationary effects of the appreciation exceed the increase in government spending, the IS-curve will shift to the left, and in that case, a rise in output is connected with a decline in the domestic price level.

A second instrument of fiscal intervention is the reduction of taxes. The main difference from the increase in government purchases stems from the fact that a tax cut will expand output and reduce unemployment only if consumers increase their spending and that as a result, the direct policy-induced consumption-stimulus does appear. There is always the possibility that consumers will save the additional disposable income, leaving the original absorption schedule unchanged with no effect on output. But overall it seems likely that a permanent tax change will have a greater effect than a temporary change (government spending) that may well be compensated by temporary changes in saving.

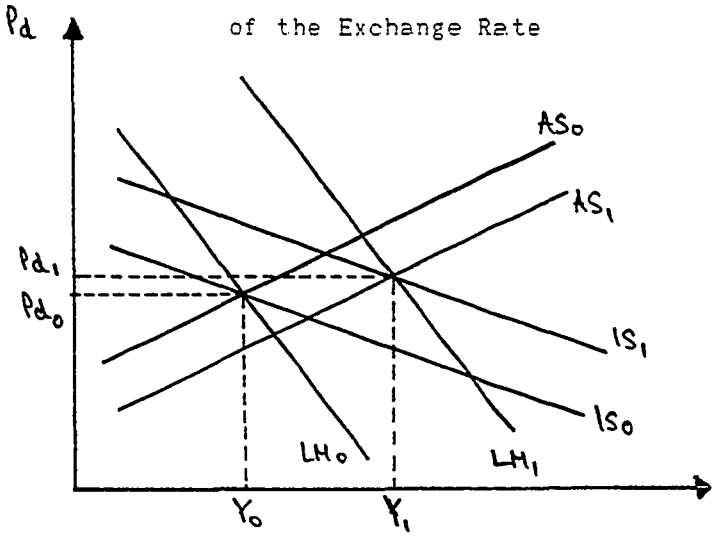
The tax reduction will increase the worker's net income, shifting the AS-curve to the right. This movement is due to the tax cut's impact on the real value of labor's take-home pay.

The IS-schedule will also shift to the right because of the injection of purchasing power into the economy.

Assuming a small income elasticity of the demand for money, it is more likely for the exchange rate to appreciate.

Diagrammatic Illustration

Fig. 3.4 Effects of a Tax-Reduction with Appreciation of the Exchange Rate

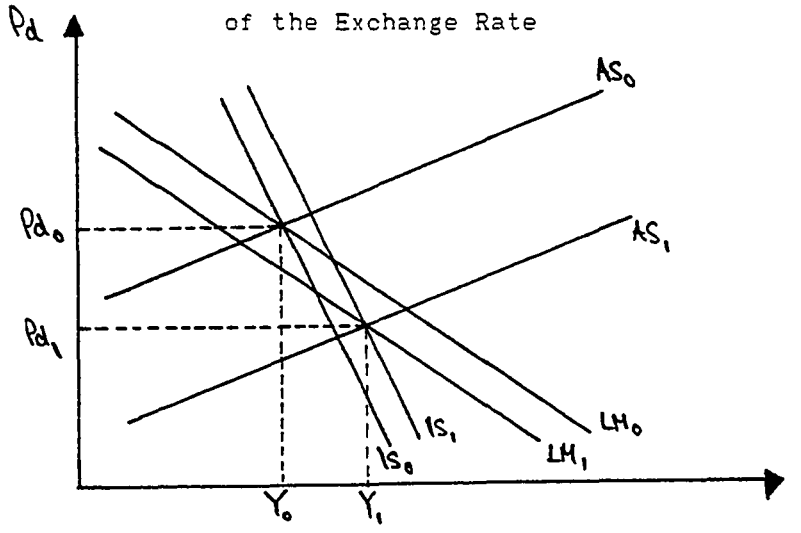


Source: Argy/Salop, 1979

However, it is conceivable that the cut in taxes results in a stronger decline of domestic prices than in an positive effect on output and that in such a case the occurring excess supply of money forces the exchange rate to depreciate (LM-curve shifts to the left).

Diagrammatic Illustration

Fig. 3.5 Effects of a Tax-Reduction with Depreciation of the Exchange Rate



Source: Argy/Salop, 1979

Summarizing the efficiacy of fiscal policies under different degrees of money illusion, we obtain the following results:

1) If money illusion is complete, i.e. nominal wages do not adjust, real wage cost to producers fall as the domestic price level rises. Real wages to labor fall as domestic prices rise, but fall by less than rise in the domestic price level, depending on extent to which the appreciation of the exchange rate lowers import prices. Overall, the result will be an increase in output. Only in the case that the cut in taxes

produces excess supply of money, the exchange rate can depreciate and the domestic price level will fall.

2) If nominal wages are fully indexed to a weighted average price level, i.e. no money illusion, real wages to workers are constant while real labor costs to producers fall as the domestic price level rises, but they fall by less than with complete money illusion. Since the fall of real labor cost to employers is less than if we have complete money illusion, output will rise by less.

Complete money illusion should lead to a greater increase in output and to a greater decrease in the overall price level than if full indexation exists, assuming the effect of appreciation on import prices and on export demand is identical in both instances.

3.3 The International Transmission of Macroeconomic Policies

In this section, the effects of domestic policy actions on the economy of the trading partners shall be examined. The interdependence of international markets forces the domestic authorities to pair the objectives of an optimal policy-mix for their own economy with the possible effects of their actions on a foreign country. In doing so, it is of considerable interest

to have reliable information about the structure of the foreign economy. Since we are dealing with wage behavior as a key variable for the economic performance of a country, the degree of wage indexation abroad will be of great importance.

In a world of high capital mobility and flexible exchange rates, domestic fiscal expansion or monetary contraction will cause a domestic exchange rate appreciation relative to the rest of the world. If real wages are sufficiently rigid abroad, this will be transmitted just like a stagflationary supply shock to the other countries.

The state of a country's economy and the resulting policy options will be influenced by policies pursued elsewhere, and therefore the repercussion effects in other countries will lead to necessary adjustments, mainly in the sense of coordinated selection of policies to raise economic welfare in all economies.

Different exchange rate regimes differentially affect domestic output and employment through changes in relative prices of foreign and domestic goods. The fact that exchange rate changes have real effects makes such changes a concern of government policy.

The mechanisms of the transmission of disturbances (monetary and fiscal policy actions) are:

a) the terms of trade and

b) the capital markets (Corden, 1986).

We now have to examine how monetary and demand disturbances affect the home and foreign countries depending on the existing exchange rate regime and the degree of wage indexation.

3.3.1 Monetary Policy in a Two-Country-model

Assuming a monetary expansion in one country with a perceivable contribution to the world quantity of money, it is possible to see stimulating results in the domestic and foreign country. The domestic expansion of the money supply may lead to a loss of reserves and an outflow of capital; this, in turn, can stimulate the foreign economy, and the resulting increase in output abroad can show expansionary effects on the domestic economy via the increased import capacity of the foreign country. As a consequence we will recognize an increase in the demand for money at home, so that at least some amount of the newly created money supply will remain in the home country (Konrad, 1979). The same result, of course, is true for an increase in the money supply abroad. Foreign prices and output will rise and the foreign interest rates will decline. In the case of a fully indexed foreign economy, only foreign nominal variables are affected (prices, interest rates), but there will

be no increase in output. With a fixed exchange rate, the domestic output must rise(Marston,1982).

If we consider two countries with a flexible exchange rate between them and nominal wage rigidity in each, Mundell (1968) showed that a domestic monetary expansion is likely to lower output and prices abroad. This result will be reached essentially by raising foreign real wages and reducing foreign competitiveness in international markets. The domestic monetary expansion causes a depreciation of the home currency and thereby reduces foreign import prices. The consumer-price-index abroad will decline, even though nominal wages by assumption remain unchanged. Although the expansion of the money supply will cause the world interest rates to fall, and therefore world demand for goods will rise, the change in relative output and prices via the currency depreciation will shift demand toward the home goods, and foreign output will decrease.

In the case that foreign wages are partially or fully indexed to a consumer-price-index and that they are downward flexible, the foreign country will also benefit from a domestic monetary expansion. As the domestic currency depreciates and foreign import prices fall, the foreign consumer-price-index will decline and with it the nominal wage. The downward movement of the wages will stimulate aggregate supply and will lower foreign prices; this will mitigate the shift in world demand towards domestic goods.

Corden (1986) concludes that, in order to maintain a current account balance at home, the domestic currency would have to depreciate in real terms so much that expenditure would switch away from the foreign country to domestic goods. The depreciation is likely to lower real wages in the home country, other things being equal; this result is true, especially if we consider that the rise in nominal wages lags behind the rise in prices. The net result of such a development will be a rise in output of domestic goods, but at constant prices, but the demand for home goods will has risen by less, since some of the extra demand generated by the higher income is spent on foreign goods. This improvement of the foreign terms of trade tends to raise real wages. If the real wage is fixed in terms of the foreign countries' own products, a rise in real wages from the point of view of the consumers in the foreign country is inevitable as a result of the fall in the relative price of imports from our home country. Such a rise in real wages cannot affect employment in the foreign country, because the real wage in terms of the foreign country's own products remains fixed. A positive transmission of employment abroad is possible if the usual continual rise in nominal wages can be moderated through the import price decline or a possible slow-down of the factor price increase, owing to the improvement in the terms of trade. The increase in the money supply and the resulting economic expansion will have real effects in the foreign country in so

far as the enlarged foreign output will tend to worsen the foreign country's terms of trade and so moderate the initial terms of trade improvements. This will stop both the rise in real wages abroad and the decline in real wages at home (Corden, 1986).

3.3.2 Fiscal Policy in a Two-Country-model

An increase in government expenditure can show positive effects on employment and ambiguous effects on the balance of payments for a fixed-exchange-rate regime. The increase in income induces additional imports and thereby deteriorates the current account, while on the other hand, the increased demand for transactions balances stimulates higher capital imports. If international capital movements are sufficiently sensitive to interest rate differentials, the positive effect on the capital account can dominate the deterioration of the trade balance. In such a case fiscal policy not only improves the employment situation, but also the balance of payments. The interesting aspect of a two-country model lies in the fact that an increase in domestic expenditure may not only result in stimulating but also in contractive effects abroad.

This stands in contradiction to the opinion that fixed exchange rates favor the transmission of international business cycles (Konrad, 1979).

The increase in expenditure may improve the balance of payments if the positive influence on capital account exceeds the negative influence on current account. In such a case we see a redistribution of the money supply in favor of the expanding country. In the meantime, the interest rate at the common capital market will rise; the higher the demand for transaction balances in the home country is, the stronger will be the rise in interest rates. If investment in the foreign country is very sensitive to interest rates, we may see a strong decline in investment, so that despite the increase in exports to the home country, a decrease in income in the foreign country will occur.

The international transmission of fiscal policy under flexible exchange rates starts with the appreciation of the home currency and an increase in world interest rates. The fiscal expansion, thus, raises the relative price of home goods, and by this means, causes demand to shift from domestic goods to foreign goods. With complete nominal wage rigidity, the foreign country gains in international competitiveness sufficiently to overcome any contractionary effects of higher interest rates, so that its output expands along with the home country's. In this way, the domestic fiscal expansion raises output in the

foreign economy. If the foreign wages are highly indexed, the home expansion can actually reduce foreign output. As the home currency appreciates, foreign import prices rise, and if foreign nominal wages rise in response, aggregate supply will decline. The increase of the real price of intermediate inputs and the wage development are likely to diminish or eliminate the foreign country's competitive gain, because together with higher interest rates, there is little recompense in the form of improved competitiveness, and output may then decline (Bruno/Sachs.1985).

CHAPTER IV

MACROECONOMIC PERFORMANCE IN PRACTICE : THE EXAMPLE OF THE U.S.-AND THE WEST-GERMAN ECONOMIES

4.1 The U.S.-Policy During the Seventies and Early Eighties

Most industrial economies were facing a supply disturbance in the form of a sudden increase in prices of imported raw materials during the periods of late 1973 to early 1974, and 1979. The massive increase of crude oil prices was rapidly translated into rising gasoline and motor oil prices. The attempts to employ substitute fuels also caused coal prices to rise sharply. In early 1974, the fuel oil and coal component of the American CPI stood 60 percent above levels of a year earlier (Kaufman, 1981).

In late 1973, the rate of U.S. economic activity slowed, partially because of reduced automobile sales due to the high price and reduced supply of gasoline. The immediate impact of

the supply shock was stagflationary, as it produced both recession and inflation. Real GNP declined in 1974 and 1975, unemployment climbed to 8.5 percent and inflation accelerated to 9.3 percent in 1975 (International Monetary Fund, 1983).

When confronted with those external shocks, policymakers typically responded with measures that included contractionary monetary policies designed to fight the imported inflation. Depending on the preference of the political administration whether to counteract the unemployment effects of the supply shock with an engagement in expansionary monetary policy or rather to follow restrictive monetary policies in order to control inflation, different inflation rates will be the result. Although U.S.-monetary policy was directed primarily at slowing the rate of inflation, the institutional setting of the labor market allowed the economy to recover, not only despite the inflation but also because of the inflation. The nominal price developments had a significant effect on the real wage. The rise in commodity prices during 1973-1974 led to a reduction in real wages because nominal wages were largely tied to decisions made before the price hike. The inflation was an efficient way to bring about the needed decline in real wages after the relative increase in the prices of primary goods.

The labor market in the United States can be characterized by the prevalence of nonsynchronized, three-year labor contracts, with low levels of indexation (Bruno/Sachs, 1985). The facts

that wage negotiations predominantly take place on plant level and that neither the Central Labor Organization nor the National Employers' Federation are engaged in the collective bargaining process, show that Corporatism in the United States is very low; labor is not strongly organized in all sectors of the economy, and as a result, wages do not tend to go up in line. Although this low level of corporatism normally would indicate an unfavorable dimension in the wage-setting process, another important dimension, the low level of nominal wage-responsiveness, an amalgam of institutional bargaining features that helps to determine how rapidly unexpected price changes can feed through into nominal wages, helped the U.S. economy to avoid a serious profit squeeze. The stickiness of nominal wages, then arguably moderated the adverse supply consequences of the terms-of-trade deterioration and resulted in a successful reduction of unemployment, following the expansionary monetary policy adopted after 1974. The economy began to recover in the second quarter of 1975. Combined with the gradual movement toward more expansionary policies during the 1976 to 1978 period, the reduction of real wages laid the basis for a strong recovery in these later years because the decline of real labor costs served as a boost to production. The rate of monetary expansion picked up sharply, particulary for M1, which expanded at an annual rate of 8 percent through the third quarter of 1978 (Kaufman, 1981). The period of

economic growth continued for almost five years, until the first quarter of 1980. Unemployment declined steadily to below six percent (International Monetary Fund, 1983) but nevertheless, economic performance was regarded as dissatisfactory, mainly because of the high inflation rates.

The downturn of the economy in the early 1970's was also reflected in the persisting devaluation of the U.S.-$ against both gold and major foreign currencies during the seventies. The pressures against the US-$ were so strong that the fixed exchange rates were abandoned in March 1973. In mid-1973, the dollar was valued 20 percent lower in terms of other major currencies than in mid 1970 (Kaufman, 1981). After permitting exchange rates to float, the U.S.-current account improved to a substantial surplus of $12 billion in 1975. An explanation for this development could be the decline in income as a consequence of the increase in the price of oil, which tends to reduce the imports of final goods and thereby improves,rather than worsens,the current account. The stronger recovery of the US-economy in 1976/77 in comparison to Europe and the rapid increase of oil-imports brought the current account to a deficit of $17.5 billion in 1977 (International Monetary Fund, 1983). This deficit could not be completely compensated through autonomous inflows of capital and therefore led to an accelerated decline in the value of the dollar.

Much of the weakness in the dollar abroad was due to foreign expectations that the Fed lacked the will to control U.S. money growth. To prevent a further decline in the dollar exchange rate, the Fed announced a new targeting procedure in October 1979 (Harrison, 1985). In terms of daily operating targets, the change in the Fed's policy meant focusing on nonborrowed bank reserves instead of federal funds rates. Starting in early 1980, the growth rates in measures of money supply halted or even turned negative, and at the same time interest rates experienced their most volatile period in modern U.S. history. The shift toward tight monetary policy meant support for the dollar and in connection with expansive fiscal policy, the U.S. currency appreciated in response. In a world of inflationary pressures, the tightening of the money supply helped to reduce the inflation rate by transmitting it to other countries. The appreciation of the dollar raised European import prices in terms of domestic currencies, and with the existence of relatively high wage-indexation, Europe was forced to import stagflation from the United States. Even though the corresponding depreciation of the European currencies might be associated with a short-run improvement in net exports, the inflationary consequences in Europe forced their policy-makers to conduct a contractionary policy of their own to try to re-export the inflation, but with the accompaniment of exacerbating unemployment. Thus, the attempts to export

inflation to other countries by the means of contractionary monetary policy may result in international policy conflicts. Therefore, there is a case for improving macro-policy coordination among countries, due to its positive impacts on welfare.

In 1981, Congress adopted tax cuts and an increase in defense spending, proposed by President Reagan. But because the Administration did not succeed to sufficiently turn down public expenditures and the revenues went up only slightly, the budget deficit expanded very rapidly in the following years. In spite of the increase of private income, the private savings rate did not go up, but in fact declined from 6.7 percent in 1981 to 6.1 percent in 1984 (Schlesinger, 1985). The increased demand for money, further stimulated by the growing deficit, did not meet a correspondingly increased supply of money, so that not only the nominal, but also the real rate of interest had to rise. The expansionary fiscal policy led to capital imports, attracted by the high real returns on capital. These capital inflows now led to exchange appreciation and a deterioration in the trade balance.

The New York agreement of the Group of Five (G-5) on 09.22.1985 has initiated a devaluation of the U.S. currency. The downturn of the dollar reflects primarily the high current account deficit, the insufficient reduction of the federal budget deficit, the mediocre rates of growth in GNP and the

expansionary monetary policy. These latest movements in the exchange rate may work as a double-edged sword for the U.S. economy: the U.S. export sector gains competetiveness, but on the other hand, imported inputs will become more expensive and inflationary pressures from abroad will in principle hinder economic growth. A second burden for the economy could arise from expectations regarding further depreciation of the dollar. In that case, foreigners may no longer be willing to finance the U.S. budget deficit as they did in the past and as a result interest rates would be forced to go up again in order to attract foreign capital.

The interdependence of macroeconomic policies requires the harmonization of the different national policies for the achievement of substantial results in their efforts for greater stability and economic welfare.

It is helpful to examine one important trading partner of the United States, in order to better understand how macroeconomic policies are transmitted internationally.

4.2 The West German Economy in the Seventies and Early Eighties

The West German economy is big enough to maintain, at least temporarily, the illusion of international independence, but on the other hand, this economy is internationally much more dependent than the U.S., due to its strong export-orientation. In the Sixties and early Seventies, German policy-makers were heavily inclined to the objective of price-level stability, remembering the fact that private properties had been wiped out twice through inflation, once through a hyperinflation in 1922/23 and again through represssed inflation from 1936 to 1948 (Kasper, 1972). In the sequel, that objective still kept its importance, but growing unemployment and the real wage development asked for more public attention.

In the early 1970s, West Germany's economy could expand without much inflationary strain on resources because whenever internal demand slackened, a new demand pull from outside provided the necessary rates of growth. These conditions changed, however, when the economy had to adjust to the first oil-price shock. After the breakdown in March 1973 of the Smithsonian agreement of December 1971, the German central bank pursued a contractionary policy. The rate of growth of the money supply was approximately halved between the first quarter of 1973 and

mid-1974 (Rivera-Batiz, 1985). In theory, the appropriate response to a supply shock would have been an expansion of monetary policy to counteract the disturbance, but this would have fueled inflation; since German policy makers were committed to controlling inflation, they decided instead to pursue a contractionary policy.

A second and perhaps more important reason why expansionary monetary policy would fail to move the economy to full employment, was the presence of real wage rigidity in the labor market. The expansion of aggregate demand in a situation of rigid real wages is likely to increase price inflation in the short run with no effects on output because wage indexation or the existence of short-term contracts allows workers to bargain in order to maintain their real earnings. Thus, employers have no incentive to increase employment and they tend to substitute capital equipment for workers wherever possible. Theoretically, real wages were to decline in response to unemployment but in Germany and in other European countries the inflexible labor markets prevented this normal reaction. Although, under the Monetary Law of 1948, as interpreted since 1961, any indexation of the nominal value of monetary assets is forbidden without express authorization by the German central bank, the law in practice has been taken to prohibit automatic adjustment clauses but not provisions for automatic renegotiations of

contracts when the cost of living index exceeds a certain level (Braun, 1976). The German labor market provides a clear case of high centralized and synchronized wage negotiation patterns. A high degree of unionization, the key importance of the negotiations in the metal sector and the short contract duration of roughly one year, permit the conclusion that the labor market is very susceptible to external disturbances (Bruno/Sachs, 1985). In a situation of price increases, the rapid response of nominal wages can have the effect that labor costs rise relative to the cost of capital; consequently this development leads to a substitution of capital equipment for labor. As a result, there is now a mismatch between the capital stock and the labor force: even if capacity were fully used, unemployment would remain high.

A second type of rigidity is pay differentials. Wages need to be flexible not only at economy-wide level, but also in response to changes in the demand and supply of different industries and for different skills (The Economist, 1986). In West Germany and other European countries, however, minimum wages are much closer to average wages than they are in America.

The benefits for those who are employed, at the same time mean unsurmountable obstacles for those who search for work. The restrictive labor protection laws make it difficult and expensive, and sometimes impossible, to lay-off workers, and

this makes it much riskier for a company and more expensive to go into business. What is a reasonable risk in the United States where labor is a variable cost becomes an unreasonable risk in West Germany where labor is an overhead fixed cost.

Since 1979, the unemployment rate has steadily increased from 3.3 percent to 10 percent in 1986. Very recently, the introduction of a more flexible working-hours scheme and the discussion of a profit-depending restructuring of the wage system showed some kind of solution for the unemployment problem of the German labor market.

The tight monetary policy, directed principally at domestic targets, resulted in a sharp appreciation of the German exchange rate until 1979. At the same time, the United States began to conduct a policy mix of contractionary monetary policy and expansionary fiscal policy and this caused the dollar to appreciate. In the face of continuing increases in U.S. interest rates, West Germany saw large outflows of capital, associated with relatively low German interest rates; this caused the Deutsche Mark to depreciate. In order to prevent further capital outflows, the German interest rates had to go up, and together with higher import prices through the exchange rate depreciation, labor costs did also increase. As the theoretical model suggested, those developments brought inflation and recession to the German economy.

From that time on, the West German current account deteriorated drastically. The economy had to adjust to the second oil price shock. In addition, the budget was operating in the red, and was in part financed with money from abroad. The expansive fiscal policy of the past now resulted in unfavorable developments of the interest rates, exchange rates and domestic prices. In 1982, tight monetary policy and the begining of the consolidation of government expenditures led to a surplus in the current account and to a decrease of the national debt against foreign countries.

From 1985 on, the Deutsche Mark again appreciated against the dollar. This development brought support for the fight against inflation on the import side and an improvement in the terms of trade. The import costs for domestic companies went down and real income increased. The widespread expectations of further appreciation of the currency led to huge inflows of capital and this forced the central bank to lower the interest rates. Overall, monetary policy is currently following a course of "tight and cheap" money.

The biggest internal problem of the West German economy is the inflexibility of the labor market. As soon as the persisting unemployment problem can be solved to a certain degree, the driving forces towards higher productivity could develop. This might be beneficial for all trading partners, since a stronger West German economy could more effectively contribute to

supporting the United States, which still is the strongest country in the industrial world and the most important manager of the international trading system.

CHAPTER V

CONCLUSION

Under the conditions of an open economy and perfect capital mobility, Mundell and Fleming developed a model of how to assign different policy instruments for the achievement of internal stability and balance-of-payments equilibrium.

Mundells "principle of effective market classification" regards fiscal policy under fixed exchange rates as being highly suitable for internal objectives. An increase in government spending creates a credit tightness, induces capital inflows and with an increase of the domestic money supply, further increases in income will be generated. The fact that interest rates remain at their world level and there is thus no negative impact on domestic investment, shows the effectiveness of fiscal policy for the achievement of internal balance.

Expansive monetary policy has no effects for internal stability. A variation of the money supply, which tends to reduce the rate of interest, results in an outflow of capital. In order to stop the demand for foreign exchange, the central bank has to sell some of its holdings of foreign exchange and

consequently the money supply will then decrease back toward its original level in response to the loss in international reserves.

Under a system of flexible exchange rates, the central bank does not intervene in foreign exchange markets to fix exchange rates, and the money supply is in principle under the control of the monetary authorities. If the government decides to increase the money supply, this would place downward pressure on domestic interest rates, inducing capital outflows and depreciating the domestic currency. This depreciation increases the home and foreign demand for domestic goods as a result of the rise in the domestic price of imports and the decline in the foreign price of exports. The expansionary effect on domestic output qualifies monetary policy under flexible exchange rates as highly efficient, since the changes in the relative value of the domestic currency automatically bring about external balance.

Fiscal policy, on the other hand, is not effective in changing output. An increase in government expenditures would raise aggregate demand for domestic goods and place upward pressures on domestic interest rates. This would lead to a fall in the exchange rate if the interest elasticity of capital flows is sufficiently large, and this would switch demand away from domestic goods. The reduction in the domestic price of imports tends to offset the increase in the price of home goods.

Implicitly, Mundell and Fleming assume constant wages and prices. Once, however, this condition is relaxed, the conlusions of the traditional model do not longer hold. With the introduction of wage indexation, current or expected price changes are transmitted in the development of nominal wages in order to keep real wages moving close to targets, which in turn may be influenced by the unemployment rate.

If a demand expansion at home pulls up the price of domestic output relative to the consumer-price-index, employment and output will expand. This is due to the fact that the relevant prices for workers'and producers'decisions are different. Entrepreneurs look at the price of domestic output and since increased aggregate demand tends to push up the domestic price level, the real wage rate has fallen from the point of view of the entrepreneurs. Workers, on the other hand, look at the CPI with imports in it as well and since expansionary fiscal policy, under a system of flexible exchange rates, generates an appreciation of the currency, this in turn leads to a decline of foreign import prices. The overall price level therefore has remained the same for the suppliers of labor.

With wage demands fixed in real terms, expansionary monetary policy will only increase prices without significant effect on output. With rigid real wages, labor market institutions react

immediately in response to the implied price inflation and thus, domestic producers do not have any incentive to increase employment.

In practice, the theoretical model of complete and instantaneous adjustment of nominal wages has several shortcomings. Rarely, if ever, it is ensured that all wages and salaries are automatically adjusted at short intervalls for changes in the overall price level. Indexation provisions seldom apply to all workers or cover the whole pay packet; they often provide for adjustment only with substantial delay. Furthermore, there is usually provision for price declines to be treated asymmetrically from price increases. Therefore, if indexation is not to be a disturbing factor, it is desirable that adjustments should be made frequently and smoothly, and preferably not on the same basis and simultaneously in all sectors (Braun, 1976).

Chapter 4 has provided some description of the practical application of stabilization policies in the United States and West Germany in recent years. It was shown that the domestic-macroeconomic-policy response to an exogenous supply price shock depends to a great extent on the nature of nominal wage behavior. In this light, the simultaneously conducted contractionary monetary policy and expansionary fiscal policy of the United States in the early 1980s brought stagflation to the West German economy. This policy-mix caused the dollar to

appreciate and helped to reduce U.S. inflation, while Germany, with relatively high wage-indexation, was forced to import stagflation (Bruno/Sachs, 1985).

This example stresses the necessity of policy coordination among countries, because, in order to raise economic welfare in all economies, not only the impact of foreign policies on the domestic economy must be estimated correctly, but also because of the interdependence of economies, the choice of policies itself depends on policies pursued elsewhere.

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