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AN EMPIRICAL ANALYSIS OF THE POLICY RESPONSE TO THE BALANCE OF PAYMENTS IN WEST GERMANY - 1958-1971

by

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CHAPTER I

INTRODUCTION

Statement of the Problem

This study will seek to analyze the measures undertaken by West Germany in response to her balance of payments position. It will concentrate on those instruments which affect aggregate demand although other tools available to the authorities will be included as part of the discussion. The various tools of monetary and fiscal policy which affect the economy through changes in aggregate demand will be dealt with primarily by ascertaining the reactions of the German authorities to balance of payment disequilibrium.

Although the analysis will concentrate on the balance of payments as a target or objective of policy makers, other major targets that governments are concerned with will be examined. Thus, the objectives of full employment, price stability, and economic growth will be incorporated into the study. The obvious reason for this is that explanations and rationales for particular behavior in response to balance of payments disequilibrium will quite often emanate from the possible greater priority assigned to one of the other targets. This fact raises the point that a particular instrument may be used to achieve a particular objective while at the same time move in a disadjusting direction with respect to another objective. The problem facing the open economy is to achieve external as well as internal stability which poses difficulties concerning the appropriate measures to undertake.

The basic strategy of this thesis will be to analyze, empirically, the adjustment process to balance of payments disturbances in West Germany. The approach followed is to make a comprehensive study of the policy actions and to infer conclusions with respect to policy reactions. These conclusions will aid in determining the answers to the following questions: How does a country which is characterized as a surplus nation react to its balance of payments position? Was their reaction to surpluses symmetrical to their reactions to deficits? Was the utilization of a particular policy instrument for adjustment of balance of payments, continued consistently over time, or were other instruments substituted because of particular circumstances? Were there special characteristics of the German economy which could explain her reactions to her payments position? If policies are not responsive to balance if payments, in a manner in which we would predict, can this be attributed to the greater priority given an alternative target? And finally, did the patterns of response in West Germany contribute to the maintainence of a stable international monetary system and the preservation of the system of fixed exchange rates?

West Germany was chosen for this study because it is a large country which is an economic power with a great industrial capacity and a strong tie to international transactions which have a considerable impact on her economy.[1] In addition, Germany was partially a surplus

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[1] Exports as a percentage of G.N.P. for the period under study in West Germany ranged between 18 and 23 percent. Source: Monthly Reports of the Deutsche Bundesbank.

country during the period studied and this researcher was interested in studying the responses of a nation with a surplus position in its balance of payments. The period covered in this study is from 1958 to 1971. The reason for choosing 1958 as a commencement point is twofold. First, complete convertibility was established for the deutsche mark with respect to international transactions of all kinds in 1958. Secondly, the German Central Bank, the Deutsche Bundesbank was established in its modern form and reorganized from its precursor, the Bank Deutsche Lander. The Smithsonian Agreement of 1971 provides an excellent termination fear for the study because it was here that there was a vast realignment of exchange rates and an introduction to the 'dirty float' monetary system presently in use.

Scope and Method

The relationships that shall be established and measured are basically those in which the target is the causal variable and the policy instrument variables are those that are being affected. The reverse relationship which measures how well the instruments are working to affect the targets will be of minimal interest to this study. The policy makers' reactions are, thus, what is of interest in this paper. There have been a variety of attempts at this kind of analysis in the past. One of those attempts inspired this study by suggesting further research in this area.[2]

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[2] Michaely, Michael, The Responsiveness of Demand Policies to Balance of Payments: Postwar Patterns., National Bureau of Economic Research, 1971.

Deriving consistent estimates of parameters in a formal regression analysis will constitute a major portion of this study, however some of the problems to be solved necessitate alternative procedures. Thus, quantitative as well as qualitative relationships shall be established between targets and instruments, yielding a type of reaction formula for the authorities. The literature on this type of analysis is not very extensive.[3] This study does not intend to comment on the actions of the West German government with the view toward judging their policies, but rather it will investigate previous experience and analyze patterns of behavior toward the end of determining overall objectives of the policy makers.

In order to determine how policy instruments responded to imbalances of payments it is important that confusions be overcome concerning the reactions of instruments to movements in targets. Specifically, if a particular instrument was perceived to move in an adjusting fashion, this response may have been taken to achieve a particular objective with respect to an alternative target. Therefore a major problem to overcome is separating responses to one target from responses to another. When it is evident that a particular policy variable does not move in an adjusting fashion or a fortiori moves in a disadjusting fashion, explanations of this behavior will be forthcoming. More often than not it's the appropriation of policy instruments for alternative targets that explains the apparent inconsistency.

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[3] Reuber, G. L., 'The Objectives of Canadian Monetary Policy, 1949-61: Empirical Tradeoffs and the Reaction Function of the Authorities', Journal of Political Economy, April 1964.

Although the effect of policy on economic variables and objectives is not of primary importance in this study, it must be considered to some degree so as to permit interpretation of policy actions. There are some difficulties associated with this analysis which will be discussed fully as they arise. In some instances money market variables may have a target level set as an objective by policy makers. Anna Schwartz has shown that some central banks transform the traditional objectives of full employment, price stability, balance of payments equilibrium and reasonable rates of economic growth into short-term money market variables.[4] However, in this study of West Germany, it is assumed that the traditional objectives are indeed what is really important to policy makers. The assumption is that there are no specific target levels of interest rates, free reserves, liquidity ratios, etc., that are not considered in the context of achieving the ultimate goals that have sometimes been characterized as 'remote' or 'traditional'.[5] In other words, it is assumed that there is an approximate quantitative relationship between the achievement of policy goals and the reaction of policy makers.

Basically, this study assumes that policy instruments respond to policy objectives in order to maximize some utility function consisting

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4 Schwartz, Anna, "Short Term Targets of Three Foreign Central Banks", in Targets and Indicators of Monetary Policy, ed. by Karl Brunner, Chandler Publishing Company, 1969.

5 Brunner, K., Meltzer, A., "The Nature of the Policy Problem", pg. 3 op.cit.

of the policy goals. Peacock and Shaw, in an interesting work done in 1971, describe how the policy maker attempts to optimize community welfare where the elements in a social welfare function are the traditional policy objectives and the constraints are their tolerable levels. Essentially, to better understand the role of fiscal policy, they develop the analysis of constrained maximization.[6] Although no specific utility function will be set forth in this work, a set of goal tradeoffs with respect to particular instruments can be derived from the results of the regression analysis.

The regression analysis will not suffice to answer some of the questions raised by this study. For example, the question of how West Germany changed her policy patterns over time or differed in her response to payments surpluses and deficits does not lend itself to regression theory. Following Michaely, subperiods of imbalances of payments are broken down to take into account short time divergencies as discrepances from the apparent movement in a target or instrument.[7]

The objective of this analysis will be to determine reactions of policy instruments to imbalances of payments which were continuously in surplus or deficit. The periods should be long enough to justify that the reactions were to target movements in the period in question

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6 Peacock, A. and Shaw, G. K., The Economic Theory of Fiscal Policy, chapters 8 and 9, University of York Studies in Economics, 1971.

7 Michaely, Michael, op.cit.

and not to target movements in earlier periods. Therefore, the periods last from a few quarters to a number of years and policies are assumed to be reacting to developments within the period. An important assumption that is necessary to make is that the policies undertaken do not immediately affect the goal variable strongly enough to reverse the movement which gave rise to the policy action in the first place. This assumption is made so as to insure that we are looking at effects of objectives on policies, and not the reverse, that is to say, in other words, that the inside lag is substatially shorter than the outside lag.

In determining whether a policy instrument moved in an adjusting or a disadjusting manner, care must be taken of the type of instrument and degree of control the authorities possess. For example, commercial bank credit or the prime rate may change because of demand considerations in the credit and capital markets. However, if the monetary authorities thought that this behavior was undesirable, it is assumed that they would try to counteract it. This point also applies to automatic responses of certain instruments to policy objectives. A good example of this is the money supply rising with a payments surplus and falling with a payments deficit. Autonomous movements such as these will be considered desirable even though they were not initiated by the authorities. Although this may place a limitation on the analysis, the alternative would render evaluation of policy patterns practically impossible.

Part of the analysis of the subperiods of imbalance will include a testing, where applicable, or some of the theories of the optimal policy mix.[7]

Theoretical Aspects

The problem facing an open economy in effectively controlling aggregate demand and dealing with the balance of payments concentrates on the effects taken on the current and capital accounts. For a country pursuing both full employment and a balanced payments position under fixed exchanged rates, theory gives us definite prescriptions for two out of four possible situations: 1) Deflate, if a country is experiencing over-full employment and a payments deficit; and, 2) Expand, if a country is at less than full employment coupled with a payments surplus. The other two cases, inflation with surplus and recession with a deficit, seem to provide conflicts with respect to objectives. Thus, additional policy instruments must be utilized. West Germany, a surplus nation with high employment and an extraordinary preoccupation with price stability, usually faced a conflict of objectives. This

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[7] See for example: Johnson, Harry, 'The Objectives of Economic Policy and the Mix of Fiscal and Monetary Policy Under Fixed Exchanged Rates' in Maintaining and Restoring Balance in International Payments, eds. Fellner, W., Machlup, F., Triffin, R., Princeton University Press 1966; Mundell, Robert, 'The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability,' I. M. F. Staff Papers, March 1962; Fleming, Marcus, 'Domestic Financial Policies Under Fixed and Under Floating Exchange Rates'; I. M. F. Staff Papers, November 1962.

conflict is not as apparent as it might seem to be because of the differential effects of monetary and fiscal policy on the capital account of the balance of payments.

When considering the appropriate monetary or fiscal policy, account must be taken of the effects on income and the effects on interest rates and credit conditions. Stimulating the economy by fiscal or monetary means will worsen the current account via the marginal propensity to import or the possible export substitution to competing domestic markets. The capital account will also be affected through a variety of routes with conflicting effects.[8] First, stimulating income expands private savings, part of which may flow into foreign investment via a marginal propensity to invest abroad, thereby worsening the capital account. Secondly, expansion of income domestically may divert domestic and foreign saving toward domestic investment, thus improving the capital account. Finally, the expansion of income may imply increased prospects of profits from real investment, again improving the capital account. The probable effect of all of these factors will be to worsen the overall balance of payments.

The interest rate and credit conditions will effect capital flows in the usual manner, i.e. expansionary fiscal policy will increase the transaction demand for money and raise interest rates while expansionary monetary policy will increase the supply of money (relative to demand) and lower interest rates. The balance of payments improves in the former case and deteriorates in the latter.

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[8] Johnson, Harry, op.cit.

Thus, depending on a nation's employment level and payments position, there is an appropriate combination of fiscal and monetary policies whereby a country could fülfill both of its objectives. This will be investigated in the analysis of Germany's response to her balance of payments position. In much of the period studied, Germany exhibited payments surpluses along with high employment and thus, according to the above discussion, appropriate combinations of fiscal contraction and monetary expansion would be the correct policies. Similarly, a country with inadequate employment and a payments deficit could achieve its objectives by appropriately utilizing fiscal expansion and monetary contraction.

These policies are not designed to restore international equilibrium. Instead, they are designed to induce capital transfers necessary for financing the deficits or surpluses through the private capital accounts. By pursuing the objectives of full employment and price stability in a fixed exchange rate disequilibrium situation via the private capital account, a great amount of pressure is removed from the central bank and various governmental authorities. Thus they are short run responses to problems and, given the political structure of governments, i.e. four or five years being the usual length of an administration, short run responses are a fact of political life.

A policy prescription for balalnce of payments problems which are not diagnosed as representing "fundamental disequilibrium" is to adjust through changes in aggregate demand. Although there is some tendency for an automatic movement in the adjusting direction, the government policy makers still have the ultimate responsibility of bringing about the adjustment through the use of the measures at their disposal.

For this reason, adjustment in surplus countries would dictate an expansion in aggregate demand and in deficit countries, adjustment would dictate a restraining of aggragate demand. This constitutes playing by the "rules of the game" concerning a nation's responsiveness to balance of payments disequilibrium. Of course, there may be sacrifices to make with respect to domestic objectives such as full employment and price stability if a country should follow these rules of the game. The West German reaction to this problem is essentially the subject matter of this thesis.

Economic Situation

In order to provide a setting for the West German policy response, a brief description of the international monetary situation and the West German economic performance during the period under study will next be presented. At the Bretton Woods, the International Monetary Fund provided the groundwork for the international monetary structure after World War II. Throughout the 1950's the United States emerged as the principal reserve nation as the dollar increasingly took over the function of gold as an international reserve. This occurred as a result of the dominant U. S. position in world trade. Since most international money transactions were financed in dollars, it became advantageous to maintain dollar balances in lieu of gold.

In 1958, the relatively smaller U. S. deficits of the past six years assumed larger proportions. Prior to 1958, the rest of the world accepted U. S. liabilities as financing of the deficit, but in 1958 the dollar began showing signs of weakness on foreign exchanges as the U. S. began to experience substantial gold outflows. Beginning in 1958, the European nations were in a stronger competitive position with the productive capabilities to win markets from the U.S. The European Economic Community was established along with complete convertibility for the major European currencies. As the U. S. began suffering from lagging growth and high unemployment, the view became widespread in Europe that the devaluation of the dollar was a serious possibility. Various countries began converting surplus dollars into gold, accentuating the gold drain that by 1960 had reached major proportions. This led to the setting up of the Gold Pool, which acted as a temporary cushion on the U. S. gold stock.

The countries whose surpluses were the counterparts of the large U. S. deficits were West Germany, Japan, the Netherlands, and Italy. France was a surplus country too, until 1968. In the period under study, the U. S. became the world's central banker as the dollar emerged as the major reserve currency.

During the period under study (1958-1971) nearly all the growth in total international reserves resulted from foreign central bank increases in their dollar holdings. Sterling reserves were stable and gold reserves decreased by almost two billion dollars. Thus, U. S. liabilities to foreign central banks comprised most of the growth in international reserves.[9]

Knowledge that in the short run the United States deficit could turn to surplus, causing dollar reserves to fall and giving rise to international liquidity problems, caused great concern. In addition, in the long-run the dollar could not be expected to supply new reserves, causing even greater concern. This concern over the adequacy

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[9] International Financial Statistics of IMF, February 1972, pp. 18 & 23.

Table 1.1

Export Prices (1963=100)

1958-1971

	West Germany	United States	Industrial Countries
1958	93	98	98
1959	92	98	98
1960	94	99	99
1961	100	101	100
1962	100	100	99
1963	100	100	100
1964	100	101	102
1965	102	104	104
1966	103	107	106
1967	102	110	106
1968	101	111	105
1969	104	115	108
1970	114	121	116
1971	121	125	121

Source: International Financial Statistics, IMF, 1958-1972.

of international liquidity resulted in improved facilities for borrowing reserves and for the creation of the rhserve asset known as Special Drawing Rights (SDR's) in the 1960's.

Throughout the period under study West Germany experienced a strong export-led growth rate by maintaining a highly competitive position in international markets. Table 1.1 illustrates this competitive edge vis-a-vis the U. S. and the rest of the industrial countries of the world. The lower export prices in West Germany were the result of many factors among them were: The Undervalued deutsche mark; the responsible attitude of West German labor unions; the productive and hardworking German workers; the massive foreign labor force; and the reasonably successful anti-inflation policy in West Germany.

Exports in West Germany grew from $8.8 billion in 1958 to $39 billion in 1971, while at the same time imports were growing from $7.5 billion to $34 billion. This exceptional performance can be given even higher marks when compared to the experience of the United States and the rest of the world as is indicated in Table 1.2 below.

Table 1.2

Exports and Imports (billions of $)

	Exports		Imports	
	1958	1971	1958	1971
West Germany	8.8	39	7.5	34
United States	18	44	14.6	48
Non-Communist World	95	313		

Source: International Financial Statistics of IMF, May 1972

This huge expansion of trade in West Germany was accompanied by an increase in international liquidity in West Germany of from $4.5 billion in 1958 to $16 billion in 1971.

The GNP in current dollars in West Germany during this same period, increased from 230 billion DM. to 750 billion DM., a rate of almost 10 per cent per annum. At the same time, the GNP price deflator increased at an average of 3.3 per cent a year and Consumer prices rose on average by 2.8 per cent a year. If it were not for the relatively high inflation rate of 1970 and 1971, these average figures for the period under study would have been even lower. It is also important to note that the unemployment rate went over 2 per cent in only one year and for most of the years between 1958 and 1971 the rate was actually below 1 percent.

CHAPTER II

Structure and Characteristics of the West German Economy

The German economic planners have tried to follow the principle of the 'social market economy' which has its roots in neoliberal economic thought. The leading proponent of the economic or competitive order in West Germany was Walter Eucken.[1] Consequently, a centrally administered or directed economy was looked upon as distateful and of course, incompatible with a market economy. The historical experience of the administered economy of the Third Reich contributed to this general attitude. Almost twenty years elapsed before this attitude was changed and an effective fiscal policy was implemented with the 1967 Act to Promote Economic Stability and Growth. This Act was the culmination of the acceptance of the idea that a planned economy need not lead to a centrally directed economy.

This reconciliation of the 'competitive order' i.e. an exchange economy with complete competion and modern Keynesian government interventionist policies, was the result of trial and error and past economic frustrations. The economic policies of the fifties were largely tied to the primacy of monetary policy.

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[1] Eucken, Walter, The Foundations of Economics, Edinburgh Hodge 1950 translated into English by T. W. Hutchison, Die Grundlagen der Nationalokonomie, 1947.

This was the direct result of the great importance attributed to a stable currency and the negative experience with inflation. Consequently, anticyclical measures in the form of tax and expenditure changes were used only on rare occasions and the burden of adjustments fell heavily on monetary instruments.

Much has been written on the need for the proper policy mix for external and internal stability. The essential conclusion drawn from these research efforts is that monetary instruments by themselves will not provide the necessary stability on both an external and internal front. This was demonstrated to the German policy makers many times in the past twenty five years. A central question that arises is: What policy objectives should monetary policy be aimed at? Should it be concerned with price stability and balance of payments equilibrium or should it be aimed at full employment and faster growth? Recently, governments have been influenced to utilize more selective monetary measures designed to affect the allocation of investment and consumption expenditures in addition to their aggregate levels. The balance of payments is important to growth for West Germany as a result of its large amount of international trade. A reasonable rate of growth is therefore contingent on West Germany's competitiveness in foreign markets. In addition, domestic industry must be competitive to prevent import substitution. Whenever fiscal policy is used for balance of payments reasons the discriminatory effects on consumption and investment will have a direct effect on economic growth. If domestic investment is to be favored, then corporate income taxes, investment credits and accelerated depreciation allowances can be manipulated to affect the after tax marginal efficiency of investment. It is interesting to note that the prescription for a surplus country with full employment (which West

Germany resembled for much of the period under study) is for fiscal restraint and monetary expansion, which is likely to promote investment and stimulate growth.

The statutory bases of monetary policy in West Germany are the Deutsche Bundesbank Act of 1957, the Act to Promote Economic Stability and Growth of 1967, and the External Trade and Payments Act of 1961. The basic provisions on the supervision of the banking system are found in the Banking Act of 1962. The Bundesbank is assigned the task of "safeguarding the currency" and though independent, is expected to support the general economic policy of the government.

The Act of 1967 describes the general economic policy objectives. All policies are to be undertaken by the Federal Government and the Lander within the framework of the free market economy and contribute to price stability, high employment, steady reasonable growth, and external equilibrium. Compliance with these objectives is also required by the Federal Railways, Federal Post Office, European Recovery Plan (ERP) Special Fund and the local authorities as well. The External Trade and Payments Act empowers the Federal Government to regulate the various sectors of foreigh trade and payments with the authorization of the Bundesbank. The Banking Act provides for cooperation between the Bundesbank and the Federal Banking Supervisory Office with respect to loans, capital resources, bank liquidity, and, in general, the field of credit policy.

The 1957 Law established the Bundesbank or German Central Bank which previously was called the Bank Deutsche Lander. The Lander Banks were transferred into agencies of the Deutsche Bundesbank, preserving the autonomy of the Central Bank. The Board of Managers of the Bundesbank maintains its independence from the Government as a result of its eight year term of office. The Central Bank Council, the highest organ of the Bundesbank, is composed of the Board of Managers and the eleven Presidents of the Lander Central Banks. The Bundesbank is to advise the Government on monetary matters and support their overall economic policy. This policy will take a back seat to the express task of safeguarding the currency which the Bundesbank considers to be its primary objective.

The Bundesbank has tried to pursue the objective of monetary stability but it has been a complicated task because of the large inflow of speculative funds. The large surpluses of the fifties and strength of the German D. M., which many thought would lead to revaluation contributed to the inflow of speculative funds. As the monetary reser-es grew to huge levels in West Germany, by 1957 the problem of imported inflation became a major issue. This problem was basically caused by two factors. First, the increased liquidity caused by the foreign exchange increased the money base and caused inflationary demand. Second, the balance of trade surplus with inflation-prone nations led to rising domestic prices. The task of the monetary authorities is always difficult under these circumstances because the increased liquidity from abroad gives the credit institutions greater independence from the Central Bank and tends to offset credit control measures that are undertaken. In addition, restrictive monetary measures which raises interest rates aggravate the problem by attracting more foreign capttal. Thus, orthodox monetary policies which try to contain inflation caused by market forces affecting supply and demand, may run counter to balance of payment equilibrium. Revaluing the currency becomes a viable alternative measure under these conditions.

Qualitative measures which stimulate the export of capital or discourage the import of capital can also help by draining off some of the excess liquidity. This complex problem stimulated the interest in the greater utilization of fiscal measures.

In West Germany, the predominant type of bank is the all purpose bank (Universalbank) which takes part in all types of banking business. Building and Loan associations, insurance companies and social security funds play an important role as institutional investors. Building and Loan associations are among the most successful institutions of the West German credit system. The need for housing and considerable government assistance are the main reason for their rapid growth. Insurance institutions primarily provide medium and long term finance for residential construction and for industrial needs.

The securities and equity markets are free from any restrictive provisions limiting access to the market. Share and loan issues are placed through banking syndicates. For special commission (the so called Bonification) the banking syndicate underwrites the issue at a fixed price and places it with the public or in the case of an issue of shares, offers it for subscription to existing shareholders. The syndicate bears the risk and must put the unsold portion in their respective bank portfolios. Loan issues of the Federal Government, the Federal Railways, and the Federal Post Office are floated by the Federal Loan Consortium, consisting of about eighty banks, headed by the Bundesbank. The Central Capital Market Committee set up by the major issuing banks in 1957, discusses the situation on the bond market and makes recommendations concerning the order and timing of loan issues. This is achieved with the cooperation of the Bundesbank and the Federal Government. The banks also play an important role as issuers of their own debentures and as purchasers of securities. The capital market is heavily dependent on the money market. With banks heavily committed on the bond market, the Bundesbank's credit policy measures, aimed at bank liquidity, have a major impact on the bond market. When measures restrict liquidity, banks first cut down on their security purchases, thereby raising interest rates. Conversely, when measures expand liquidity, banks increase their purchases of securities, thereby lowering interest rates. Institutional saving represents the largest share of financial asset formation.

The money stock (Geldvolumen) or money supply (Geldversorgung) is defined by the Bundesbank in the narrowest sense as currency in circulation plus sight deposits. Near monies are defined as all time deposits of less than four years. For a time the Bundesbank included in the money supply, short term time deposits with a maturity of less than three months. The most important source of the money supply is lending by the banking system as a whole, which reflects an overall change in external claims of the banking system. Formation of monetary capital with the banks from domestic sources includes the increase in savings deposits and time deposits made by non-banks for periods of four years or more, the proceeds of sales of bank bonds to non-bank buyers, and additions to the banks' and Bundesbank's own capital and reserves. Another determinant of the trend of the money and near money stock is the change in sight deposits of public authorities with the Bundesbank.

The term "bank liquidity" refers to the banks' holdings of Central Bank money and other short-term assets which can be used to gain access to Central Bank money, less compulsory minimum reserves and advances taken from the Central Bank against securities. Short-term assets eligible for rediscounting at the Central Bank include trade bills with in the rediscount quotas's limit, shortterm funds employed abroad, and money market paper. Justification for including such assets as part of liquidity is that the Bundesbank is willing to exchange them for Central Bank money.

The Bundesbank attempts to influence demand for influencing bank liquidity and interest rates through the use of the major instruments of monetary policy available to it. First, refinance policy (refinanzierung) enables the Bundesbank to change the discount rate and rate for advances on securities that it charges banks. The bills bought and sold most satisfy predetermined conditions. The Bundesbank can refuse to rediscount bills relating to certain types of business. This increases the cost of credit in those particular areas. The volume of rediscount credit available to each bank is controlled by rediscount quotas. A rise in the quota ceiling acts to increase the available discounting and thereby increases the free liquidity reserves of the banking system. Certain types of securities are eligible for lombard credits or for loans against the securities as collateral. These advances are not to exceed about 20 percent of the rediscount quota.

The second major credit instrument is the minimum reserve policy. In West Germany the vast majority of banks are subject to minimum reserve requirements. Among liabilities subject to reserve requirements a distinction is made between sight deposits - fixed period liabilities of less than thirty days; time liabilities - fixed period liabilities of more than thirty days; and savings deposits. The minimum reserve requirement (Mindestreserve Soll) for sight and time liabilities are differentiated according to the size of the banks and whether or not the Bundesbank has a branch in the area (Bankplatze). When necessary for credit policy reasons the Bundesbank makes liabilities toward non-residents subject to higher reserve ratios than liabilities toward residents. This is undertaken as a capital import control measure. In addition, the Bundesbank can fix special minimum reserve ratios for any increase in liabilities, specifically for non-resident deposits.

The third major credit control instrument is open market policy. The money market in West Germany consists first in dealings in Central Bank funds between banks and secondly in dealings in money market paper such as Treasury Bills, discountable Treasury bonds, Storage Agency Bills, and prime acceptance. There are practically no dealings in money market paper without the participation of the Bundesbank, which determines the interest rates in the market by fixing the terms in which it buys or sells money market paper.

Fiscal policy, in West Germany, was not very popular until the mid-sixties. Then, there was increased support for budgetary policy so that some of the responsibility could be removed from monetary policy for regulating cyclical fluctuations. Control in West Germany over the size of public expenditures is difficult because of the three distinct levels of public budgeting. These are the Federal Government together with the Equalization of Burdens Fund and the European Recovery Plan funds; the Lander Budgets; and the Gemeinden or local budgets. Each level has its own revenue source, with source sharing arrangements.

The European Recovery Plan Fund (ERP) is an important instrument for affecting private investment. Grants and loans originate from the ERP. The Fund was established as an outgrowth of the Marshall Plan, from which Germany received about $1300 million. Only $1,000 million of this assistance had to be repaid, and the Federal Government undertook the task of repayment allowing the E. R. P. Fund to go on growing. Basically, the E. R. P. Funds are utilized as an emergency reserve to inject funds quickly into particular areas of the economy to combat structural difficulties. The funds originally earmarked to aid the basic industries; mining, energy, and transport, were switched to aid medium and small sized firms unable to get access to the capital markets. During the period under study (1958-71) funds became directed toward regional and social objectives. Firms established in economically depressed areas were given greater priority concerning assistance. Recently, the granting of aid to developing countries and the prevention of air and water pollution have grown in prominence as objectives.

The Act to Promote Economic Stability & Growth was passed in 1967. Fiscal policy in West Germany was essentially aimed at a balanced budget in order to achieve price stability. This was consistent with the desire that public expenditures not increase faster than did the GNP. The trend toward greater use of fiscal policy eventually resulted in the 1967 Law. The new Law created many additional measures and options for governmental use. Some of the resulting innovations include the following: 1) The Federal Budget would heretofore be determined in advance within the framework of a five year financial plan where revenues and expenditures would be projected; 2) The government would be given the option to vary income and corporate taxes by 10% up or down; 3) The government would be permitted to implement special accelerated depreciation allowances for a specific period, and could likewise give investment incentives of up to 7.5% over and above 100%

depreciation; 4) An anti-cyclical reserve fund would be established at the Bundesbank. In addition to these vastly broadening powers, the government was given: 5) The authority to instruct Federal and Lander authorities to place up to 3% of their tax revenue of the previous year into the fund, as well as to restrict their credit; 6) The Federal Government was permitted to suspend for a maximum period of one year, declining balance depreciation and the right to accelerated depreciation; 7) In the event of excessive demand relative to capacity, the Minister of Finance would be authorized to approve building and construction starts of the Federal Government; 8) Funds saved under the regulations of this policy would be used for redemption of debt with the Bundesbank or for payment into the anti-cyclical reserve; 9) In cases where a lack of demand persisted, suitable public investments would be stimulated; 10) The Federal Government would be required to make available to the Bundesbank an additional amount of up to DM 8,000 million in treasury bills or bonds, if the normal mobilization paper had been used up. As a direct result of the passage of this bill, open market operations have been expanded. In addition, 11) A portion of the funds of the Wage & Salary Earners Pension Insurance funds and the Federal Labor Office are to be immobilized in money market paper for reasons of short-term economic policy.

For credit objectives, the transferring of excess tax revenues of the Federal Government and Lander to an anti-cyclical reserve account at the Bundesbank means a reduction in bank liquidity. On the other hand, the mobilization of these funds will increase bank liquidity. Another important new instrument of budgetary policy is to regulate debt management policy according to the economic trends, i.e. a contracyclical approach to borrowing and repaying debt is to be adopted in coordination with economic policy. Borrowing is to be controlled by placing an upper limit on all governmental levels. Section 4 of the Act requires the Federal Government to take into account foreign trade and payments, and to safeguard external equilibrium by utilizing the policy instruments at their disposal.

The committee of Experts for the Evaluation of Economic Trends, established in 1963, publishes an annual report in which it analyzes the overall economic situation within the framework of a market economy. This is done so as to determine how price stability, full employment, reasonable growth rates and external equilibrium can be maintained. The distribution of income and formation of property must also be taken into account as must any difficulties that arise between supply and demand. In general, the Committee can be said to reflect a tendency on the part of the German government to look more scientifically at future economic development

Balance of Payments Experience -- 1958-1971

For a substantial portion of the period under study the balance of payments was in surplus. There are many measures which indicate payments balance and policy makers may consider some more relevant than others. Otmar Emminger, Vice Chairman of the Central Bank Council of the Deutsche Bundesbank has written that, in practice, it is not very difficult to detect and recognize an undesirable imbalance of payments and that it is particularly important for early detection and correct diagnosis of emerging imbalances.[2]

From 1958 to 1971 the balance on net current and capital transactions was in surplus 8 out of 14 years and 33 out of 56 quarters. The current account was in surplus 12 out of 14 years and the balance of trade 55 out of 56 quarters. The short-term capital account was in surplus 9 out of 14 years and the long-term capital account had only 3 surplus years. In 38 out of 56 quarters and 8 of 14 years there was an increase in official external reserves. Thus, the West German experience was, in general, that of a surplus nation.

The newly organized Deutsche Bundesbank, in 1958, faced a large amount of excess liquidity induced by the foreign trade and payments position. Toward the end of 1958 and early 1959, prices stabilized and the Bundesbank lowered interest rates and promoted capital exports.

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[2] Emminger, Otmar, "Practical Aspects of the Problem of Balance of payments Adjustment". Journal of Political Economy, March 1967.

These capital exports, in 1959, were three times that of the previous year and contributed significantly to the first balance of payments deficit in West Germany in eight years. In 1960, as a result of high interest rates aimed at internal stability, the balance of payments exhibited a huge surplus led by the short-term capital account. These massive inflows of foreign funds were essentially counteracting the Bundesbank's restraint policy as the supply of credit to the West German economy was passing from domestic to foreign sources. As a result the government was losing its control over domestic credit volume. In late 1960 the Bundesbank quickly reversed its policies so as to make them conform more to balance of payments needs. The repatriation of short-term assets by German banks (in an attempt to circumvent central bank restraint policy) and the massive inflow of foreign short-term funds, coupled with the widening interest rate differential between Germany and other financial centers prompted the authorities' reversal of policy. The speculation of possible appreciation of the D. M. also contributed to the new policy. Consequently, in 1961, Germany had a capital account deficit and a lower surplus on the balance of trade. These results were aided by the D. M. revaluation of 1961 which was prompted by the large export surplus and the growing feeling that, indeed, a "fundamental disequilibrium" had developed.

As a result, West Germany's current account surplus fell to a ten year low. The balance on current account and unilateral transfers combined, recorded its first deficit since 1950. In addition, 1962 also exhibited a basic balance deficit of almost D. M. 2 billion. In 1963, the Bundesbank's gold and foreign exchange holdings rose by the large margin of 2.6 billion D. M. compared to the decline in 1962, of 550 million D. M. The balance of payments surplus was due to the current account and growing capital imports.

In 1964, as a result of measures taken at home and abroad, the German government succeeded in reversing the surplus of 1963. The long-term capital outflow exceeded the current account surplus, causing a deficit on the basic balance. There was a slower growth of foreign demand and an accelerated rise in imports, thus reducing the trade surplus. The Bundesbank's monetary reserves increased in 1964 by only 12 million D. M. compared to the 2.6 billion D. M. of the previous year. In 1965, the balance of payments closed at a considerable deficit. The balance of trade was in surplus by only 5.1 billion D. M. compared with the 9.7 billion D. M. of 1964. Deficits on the balance of services and transfers increased still further. The current account was in deficit by more than 6 billion D. M. compared to a year earlier of a half billion surplus. Since there was a short-run capital import of about 4 billion D. M. and a small long-term capital import, the monetary reserves of the Bundesbank decreased only slightly in 1965.

In 1965 and the first half of 1966 the balance of payments was in a large deficit. From mid 1966 surplus became the rule. Low imports contributed to a large trade surplus. External reserves rose by over 1 billion D. M. in 1966, after having fallen in 1965 by 1.5 billion D. M. In 1967 there was a large export surplus largely caused by declining imports. This surplus was offset by deficits in the other balance of payments sectors. These were mainly high capital exports due to increased German investment abroad while foreign investment in Germany fell and high short-term capital began to take advantage of high interest rates in foreign money markets. In 1968 the current account surplus continued to increase as did long-term capital exports, but short-term capital flows reversed to a net import position and external reserves increased by 7 billion D. M. compared to the 400 billion D. M. in 1967.

In October of 1969 the D. M. was revalued by 9.3 percent. After the revaluation a huge outflow of foreign exchange of over D. M. 20 billion took place. Interest rate differentials also contributed to a net long-term capital exports of nearly 23 billion D. M. The surplus on current account decreased by over 4 billion from the previous year contributing to a huge basic balance deficit for 1969. In contrast, as a result of borrowing abroad by German banks, short-term capital transactions were in surplus by almost 6 billion D. M. In 1970 the surplus on current account decreased to 2.4 billion D. M. and the excessive long term capital exports of 1969 dropped to more normal proportions. The basic balance, though, continued to show a deficit. Short-term capital imports to West Germany were very large in 1970, owing to rekindled foreign exchange speculation. Part of this reflected a way in which domestic enterprises and banks could circumvent the credit crunch policy that the Bundesbank was engaging, in its attempt to curb the boom.

In 1971, there was a small surplus on current account. Exports increased in the first few months of 1971, but after the floating of the D. M. in May, the rise slowed down. There was a movement toward capital imports and a steep rise in foreign direct investment in West Germany. The basic balance was in surplus and Bundesbank monetary reserves rose. In August of 1971, there was the massive international realignment of exchange rates which essentially acts as the termination point for this study.

CHAPTER III

Subperiods of Imbalances of Payments

In this chapter the reactions of policy makers to the balance of payments position in West Germany is analyzed through the use of subperiods of imbalances of payments. A subperiod of payments imbalance is defined as a period of time when the balance of payments is continuously in deficit, continuously in surplus or continuously in equilibrium. Quarterly data is utilized and a one quarter divergence from an apparent trend will be disregarded as a random fluctuation.

The examination of subperiods will focus on the movements of policy instruments and policy objectives within each period. Policy response to balance of payments will be inferred from an examination of the direction of change of instruments and objectives. The subperiods will be of sufficient length to insure that policy reactions are in response to policy objectives within each period. As previously discussed, it is assumed that the "inside lag" is shorter than the "outside lag"[1], so that the patterns illustrate the effects of objectives on instruments, and not reverse.

If an instrument appears to be manipulated in a direction necessary for balance of payments adjustment, the movement of alternative policy objectives will be examined. This will aid in determining if the

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[1] Ando, Brown, Solow, Kareken, "Lags in Fiscal and Monetary Policy", in Commission on Money and Credit, Stabilization Policies, 1963.

association of a policy instrument with the balance of payments can be explained according to the rules of payments adjustment or by the coincidental movement required to achieve another policy objective i.e. the relationship between the balance of payments and the instrument may be due to the association with the movements of an alternative objective variable with the balance of payments.

Numerous questions whose solutions are not immediately apparent as a result of regression analysis can be illuminated as a result of this research endeavor. However, it is entirely likely that each approach lends valid support to the other with respect to conclusions drawn, and inferences concerning the responsiveness of policy instruments to the balance of payments. The policy instruments investigated in this section include those which are under direct control of the authorities such as the discount rate, which can be immediately manipulated, as well as instruments such as credit to the private sector, which depend more on the relationship of the banking community and the public's demand preferences. The latter, which deals with a more complex process, is an example of a policy instrument which may reflect the response to an instrument such as the former. The entire list of instruments examined in this section are listed in columns 2 through 11 in Table 3.1.

Determinations will be made as to whether these policy instruments reacted to the balance of payments in an adjusting, disadjusting, or neutral fashion. The analysis utilized here draws, with some modifications, on the method of Michael Michaely in his work on the responsiveness of demand policy to the balance of payments.[2] An adjusting movement in a policy instrument is defined as a movement which tends to reverse the imbalance or at least to counteract what may have been an even greater aggravation of the payments position, had the action not been taken. A disadjusting movement is one which tends to accentuate the imbalance of payments and a neutral movement of a policy instrument is considered to be one which neither aggravates nor alleviates the balance of payments problem. This latter explanation of a neutral reaction of a particular policy instrument with respect to imbalances of payments can occur as a result of two considerably different patterns of policy response. First, if the policy instrument is observed to remain reasonably stable over the period as a reaction to an upward or downward movement in the balance of payments, its response will be designated as neutral. Second, if the policy instrument exhibits diverse random fluctuations so that no particular pattern of adjustment of disadjustment can be ascertained, (i.e. no consistent pattern can be determined within the period of imbalance of payments) then this too will cause the instrument's response to be designated as neutral.

A movement of a policy instrument is 'adjusting', if in response to a downward imbalance (movement toward deficit), the policy contributes to a reduction in aggregate demand. A policy response to an upward imbalance (movement toward surplus) is 'adjusting', if the policy

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[2] Michael Michaely, The Responsiveness of Demand Policies to Balance of Payments: Postwar Patterns, National Bureau of Economic Research, Columbia University,Press, 1971.

contributes to an increase in aggregate demand. The overall pattern of response in West Germany to imbalances of payments must be determined by examining the combined use of policy instruments. There is a certain degree of subjectivity attached to this method of determining policy responses to payments imbalances and, as discussed by Michaely,[3] some definite drawbacks and limitations are involved. These limitations include the problems of discretionary and automatic responses, ex ante and ex post movements, and distinctions between levels and changes.

An example of automatic response is the rising of the money supply with balance of payments surpluses and the falling of the money supply with payments deficits. In this case the apparent adjusting movement in the money supply may mainly be a result of the automatic changes in the nation's external reserves. On the other hand, a discretionary response would require some government initiation. It is often very difficult to distinguish between an automatic and a discretionary response, but it is assumed that if the government wished to offset an automatic response, it would do so. Consequently, if they do not act to offset a movement in a policy variable, that movement will be considered desirable.

An ex ante and ex post movements refer to the fact that realized movements for each policy instrument variable may differ from the movement intended by the policy maker. This may occur because some of the

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[3] Michaely, Michael, op.cit.

monetary variables are a few stages removed from direct policy action (e.g. credit to the private sector). The problem appears to be more significant for budgetary policy where misleading results can occur as a result of the effects of fiscal policies on tax revenues and hence on the budgetary balance. Although using anticipated budgetary balances would solve this problem, this was rejected because of insufficient data and because anticipations do not reflect the true reactions of policy makers. In any event, the short subperiods of imbalances suggest that such dangers are minimized.

Another difficulty in this analysis lies in the distinction between levels and changes. It may be found that although a policy instrument did not move in an adjusting direction, the level of the instrument (for example, a high discount rate in response to a payments deficit) could indicate its responsiveness to the balance of payments. Where possible, this is taken into consideration in the assessment of policy response. However, in spite of these limitations, in total, the methodology of this section can lead to significant results which in conjunction with other approaches in this study will allow important inferences and conclusions to be drawn.

The determinations of the subperiods representing imbalances of payments were based upon many factors. Obviously, since it is the reactions of policy makers that are being studied, care should be taken, where possible, to obtain measures of the balance of payments which were of concern to the decision makers. Although, statements appearing in various reports of the Deutsche Bundesbank and elsewhere contributed to this researcher's attempt to identify the payments variable that was the most important to policy makers, there was a general lack of consensus of opinion. Consequently, many of the traditionally accepted variables identifying the balance of payments were analyzed and the subperiods of imbalance of payments were determined. This task was not difficult because the balance of payments indicators, for the most part, moved in the same direction. A subjective evaluation was made in the instances when there was not a high degree of agreement.

The balance of payments variables utilized in the determination of the subperiods were the following: West Germany's total external reserves, whereby an increase in their level represents a surplus (upward imbalance), and a decrease in their level represents a deficit (downward imbalance); The secular trend of external reserves, whereby levels above the long-term trend represent a surplus and levels below the long-term trend represent a deficit; The ratio of external reserves to imports with respect to its movement from a "desired" level; The basic balance; The balance of payments on the "official settlements" basis; and the balance on current account. The beginning and end of a subperiod of imbalance of payments was determined according to the degree of agreement among the payments measures discussed above. The magnitude, direction, and divergence from a normal trend was examined for each measure. The balance of payments variables are seasonally adjusted and lagged one quarter to account for the slightly different subperiod lengths and in some instances different conclusions that emanated from this study compared with Michaely's work.[4] The different period under study, of course, also contributed to this disparity.

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[4] op.cit.

In Table 3.1, the period under study (1958-1971) is broken up into subperiods which represents imbalances of payments. The balance of payments movement in a particular subperiod is described as moving toward deficit, in which case the subperiod will be assigned a "D"; moving toward surplus, in which case the subperiod will be assigned an "S"; or no change or consistent pattern, in which case the subperiod will be assigned an "N".

The policy instruments which are examined during each subperiod of imbalance are assigned a symbol in order to indicate their compliance, non compliance, or neutrality with respect to their reactions to West Germany's balance of payments position. A plus sign represents compliance by the policy instrument with the movement necessary for balance of payments adjustment. A minus sign represents non-compliance (i.e. the policy instrument is observed to move in, the opposite direction for balalnce of payments adjustment). The third symbol, an asterisk, will be used to represent a policy instrument responding in a neutral manner, i.e either the movement of the instrument was stable or fluctuates with no definite pattern. In Table 3.1, within each subperiod, the movement of the policy instrument is described and immediately below, the movement is assigned a symbol representing the policy response.

The evidence suggests that the open market rate and the discount rate were responsive to the -alance of payments position of West Germany. Of the nine subperiods determined, the open market rate moved in an adjusting fashion in five of them, in a neutral fashion in three, and only once did it move in a disadjusting fashion. In fact, the one period reflecting a disadjusting movement can be explained by revaluation of the D. M. in 1961, which essentially caused a deficit that did not require corrective action. The Bundesbank was trying to lower their short-run interest rate differential with the hope of getting rid of the speculative funds that had moved into the German economy. In other words, a great part of the deficit was caused by depreciation of the Deutsche Bundesbank's gold and foreign exchange and the resultant outflow of short-term funds after March 1961. Therefore, a decrease in the open market rate in this subperiod does not actually contradict its otherwise consistent association with the requirements of the balance of payments. The discount rate was manipulated for balance of payments purposes with more consistency than any other policy instrument. It moved in an adjusting direction in six of the nine subperiods and in the remaining three, it moved in a neutral fashion. The required reserve ratio does not appear to convey the same responsiveness to the balance of the payments as the previous two major credit controls of the Deutsche Bundesbank. No apparent pattern of response to the imbalance of payments is forthcoming from an examination of the subperiods in column 2 of the Table 3.1. In four of the periods, the minimum reser-e ratio moves in an adjusting fashion and in another four periods it moves in a disadjusting fashion, with the remaining period being neutral.

It is significant to note that the patterns of responsiveness to the balance of payments for these three policy instruments reveal a greater manipulation in the direction that balance of payments adjustment requires, in the latter part of the period under study. For example, in the last four subperiods, encompassing half the total period under study these three instruments reveal ten out of twelve adjusting movements, one neutral, and one disadjusting. The two subperiods that did not reveal adjusting movements (out of the twelve)

TABLE 3.1

Movements of Policy Variables During Subperiods of Imbalance

Subperiod	Balance of Payments (1)	Minimum Reserve Ratio (2)	Open Market Rate (3)	Discount Rate (4)	Money Supply (quarterly % change) (5)	Total Credit to Private Sector (%) (6)	Central Bank Net Claims on Government (7)
III 1958-III 1959	D	rising +	stable *	rising +	fluctuates *	rising -	increase -
IV 1959- I 1961	S	rising -	fluctuates *	fluctuates *	falling -	rising +	decrease -
II 1961- II 1962	D	falling -	falling -	stable *	fluctuates *	falling +	increase -
III 1962-III 1963	N	stable +	stable +	stable +	stable +	falling -	increase -
IV 1963- II 1964	S	rising -	stable *	stable *	stable *	rising +	increase *
III 1964- II 1966	D	stable *	rising +	rising +	falling +	fluctuates *	increase -
III 1966-III 1968	S	falling +	falling +	falling +	rising +	fluctuates *	fluctuates *
IV 1968- II 1970	D	rising +	rising +	rising +	falling +	fluctuates *	stable *
III 1970- II 1971	S	rising -	falling +	falling +	rising +	rising +	decrease -

TABLE 3.1 (continued

Subperiod	Balance of Payments (1)	Central Bank Claims on Commercial Banks (8)	Deposit Money Bank Reserves (%) (9)	Budgetary Balance (10)	Government Expenditures (11)
III 1958 - III 1959	D	increase −	fluctuates *	decrease −	fluctuates *
IV 1959 - I 1961	S	stable *	fluctuates *	increase −	fluctuates *
II 1961 - II 1962	D	increase −	fluctuates *	decrease −	rising −
III 1962 - III 1963	N	stable +	stable +	increase *	stable +
IV 1963 - II 1964	S	increase +	increase +	decrease +	falling −
III 1964 - II 1966	D	increase −	stable *	decrease −	stable *
III 1966 - III 1968	S	stable *	decrease −	decrease +	fluctuates *
IV 1968 - II 1970	D	increase −	increase −	increase +	stable *
III 1970 - II 1971	S	stable *	increase +	decrease +	rising +

were for the required reserve ratio. This cannot be explained by a different response to surpluses versus deficits, since no differentiating pattern is revealed, i.e. there were an equal number of adjusting responses for deficit periods as there were for surplus periods. No general conclusions concerning the hypothesis that a nation will respond more to deficits than to surpluses, and thus that a deflationary bias is built into monetary policy, can be made from the West German experience. The reason for this is that the inflation phobia prevalent in West Germany probably contributes to their consistent response to surpluses. In other words, the West German response to surpluses may be unique and no generalities can be inferred from it.

The rate of expansion of the money supply (column 5) lends more support to the thesis that monetary policy in West Germany did conform to the classical "rules of the game". In five of the nine subperiods, the rate of change of the money supply moved in an adjusting fashion. In three of the subperiods, it moved in a neutral fashion, and only once did it move in a disadjusting fashion. This one disadjusting movement is explained by the period surrounding the 1961 revaluation when the Bundesbank undertook a contractionary monetary policy to combat the inflationary pressures brought on by large capital inflows. This contractionary monetary policy resulted in greater capital inflows and eventually the Bundesbank reversed its policy towards balance of payments considerations, lowering interest rates. The evidence here also seems to indicate that monetary policy was manipulated in accordance with the balance of payments, to a greater extent in the latter part of the period under study. In the last four subperiods, encompassing half the period under study, the money supply moved in an adjusting direction each time. No different pattern is revealed concerning the response to deficits or surpluses.

The rate of expansion of total credit to the private sector (column 6) reveals a pattern similar to the money supply. It did not behave as consistently with respect to moving in a direction required for balance of payments adjustment, but there were four adjusting subperiods revealed and three neutral out of a total of nine. Thus, the evidence does not contradict the hypothesis that credit to the private sector was at least partially manipulated in a direction consistent with balance of payment adjustment.

Central bank asset items such as Bundesbank claims on commercial banks (column 8) and Bundesbank net claims on the government (column 7) appear to move in a disadjusting fashion. Central bank claims on commercial banks exhibited four subperiods of disadjusting movements and only one adjusting subperiod. This reverse movement indicates that claims rise in times of deficit and decline in times of surplus. This is not surprising, however, since commercial banks desire to prevent significant changes in their loans to customers. A decrease in external reserves will result in a similar decrease of bank reserves, thus causing the banks to offset this loss of reserves by borrowing from the central bank. Similarly, loans from the central bank will decrease as external reserves increase and provide greater liquidity to the banks. This reverse relationship appears to hold only for deficit periods in West Germany and not for surplus periods, i.e. loans or claims increase during periods of decreased external reserves (deficits) each time, while surplus periods reveal no particular response. Apparently, West German banks react to an increase in external reserves by merely expanding loans, and to a decrease in external reserves by increased borrowing from the Bundesbank.

The lack of conformity of movement between the central bank asset items and the open market rate and discount rate is a result of the passive open market policy pursued by the Bundesbank. In West Germany, the Bundesbank stipulates the interest rate at which it is willing to buy or sell securities in the open market. As a result, the price of the securities is stipulated and the banks then decide whether or not to offer or demand securities at the going rate. This is similar to the operation of the discount rate when the Bundesbank buys and sells short term bills at a fixed discount. This type of policy is decidedly different from U. S. open market policy which is an active one through which the Federal Reserve buys and sells securities in the open market each day.

Central bank net lending to the government (column 7 of Table 3.1) displayed six disadjusting subperiods - two neutral, and one adjusting. To the extent that this variable expresses the budgetary balance, this result is not surprising since no conformity with balance of payments objectives can be discerned from that fiscal measure.

No consistent pattern of response can be ascertained for bank reserves, as can be seen from column 10. Three subperiods reveal an adjusting movement and four subperiods reveal a disadjusting movement. This is not unexpected, since bank reserves constitute only one component of total liquidity.

The budgetary balance (column 10) and Federal Government expenditures (column 11) did not reveal any consistent pattern of adjustment or disadjustment during the periods under study. In four of the nine periods the budgetary balance moved in a disadjusting direction and in four it moved in an adjusting direction. However, the last three subperiods revealed that the budgetary balance moved as if it were responsive to the balance of payments. In a further chapter concerning the Act to Promote Economic Stability and Growth, this pattern will be analyzed in conjunction with other fiscal instruments, in a somewhat more detailed examination of the fiscal policy response beginning in 1967. The rate of change of government expenditures reveals a basically neutral response to the payments position, as is indicated in five of the nine subperiods. The evidence seems to indicate that on the whole, budgetary policy as an instrument of aggregate demand was not used for balance of payments purposes.

It is of interest to obtain the influence of targets other than the balance of payments, on policy instruments, so as to determine possible explanations for adjusting as well as disadjusting movements in the aforementioned subperiods. The multiple regression analysis in another chapter attempts to do just that. In the period under study, West German economic growth was generally high and reasonably stable, and unemployment low and stable. Prices were kept in check but the overwhelming priority assigned to price stability by the policy makers in their writing and speeches posed the question of whether or not the association of an instrument with the balance of payments was in fact a response to the fluctuations of prices. The other major policy objectives: price stability, unemployment, and economic growth, are examined for their movement during the subperiods of imbalance in Table 3.2. Column 2 characterizes the general movement of prices during the subperiods as either low, high, normal, or fluctuating. The percent change in Producer Prices is the variable used to represent price stability. Column 3 describes unemployment during the subperiods as either rising, falling or stable. Column 4 describes the percent change in industrial production, representing economic growth, as high, low, or normal. These columns are examined so as to determine the possibility that movements of policy instruments responded to the needs of other targets.

In this analysis, only one policy instrument is tested at a time to determine if its movement was consistent with the direction necessary to adjust for the movement in the policy objective. If so, the objective is assigned a plus sign. If the change in the instrument is opposite to what would be necessary for adjustment, (i.e. a disadjusting movement), the objective is assigned a minus sign, and if the movement of the policy instrument was neutral or fluctuating, the objective is assigned an asterisk. Since the symbol assigned to the objective only reflects the association of one policy instrument, each table such as Table 3.2 can deal with one policy instrument at a time. It should also be noted that the movement of the policy objectives is examined for the subperiods determined for balance of payments movements.

The discount rate was chosen as the policy instrument to be explicitly included in Table 3.2 because it was the most consistent in its response to the balance of payments. The signs attached to the discount rate reveal its movement with respect to the balance of payments in column 1, exactly as in Table 3.1. The signs attached to unemployment in column 3 indicates that the discount rate moved in a direction responsive to the target of unemployment. However, unemployment was generally low throughout the subperiods so that its fluctuations probably did not bring about significant monetary reactions. It appears

TABLE 3.2

Movements of Other Policy Objectives and Changes in the Discount Rate During Subperiods of Imbalances of Payments

Subperiods	Balance of Payments (1)	Rate of Change Producer Price Index (2)	Unemployment (3)	Rate of Change Industrial Production (4)	Discount Rate (5)
III 1958 - III 1959	D	low -	falling +	high -	rising -
IV 1959 - I 1961	S	normal *	falling *	high *	fluctuates *
II 1961 - II 1962	D	normal +	stable +	normal +	stable *
III 1962 - III 1963	N	normal +	stable +	normal +	stable +
IV 1963 - II 1964	S	normal +	stable +	high *	stable *
III 1964 - II 1966	D	normal *	stable *	low +	rising +
III 1966 - III 1968	S	fluctuates *	rising +	fluctuates *	falling +
IV 1968 - II 1970	D	high +	falling +	high -	rising +
III 1970 - II 1971	S	high -	stable *	low -	falling -

that the discount rate did not move in a direction responsive to the rate of change of industrial production as indicated by column 4. This assumes that the discount rate as a part of monetary policy provides for increases in the transaction demand for money. If, on the other hand, the discount rate acts to dampen, anticyclically, movements in industrial production, then it was found to be responsive. The price variable, in column 2, does not show a consistent association of the discount rate with movements of prices. Of course, the six subperiods of normal price movements contributes to that response. The apparent disadjusting movement with respect to prices in the last subperiod can be explained by the Bundesbank's desire to offset the large speculative funds that were moving into West Germany by lowering interest rates. In addition, balance of payments objectives dictated lowering the discount rate.

This test was designed to determine if changes in the discount rate, apparently responsive to the balance of payment could actually be interpreted as having been taken in response to the needs of alternative policy objectives. The result obtained is that the discount rate was responsive to the balance of payments, though not independently. It was also responsive to the other targets or objectives of economic policy. Invariably, the movement in the discount rate is dependent on the movement of all four policy objectives. Consequently, the response of the discount rate to the balance of payments can only be quantified with the use of multiple regression analysis, where the weights attached to each are estimated. In applying this test to the other policy instruments it can be seen that no contradictions are found from the results obtained from Table 3.1. This is seen by comparing the movement in

Table 3.1 of a policy instrument during a subperiod, to the movement of a policy objective in Table 3.2 during the same subperiod (in the same manner as for the discount rate.)

Policy Mix

The optimal policy mix theories described in Chapter 1 are tested in this section. The policy mix prescription is examined in Table 3.3 for the two situations that warrant monetary policy being assigned to external objectives and fiscal policy assigned to the domestic objectives. The appropriate policies are to utilize monetary expansion and fiscal contraction when faced with a payments surplus and domestic 'boom', and to utilize monetary contraction and fiscal expansion when faced with a payments deficit and domestic 'slack'. Thus,the proper combinations of monetary and fiscal policies could achieve both objectives.

The subperiods which qualify for the policy combinations described above are examined in Table 3.3. Three cases of surplus and domestic boom are apparent, while no instances of payments deficit and domestic slack were forthcoming. Table 3.3 indicates that none of the three

Table 3.3

Balance of Payments Surplus and Domestic Boom

Subperiod	Monetary Policy	Fiscal Policy
IV 1959 - I 1961	neutral	contractionary
IV 1963 -II 1964	neutral	expansionary
III 1970-II 1971	expansionary	expansionary

The underlined movements indicate the correct direction required by the policy mix formula cases followed the postulated policy mix in West Germany. Thus, the failure of budgetary policy to respond to the balance of payments cannot be explained by its use in a more detailed policy mix.

Summary

An examination of the pattern of policy instruments taken as a unit suggest that monetary policy instruments were used for balance of payments adjustment, though within the context of overall economic policy. That is, in many cases other policy targets and economic conditions in general warranted a particular movement in the policy instrument. Nevertheless, balance of payments disturbances contributed to the policies undertaken, the extent of which will be quantified in a chapter involving multiple regression techniques. The policy reactions in the second half of the period under study were more consistent than the first half in their utilization for balance of payments purposes, i.e the subperiods from 1964-1971 exhibit more uniform adjusting movements than the previous subperiods.

The only major instrument of monetary policy that does not appear to have been used for balance of payments adjustment is the minimum required reserve ratio, and even this instrument performs much better in the 1964-1971 period. This analysis reveals no difference between the monetary policy responses to balance of payments deficits and surpluses. Bundesbank claims on commercial banks do show a consistent reversed pattern in its reaction to deficits and surpluses but this is explained by procedures dictated by bank profit and operating guidelines.

The budgetary balance does not appear to be responsive to the balance of payments but is particularly responsive to domestic stabilization objectives. No uniform pattern of response was determined from government expenditure policy.

CHAPTER IV

Regression Analysis: The General Credit Controls

It shall be the purpose of this chapter to develop estimates of the parameters relating policy instruments to policy objectives, and to use these estimates in order to determine the tradeoffs of different policy objectives with one another. This policy reaction function relates a particular measure or instrument (as a dependent variable) to the traditionally declared objectives which are conventionally defined as economic growth, full employment, price stability, and balance of payments equilibrium. In addition to these explanatory variables, a proxy is included for foreign interest rates, representing, as exogenous forces, foreign economic developments.

Multiple regressions were run, relating the general monetary control instruments to explanatory policy objective variables. Various forms of the explanatory variables were experimented with and some were included in this study. The policy action function will follow the assumption that there is a one period (quarter) lag in the response of policy action reflected in the dependent variable to the explanatory policy objective variables. In other words, policy action at t is considered to be a function of the time t-1 level of the policy objective variables. This assumption is plausible on two accounts: First, it generally takes about three to four months to collect the information on the indicators and evaluate them properly in order to make the correct decisions; Secondly, experiments with a variety of distributed lag hypotheses gave inferior results in the regression analysis with respect to goodness of fit and the economic plausibility of the signs of the coefficients. Implicit in this type of study is the long period of time necessary for policy to affect performance indicators such as price stability and payments position. Therefore, it is certain that this work analyze the reactions of policy makers, and not the reverse.

Independent Variables

These are the explanatory variables which are the policy goals assumed to affect the authorities in control of the policy instruments. The price stability objective is represented by the general price level (P) for all industrial products.[1] Alternatively, a few proxy price variables are constructed which will help capture the reactions of the policy makers. These proxies were made necessary because of the lack of variability in the traditional price variables resulting from the high priority and successful achievement of price stability during most of the period covered in this study. The lack of variability in most price variables made their inclusion as regressors very difficult. The proxies and their rationales will be discussed below.

The unemployment percentage (U), represents the employment goal. The goal of economic growth is represented by either G. N. P. (N), or industrial production (I). Although both of these variables are used, the rate of increase in industrial production is probably the better of the two as an indicator representing economic growth. Of course, industrial production is also an important component of gross national product.

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[1] This price index was chosen, after experiment with many others, since it showed the best results in the regressions.

The balance of payments variable representing a payments surplus or deficit is represented by three different measures. The first and the most often used, is total external reserves (X). In this variable an increase in external reserves is considered to indicate a movement toward surplus and a decrease in external reserves indicates a movement toward a deficit. The second payments variable used is the basic balance (B), or balance on current and long term capital account. The third variable used to represent the balance of payments objective is the balance of trade (T), which is so import to the economic well being of West Germany.

The policy makers in Germany are assumed to move the policy instruments in an adjusting direction according to the movement in the aforementioned policy explanatory variables. For example, the Bundesbank is expected to have decreased the discount rate in response to: a) an increase in unemployment; b) an increase in industrial production; and c) an increase in external reserves. The Bundesbank would be expected to raise the discount rate in response to an increase in prices. This would be playing by the "rules of the game" and would indicate that this particular monetary instrument was indeed responsive to the traditional policy objective variables. (The extent of the responsiveness depends on the regression coefficients).

Since the movement of foreign interest rates has an important effect on the capital account of the balance of payments, it was concluded that West German monetary authorities regularly consider the effect of foreign interest rates on future payments imbalances. Therefore, a proxy for this foreign economic activity was introduced to the regression analysis. The United States Government short-term treasury bill rate (90 day); was chosen as the proxy because of the relatively high share of Germany's capital outflow received by the United States. A one quarter lag is assumed until a change in this proxy variable affects the capital account. Consequently, current time t value of this variable are considered to affect the policy makers in time t because of their concern for the balance of payments in time period t + 1. Thus, monetary policy makers will contract (expand) the economy as this proxy variable is increased (decreased), i.e. currently higher foreign interest rates imply increased time t + 1 balance of payments difficulties and call for tighter monetary policies. It was necessary to add this variable to the traditional policy goal variable to insure inclusion of all the indicators that would affect the West German policy makers, i.e. in order to avoid specification bias in the regressions.

Price Variable Proxies

The only price index which displayed even limited success was the industrial price index for all commodities. Price stability in West Germany receives the highest priority of all the policy goals. This is evidenced by the numerous statements declaring the authorities' strong commitment to a stable price level. Probably, the main reason for this is the many catastrophic experiences with hyper-inflation undergone by Germany. In any event, it is a generally accepted fact that prices are watched very closely by the government authorities. Indeed, in the period under study the German policy makers had considerable success in the achievement of this goal. This success contributed to the problem of finding a suitable price variable for the regression analysis. Therefore, two proxy variables were constructed keeping in mind the importance of stability to the German people.

First, the policy goal P* was defined as the level of the industrial price index in 1958 (base year 1963=100) as P*= 92. The policy price variable P-P* was then introduced in squared form so as to capture policy reactions to price increase above this policy target. This is the one case where the response to policy objectives is not assumed to be linear. This hypothesis is based on the priority assigned to price stability. The policy goal variable P*=100 beginning in 1963 was also used on occasion.[1] The Bundesbank is expected to contract the economy in response to an increase in the variable. $(P-P^*)^2$, and expand in response to a decrease.

The second proxy constructed (and the more successful of the two) takes into account foreign rates of inflation. As a consequence of the German success combatting inflation it was important to find a price variable that was not directly under their control. Using foreign inflation as part of the proxy variable assumes that the German policy makers are concerned with the international transmission of prices.

The fixed exchange rate system links all nations together with respect to their interdependency on prices and incomes throughout the world. In a surplus country the expansion of income and output is likely to be accompanied by an acceleration of domestic price increase. The effect of a surplus caused by a price advantage seems to indicate in payments exceeding outpayments, leading to a multiple expansion of the money supply, easing interest rates, and contributing to rising prices.

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[1] It was possible to sue $(P-P^*)^2$ as a variable in the regressions because P-P* was always positive.

When foreign prices rise, domestic prices are forced upward for additional reasons. One reason depends on the extent to which German imports enter as raw materials in production and cause costs and hence prices to rise. Related to this reason is one which depends on the extent to which German imports enter the cost of living, putting pressure on wage rates and triggering a wage-price spiral. Perhaps the most important reason for domestic prices to be forced upward in response to high inflation externally, is the increased demand for German exports causing higher German export prices. This will pressure the productive capacity utilized for domestic consumption to be transferred to the export sector and raise domestic prices via shorter supplies or excess demand for resources. Of course this last point depends upon the policy makers' perception of the responsiveness to lower West German export prices vis a vis the rest of the world and the ability of the German economy to transfer resources to the export sector. The Bundesbank was expected to contract the economy in response to an increase in FG (foreign versus domestic inflations), for fear of impending inflation.

This variable (FG) has some limitations in that it not only causes policy makers to react to inflationary pressures, but also to balance of payments considerations. An increase in FG (foreign versus domestic inflation) is hypothesized to cause the policy makers to contract the economy for fear of impending inflation, which would directly result from demand considerations, as described above. On the other hand, the policy makers could perceive the greater price differential as a signal that the export surplus will increase via the improved price competitiveness with the rest of the world. This would call for an expansionary policy in order to respond to the balance of payments according to the "rules of the game". For this reason, the difficulty with using this variable is that it represents more than one objective, thereby calling for opposite policies. The use of the variable here corresponds to the price stability objective and the results of those equations must, at best, be carefully interpreted.

This price proxy variable was computed in the following manner: The consumer price index for all commodities were used for six of West Germany's largest trading partners (U. S., Japan, France, Great Britain, Italy, and Holland); A weighted average of this price index was constructed, weighted by the nation's average share of world exports during the period 1958-1971; From this value the West German consumer price index was subtracted to obtain the final form of the variable utilized in the regressions. (The proxy equals the foreign weighted average of CPI minus the West Terman CPI).

Dependent Variables

The dependent variables are the policy instrument variables which respond to movements in the policy objective variables. In this chapter the general credit controls of the Duetsche Bundesbank will be analyzed and results compared to the subperiod analysis. The variables are: the discount rate; open market rate; and minimum reserve ratio. These represent the most discretionary tools available to the Bundesbank and can be manipulated very quickly. The regression analysis will be applied to the other policy instruments in the next chapter.

Discount Rate

In Table 4.1 and 4.2 ordinary least square regression equations are estimated for the discount rate, using various combinations of explanatory variables and different periods. The policy reaction function in Table 4.1 has the form:

$$(1)\quad D_t = B_0 + B_1 I_{t-1} + B_2 X_{t-1} + B_3 U_{t-1} + B_4 P_{t-1}$$

where D is the discount rate and I, X, U, and P are the four traditional policy objectives. The reaction function estimated in Table 4.2 adds the U.S. treasury bill rate (TB), as a proxy to take into account the influence of foreign interest rates. The form of this equation is as follows:

$$(2)\quad D_t = B_0 + B_1 I_{t-1} + B_2 X_{t-1} + B_3 U_{t-1} + B_4 TB_t + B_5 P_{t-1}$$

A detailed description of these variables can be found at the bottom of the next page.[2]

Table 4.1 and 4.2, each have six equations, three for the 1958-1971 period (entire period) and three for the 1964-1971 period (latter half). In every equation the coefficients of the policy objective explanatory variables have the correct sign that economic theory suggests it should have according to the rules of the game. The coefficients of determination (R^2) range from .95 to .97, indicating that a high proportion of the response (variation)of the discount rate is explained by the policy objectives. The balance of payments (external reserves), which all have the correct sign for an adjusting movement, are significantly different from zero at the 5% level of significance. The t values are in parenthesis below the regression coefficients. The three equations estimated for the entire period were adjusted for serial correlation in the residuals by the Cochrane-Orcutt Iterative Technique.

In the three equations for the latter half of the period, 1964-1971, no serial correlation was found at the 1% level of significance. The Durbin-Watson statistics are listed in the Tables.

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2 Dependent variable: (D) = Discount rate - quarterly data, seasonally adjusted; Monthly Reports of the Deutsche Bundesbank 1958-1971.

Independent variables:
(I) = industrial production, index of industrial production, total excluding construction, (1963=100), percent change form, quarterly data, seasonally adjusted; Main Economic Indicators, O. E. C. D. 1958-1971.

(X) = external reserves, official gold and foreign exchange holdings, quarterly data, seasonally adjusted in millions of dollars; Main Exonomic Indicators, O. E. C. D., 1958-1971.

(U) = unemployment percentage; ratio of total unemployed to total employed plus unemployed, in percent form, quarterly data, seasonally adjusted; Monthly Reports of the Deutsche Bundesbank, 1958-1971.

(P) = producer prices, industrial products, index of producer prices (1963=100), percent change form, quarterly data, seasonally adjusted; Main Economic Indicators, O. E. C. D., 1958-1971.

(FG) = Foreign weighted average of Consumer Price Index minus West German Consumer Price Index, quarterly data, seasonally adjusted. The weighted average is for Japan, U. S., France, Great Britian, Italy, and Holland, weighted by each country's average share of world exports relative to each other, for the period 1958-1971; Consumer Price Index, (1963=100), Main Economic Indicators, O. E. C. D., 1958-1971. Export data: International Financial Statistics of I. M. F., Monthly Reports, 1958-1971.

(TB) = U. S. Government short-term treasury bills, quarterly data, seasonally adjusted; Main Economic Indicators, O. E. C. D., 1958-1971.

TABLE 4.1

Multiple Regression Equations Explaining Discount Rate Policy
Response to Policy Objective Explanatory Variables
1958-1971

Dependent Variable	Constant Term	Coefficient F_{t-1}	X_{t-1}	U_{t-1}	FG_{t-1}	$(P-P^*)^2_{t-1}$	P_{t-1}	R^2	DW	SE
D_t	7.05	-.04	-.0004	-.97		.006		.95	.76	.28
		(-.62)	(-.428)	(-4.11)		(3.90)				
D_t	12.51	-.06	-.0003	-.89			.15	.95	.68	.29
		(-1.92)	(-3.81)	(-4.00)			(.92)			
D_t	7.26	-.09	-.0004	-.92	.39			.96	.81	.25
		(-1.60)	(-5.53)	(-4.42)	(5.90)					
1964-1971										
D_t	12.19	-.13	-.0003	-1.30		.0004		.96	.91	.30
		(-1.41)	(-2.33)	(-4.04)		(.10)				
D_t	12.34	-.13	- .0003	-1.28			.09	.96	.95	.30
		(-1.41)	(-3.70)	-4.23)			(.48)			
D_t	8.08	- .21	-.0004	-1.03	.37			.97	1.00	.26
		(-2.67)	(-5.16)	(-4.02)	(5.25)					

t values in parentheses
quarterly data, seasonally adjusted

dependent variable: (D) discount rate

TABLE 4.2

Multiple Regression Equations Explaining Discount Rate Policy
Response to Policy Objective Explanatory Variables
1958-1971

Dependent Variable	Constant Term	Coefficient P_{t-1}	X_{t-1}	U_{t-1}	TB_t	FG_{t-1}	$(P-P^*)^2_{t-1}$	P_{t-1}	R^2	DW	SE
D_t	4.74	-.09	-.0003	-.97	.45	.29			.96	.88	.25
		(-1.59)	(-3.46)	(4.6)	(1.23)	(2.73)					
D_t	-.006	-.07	-.0002	-1.05	1.24			.20	.96	1.13	.26
		(-1.22)	(-2.09)	(-4.74)	(5.22)			(1.25)			
D_t	2.13	-.06	-.0003	-1.06	.93		.003		.96	.98	.26
		(-1.09)	(-2.94)	(-4.95)	(3.44)		(2.14)				
1964-1971											
D_t	2.38	-.39	-.0003	-1.16	1.01	.16			.95	.98	.33
		(-7.58)	(-2.23)	(-8.00)	(2.92)	(1.43)					
D_t	-.52	-.41	-.0002	-1.22	1.44			.62	.96	1.87	.28
		(-9.26)	(-4.28)	(-12.1)	(16.5)			(3.48)			
D_t	2.39	-.33	-.0004	-1.22	1.18		.006		.96	.99	.31
		(6.27)	(-3.33)	(-11.01)	(7.54)		(2.52)				

t values in parentheses
quarterly data, seasonally adjusted

dependent variable: (D) discount rate

The results concerning the discount rate support the hypothesis that the discount rate was manipulated in an adjusting fashion according to the rules of the game. The results for the last half of the period are similar to the results for the entire period, where ceteris paribis, an increase of 3,333 million dollars was associated with a decrease of the discount rate of one percentage point. Regressions run for the first half of the period 1958-1963 did not have the correct signs, significant coefficients, or reasonably high R^2's. The result of these regressions (which do not appear here), as well as those in Tables 4.1 and 4.2 are consistent with the results of the sub-periods of imbalances of payments analysis. These analyses suggest that the second half of the period under study exhibited a greater manipulation of the discount rate in an adjusting direction than the first half and for the period as a whole the discount rate was used according to the rules of the game.

(P*) = Producer Price Index, 1958-1963 goal = 92; 1964-1971 = 100; Main Economic Indicators, O.E.C.D., 1958-1971.

(B) = Basic balance on balance of payments, current account plus long-term capital account, quarterly data, seasonally adjusted in millions of DM; Main Economic Indicators, O. E. C. D., 1958-1971.

(T) = Balance of trade, quarterly data, seasonally adjusted in millions of dollars; Main Economic Indicators, O. E. C. D., 1958-1971.

One important interpretation of the regression estimates is to use them to reveal assigned policy objective tradeoffs by the policy makers. In this way, tradeoffs between objectives are derived whereby the policy makers will leave the policy instrument unchanged, i.e. there are compensatory changes designed to keep the policy instrument at a specified level and the policy makers indifferent to the changes that have transpired. Thus, the movement in one policy variable will be offset by the movement in another, resulting in no change in the policy instrument. In this manner the views held by the authorities with respect to tradeoffs of policy objectives can be estimated.[3]

These tradeoffs should, however, be interpreted with some caution for the following reasons: The particular policy instrument chosen may not reflect true monetary control, and its correlation with the explanatory variables may reflect relationships other than policy reactions. In addition, this technique assumes that the structure of the economy and the role of monetary policy with respect to the other stabilization instruments have not changed substantially over the period.

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[3] An example of this policy tradeoff method is given here using equation (1). Where the tradeoff between external reserves and unemployment is obtained. $D = B_0 + B_1 I + B_2 X + B_3 U + B_4 P$. Taking the total differential and acting equal to zero obtains: $dD = B_1 dI + B_2 dX + b_3 dU + B_4 dP = 0$. Now take dX/dU and hold I & P constant so as to obtain the conditional tradeoff of $dX/dU = -B_3/B_2$.

In place of external reserves, alternative measures of the balance of payments were substituted in the equations for the discount rate in order to determine the responsiveness of this policy instrument to balance of payments movements. The alternative measures of the balance of payments, examined in Table 4.3 are the basis balance and the balance of trade, which represents large components of the total balance of payments. These variables were utilized in order to examine, in greater detail, the policy response to the balance of payments. The results of the regression equations, using these alternative payments measures are given in Table 4.3. These results support the hypothesis that the discount rate was manipulated in an adjusting fashion consistent with the movement required to play by the "rules of the game".

TABLE 4.3

Multiple Regression Equations Explaining Discount Rate Policy Response to Policy Objective Explanatory Variables 1958-1971

Constant Term	Coefficient I_{t-1}	T_{t-1}	U_{t-1}	B_{t-1}	TB_t	FG_{t-1}	$(P-P^*)^2_{t-1}$	P_{t-1}	R^2	DW	SE
-1.15	-.07 (-1.10)	-.0036 (-2.12)	-.83 (-3.23)		1.37 (4.47)	.04 (.61)			.95	.96	.27
-1.58	-.07 (-1.13)	-.0033 (-2.13)	-.83 (-3.33)		1.45 (5.58)			.19 (1.2)	.95	1.05	.26
-1.47	-.07 (-1.05)	-.0035 (-2.05)	-.85 (-3.32)		1.43 (5.26)		.0005 (.44)		.95	.99	.27
-.53	-.06 (-.92)		-.97 (-3.99)	-.0001 (-1.37)	1.09 (3.55)		.0003 (.27)		.95	.87	.27
-.64	-.06 (-.97)		-.95 (-3.96)	-.0001 (-1.49)	1.11 (4.10)			.19	.95	.96	.27
-.33	-.06 (-.95)		-.97 (-3.95)	-.0001 (-1.44)	1.04 (2.95)	.03 (.39)			.95	.89	.27

t values in parentheses
dependent variables = discount rate

(T) = balance of trade
(B) = basic balance

Open Market Rate

The open market rate as previously described is the interest rate (and thus the price of security) fixed by the Bundesbank on its sale or purchase of government securities. In Table 4.4 and 4.5, regression equations are estimated for the open market rate using different combinations of independent variables as well as different periods. The form of the reaction function in Table 4.3 is the same of the function for the discount rate in Table 4.1, where

$$(3) \quad O_t = B_0 + B_1 I_{t-1} + B_2 X_{t-1} + B_3 U_{t-1} + B_4 P_{t-1}$$

O is the open market rate and I, X, U, and P are the four traditional policy objectives. The reaction functional form in Table 4.5 adds the influence of foreign interest rates (TB) to the policy objectives so as to account for the effect of capital flows on the balance of payments.

$$(4) \quad O_t = B_0 + B_1 I_{t-1} + B_2 X_{t-1} + B_3 U_{t-1} + B_4 TB_t + B_5 P_{t-1}$$

Each Table has six equations: three for the entire period 1958-1971; and three for the latter half of the period, 1964-1971. As in the analysis of the discount rate, three equations are utilized in each group so as to experiment with various forms of the price stability variable. In each of the equations the coefficients of the independent variables have the sign that economic theory suggests it should have according to the "rules of the game". The coefficients of determination (R^2), rage from .93 to .97, indicating that a high proportion of the variation (response) in the open market rate is explained by the policy objectives. All the balance of payments estimates are significantly different from zero at the 10% level of significane and practically all of the other estimates are also significant at the 10% level (50 out of

TABLE 4.4

Multiple Regression Equations Explaining Open Market Policy Response to Policy Objective Explanatory Variables 1958-1971

Dependent Variable	Constant Term	Coefficient I_{t-1}	X_{t-1}	U_{t-1}	FG_{t-1}	$(P-P^*)^2_{t-1}$	P_{t-1}	R^2	DW	SE
O_t	6.16	-.11	-.004	-.88		.006		.93	.72	.32
		(-1.41)	(-3.37)	(-3.24)		(3.61)				
O_t	9.03	-.12	-.0003	-80			.25	.93	.72	.33
		(-1.63)	(-2.62)	(-3.12)			(1.33)			
O_t	6.24	-.15	-.003	-.83	.33			.94	.71	.31
1964-1971										
O_t	9.97	-.22	-.0004	-1.16		.004		.96	1.22	.27
		(-2.74)	(-3.17)	(-4.13)		(1.12)				
O_t	11.02	-.23	-.0003	-1.21			.13	.96	1.25	.27
		(-2.85)	(-4.13)	(4.55)			(.77)			
O_t	7.80	-.29	-.0004	-1.02	.29			.97	1.24	.25
		(-3.81)	(-4.76)	(-4.05)	(4.00)					

t values in parentheses
quarterly data, seasonally adjusted

dependent variable: (O) open market rate

TABLE 4.5

Multiple Regression Equations Explaining Open Market Policy
Response to Policy Objective Explanatory Variables
1958-1971

Dependent Variable	Constant Term	Coefficient I_{t-1}	X_{t-1}	U_{t-1}	TB_t	FG_{t-1}	$(P-P^*)^2_{t-1}$	P_{t-1}	R^2	DW	SE
O_t	5.50	-.15 (-2.05)	-.0003 (-2.47)	-.84 (-3.14)	.13 (.28)	.13 (2.19			.94	.70	.32
O_t	.54	-.13 (-1.78)	-.0001 (1.25)	-.91 (-3.34)	.95 (3.26)			.30 (1.52)	.94	.81	.33
O_t	3.14	-.12 (-1.67)	-.000 (-2.40)	-.94 (-3.55)	.58 (1.78)		.004 (2.15)		.94	.72	.32
				1964-1971							
O_t	5.59	-.29 (-3.78)	-.0003 (-2.95)	-1.04 (-4.04)	.38 (.91)	.21 (1.82)			.97	1.21	.25
O_t	.0003	-.52 (-10.6)	-.0002 (-3.85)	-1.01 (-9.1)	1.23 (12.6)			.80 (4.06)	.95	1.68	.31
O_t	5.22	-.40 (-7.85)	-.0006 (-5.32)	-.99 (-9.37)	.74 (4.99)		.01 (4.68)		.95	.94	.29

t values in parentheses
quarterly data, seasonally adjusted

dependent variable: (O) open market rate

54 are significant). The t values are in parentheses below the regression coefficients and all of the equations have been adjusted for the presence of serial correlation in the residuals by the Cochrane-Orcutt Iterative Technique.

On the average, for both periods, an increase in external reserves of 3,333 million dollars, ceteris paribus, was associated with a decrease of one percentage point in the open market rate.[4] The importance for this study is in the sign of the coefficient which is consistent with adjusting movement in the balance of payments. Thus, the results concerning the open market rate support the hypothesis that the open market rate was manipulated in an adjusting fashion for the balance of payment equilibrium. This supports the results obtained from the subperiod of imbalances analysis.

The regressions run for the first half of the period, 1958-1963, displayed the same poor results for the open market rate as they did for the discount rate, with respect to signs and significance of coefficients and reasonable R^2's. This again is consistent with the results obtained from the subperiod analysis.

4
(0) = Open market rate - quarterly data, seasonally adjusted: Monthly Reports of the Deutsche Bundesbank, 1958-1961.

Minimum Reserve Policy

In West Germany, the minimum reserve requirements are calculated on a monthly formula and are differentiated by three types of deposit (sight, time, and savings), by size of institution, and presence of a central bank branch. The Bundesbank can vary the percentage requirement up to 30% for sight deposits, 20% for time deposits, and 10% for savings deposits. The Bundesbank has applied higher reserve ratios against the deposit liabilities of German Credit institutions to non-residents (up to 100%) than against deposit obligations to residents. In addition, the Bundesbank has fixed special minimum reserve ratios for any increase in liabilities, subject to reserve requirements, for resident and non-resident deposits as well.

The Bundesbank considers changes in reserve requirements important to the excess liquidity position of credit institutions. The minimum reserve ratio is the instrument most specifically directed at liquidity. This instrument has been utilized mainly to attain specific liquidity ratios and rates of expansion in money and credit supply.[4] If the Bundesbank lowers the reserve ratios, banks will have surpluses on their Bundesbank account and will seek to invest in the most liquid and profitable manner, depending on their liquidity needs. On the other hand, if the Bundesbank raises reserve ratios, banks find themselves in the position of having to increase their average reserve balances which implies reducing their liquid reserves. Essentially, as an instrument of policy, minimum reserve ratios are called upon by the Bundesbank when

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[4] Monthly Report of the Deutsche Bundesbank, April 1970.

the trend in bank liquidity neccessitates central bank action. Thus, minimum reserve policy in West Germany is mainly used to counteract a major rise or fall in liquid reserves. Along the same line, in some instances reserve policy is utilized to counter short-term fluctuations in liquidity caused by short-term international capital flows.

In the 1958-1971 period under study, the Bundesbank changed the minimum reserve ratio over 30 times. Regression analysis aimed at capturing the policy response of the minimum reserve ratio as a function of the traditional policy objective variables, were not successful. Various combinations of the explanatory goal variables and lag structures were experimented with, but no definite pattern or consistent estimates were forthcoming (the signs were not what theory suggests and the estimates were not statistically significant). Basically, there are two major reasons for this: One is the extensive utilization of reserve requirements for corrections in the liquidity positions of the credit institutions, rather than its utilization as a stabilization measure which affects the components of GNP in the spirit of neo-Keynesianism. Therefore, reserve policy response to traditional economic objectives takes a back seat to bank liquidity; The other reason is that the concomitant qualitative aspect of minimum reserve policy were substituted many times, complicating the response of the simple reserve ratio. The higher reserve ratios assigned to liabilities of non-residents and marginal minimum reserve ratios are examples of these qualitative controls.

With respect to the balance of payments position, the reserve ratio response mainly reflects the response to short-term capital inflows, which is more a bank liquidity problem than an external equilibrium one. Consequently, minimum reserve policy is not analyzed with regression techniques in this section, although it is discussed on another level in another chapter.

Summary

The interpretation of the regressions with $(P-P^*)^2$ as the proxy price variable suggest that price stability became more of a concern to the authorities, the further away from the goal that prices moved i.e. there is an increased marginal rate of substitution of prices for external reserves.

The results discussed in this chapter lend support to the thesis that the open market rate and discount rate responded to the traditional objectives of price stability, full employment, economic growth, and balance of payments equilibrium. In addition, foreign interest rates were also taken into account by the monetary authorities. This suggests that the Deutsche Bundesbank's monetary policy was responsive to the balance of payments situation, although within the context of overall policy objectives. This seems to be the case even though there are some obvious difficulties with inferences made from this analysis. One difficulty is that the monetary authorities form only one part of the governmental responsibility for coordinating economic policy.

In general, however, the results of the multiple regression analysis for these credit control instruments do support the results obtained from the subperiods of imbalances of payments analysis of the previous chapter, suggesting that West Germany did, indeed, respond with its monetary policy according to the "rules of the game".

CHAPTER V

Policy Response to Balance of Payments - A Multiple Regression Approach

It shall be the aim of this chapter to utilize multiple regressions in order to determine the responsiveness of other policy instruments to the balance of payments. The instruments to be examined are those discussed in the subperiod analysis. The general credit controls of the last chapter which were shown to move in an adjusting fashion (open market rate and discount rate) represent the most discretionary tools available to the Bundesbank. The money supply and credit to the private sector are policy instruments which have more of an autonomous component. However, movement, to a great extent, is still controlled by the policy makers.

The explanatory variables or policy objectives are assumed to cause policy maker's reactions. These objectives variables represent the traditional objectives of price stability, full employment, economic growth, and balance of payments equilibrium. More specifically, the independent variables are the percent change in producer prices (P), the unemployment rate (U), the percent change in industrial production (I), and the level of external reserves (X). Alternatively, the price proxy variables (FG) and $(P-P^*)^2$ are substituted in the regressions for (P). The reasons for the use of the proxies are related to the lack of variability of normal price variables owing to the high priority assigned to price stability in West Germany. The descriptions and limitations of these variables were discussed in a previous chapter so that only a short commentary on them follows. FG is the price proxy representing the inflation differential between West Germany and her major trading partners and $(P-P^*)^2$ represents West Germany's high priority assigned to price stability. A description of all of these variables is given in greater detail in the previous chapter. (Regression Analysis - The General Credit Controls).

The policy makers in West Germany are assumed to manipulate the money supply and credit to the private sector (dependent variables) in an adjusting direction, according to the movement in the above explanatory variables. Thus, the Bundesbank is expected to have increased the money supply and credit to the private sector in response to an increase in external reserves, an increase in unemployment, an increase in industrial production (in order to provide for the increased transaction demand for money), and a decrease in prices. The response to the proxy price variables is assumed to be as follows: The greater the differential between foreign and domestic inflation. (FG), the greater the likelihood of an ensuing transmission of inflation and the greater the necessity for contractionary monetary policy to counteract this movement. Thus, an increase in FG would require a decrease in the money supply and credit to the private sector. As for the other proxy, $(P-P^*)^2$, the greater this value, i.e. the further P moved from an assigned level of price stability P*, the greater would be the necessity for contractionary monetary policy. This notion assumes that West Germany is playing by the rules of the game and that the policy instruments were responsive to the traditional policy objectives. Response to the balance of payments (which is the main interest) is therefore displayed within the overall context of macroeconomic policy.

As in the regression analysis applied to the general credit controls, the policy reaction function will follow the assumption that there is a one quarter lag in the response of policy action to the policy objective. That is, policy action at time t is considered to be a function of the time t-1 level of the traditional policy objectives. The dependent variables utilized in these regressions are the money supply, and total credit to the private sector.[1]

Ordinary least squares regression equations were fit using the entire period under study, 1958-1971 and the latter half of the period, 1965-1971 where the sub-period of imbalances analysis revealed greater conformity of movement in an adjusting direction. Table 5.1 shows the regression equations for the period, 1958-1971, and Table 5.2 shows the regressions for the period, 1964-1971. The R^2 (coefficient of determination), standard error of estimate (S.E.), and Durbin-Watson statistic (DW) are shown in addition to the regression coefficients and their concomitant t values. Some of the regressions were adjusted for serial correlation bias using the Cochrane-Orcott Iterative Technique.

The general form for the policy reaction functions of Table 1 and 2 is $M_t = B_0 + B_1 I_{t-1} + B_2 X_{t-1} + B_3 U_{t-1} + B_4 P_{t-1}$,

where M is the policy instrument and I, X, U, and P are the policy goals.

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1 Dependent Variable: (M) Money Supply, percent change, quarterly data seasonally adjusted; Monthly Reports of the Deutsche Bundesbank. Observations: 1958-1971.

(C) Total Credit to Private Sector, percent change, quarterly data, seasonally adjusted; Main Economic Indicators, O. E. C. D. Observations: 1958-1971.

TABLE 5.1

Multiple Regression Equations Explaining Policy Response
to Policy Objective Explanatory Variables
1958-1971

Dependent Variable	Constant Term	Coefficient F_{t-1}	X_{t-1}	U_{t-1}	FG_{t-1}	$(P-P^*)^2_{t-1}$	R^2	DW	S.E.
M_t	-.07	.122 (1.23)	.00023 (1.86)	.311 (1.21)	-.03 (-.5)		.66	1.90	.42
M_t	-.18	.119 (1.35)	.00026 (1.86)	.32 (1.06)		-.001 (-.6)	.66	1.91	.43
C_t	-.57	.557 (5.9)	.0004 (2.7)	.71 (3.5)		-.297 (2.4)	.51	1.33	.76
C_t	-.39	.61 (6.03)	.00034 (2.55)	.64 (3.25)	-.12 (-2.2)		.52	1.35	.77

t values in parentheses
dependent variables; M = Money Supply in per cent change; C = Credit to Private Sector in per cent change

quarterly data, seasonally adjusted
observations = 51

TABLE 5.2

Multiple Regression Equations Explaining Policy Response
to Policy Objective Explanatory Variables
1964-1971

Dependent Variable	Constant Term	E_{t-1}	X_{t-1}	U_{t-1}	FG_{t-1}	$(P-O^*)^2_{t-1}$	P_{t-1}	R^2	DW	S.E
				Coefficient						
M_t	-.98	.205	.0003	.196	-.026			.68	.96	.55
		(2.35)	(2.97)	(1.01)	(-.50)					
M_t	-.72	.189	.0003	.201			-.09	.68	.95	.56
		(2.4)	(4.46)	(1.01			(-.3)			
M_t	-1.3	.189	.0003	.199		-.002		.69	.97	.55
		(2.47)	(2.35)	(1.03)		(-.7)				
C_t		-.82	.54	.0003	1.07	-.002		.62	1.56	.89
			(4.4)	(1.61)	(3.34)	(-.5)				
C_t	-.63	.57	.00026	1.05	±.05			.62	1.59	.89

t values in parentheses
observations = 27

Results

In all of the equations utilized each explanatory variable exhibits the correct sign, i.e. the sign that economic analysis leads us to expect for the manipulation of policy instruments in an adjusting direction. The Durbin-Watson test for the presence of serial correlation in the residuals is either inconclusive or indicates no serial correlation for the equations in Tables 5.1 and 5.2, (wherever serial correlation occurred it was adjusted for by the method indicated).

The results suggest that monetary and credit policy responded to the traditional goals of macroeconomic policy. That is, West Germany's monetary policy was conducted according to the rules of the game and was responsive to the balance of payments within the context of overall stabilization policy. Given the precision of the parameter estimates, it is possible to reveal tradeoffs between policy objectives i.e. tradeoffs that would leave the Bundesbank indifferent so that they would not alter the rate of change of the money supply or credit to the private sector. This technique is described in greater detail in the portion of this study dealing with the general credit controls.

No significant difference between the pattern of response for the latter half of the period and that of the entire period itself, has been detected. The balance of payments variable (external reserves, X) is significant at the 5% level for all the regression equations. The percent change in producer prices has the correct sign, although it is not significant for the money supply equation for the latter half of the period. It did not have the correct sign for the entire period. Regressions run with the same variable for the 1958-1964 period did not have the correct signs nor did they exhibit significant coefficients or reasonable R^2's. This suggests that monetary policy was not very responsive to the objectives in the 1958-1964 period.

It is not surprising that the money supply and credit to the private sector responded to the balance of payments position of West Germany since the discount rate and open market rate have already been shown to respond in an adjusting direction. In addition, the subperiods of imbalances suggest that the money supply and credit to the private sector responded in an adjustin fashion.

The same type of multiple regression techniques were applied to the other policy instruments, such as Bundesbank lending to the government, Bundesbank claims on commercial banks, the Budgetary Balance, and the remaining variables examined in the subperiod analysis. On consistent estimates were forthcoming with respect to correct signs (none were responsive to the balance of payments), significant coefficients, or 'reasonable' R^2's. In other words, no responsiveness to the balance of payments is revealed by these instruments nor is the lack of response explained by the appropriation of the instrument for alternative targets. This lack of conformity of movement is also consistent with the results obtained from the subperiod analysis.

The degree of explanatory power as measured by the coefficient of determination was uniformly lower for the money and credit supply models of this chapter than for the general credit control models of the previous chapter. This suggests that money market ease rather than the money supply is the variable that the monetary authorities sought to control in West Germany during the period under study.

CHAPTER VI

Selective Policy Instruments and the Balance of Payments

In 1958, West Germany fully liberalized capital transactions with the rest of the world. At this time the West German capital market was relatively free of exchange controls. Movements of capital into West Germany in response to interest rate differentials between the German and foreign money markets and to specualations on possible deutsche mark revaluation have greatly influenced the liquidity of the banking system as well as cost and availability of funds in Germany. These movements have frequently created problems for the Bundesbank's stabilization programs.

In response to large balance of payments surpluses on the money market, the Bundesbank has developed many techniques for affecting the flows of capital. The Bundesbank's desire to control domestic monetary conditions has caused it to respond to balance of payments capital surpluses by developing policy instruments which either prohibit capital transactions, or affect the cost or rate of return of such transactions. The latter response has been the predominant one. In addition, in order to offset the liquidity effect of large capital imports, the Bundesbank has developed qualitative aspects of its discount and minimum reserve policy. Examples of these selective policy instruments are: the official forward exchange policy: investment income tax from fixed income securities owned by non-residents; elimination of interest on sight and time deposits for non-residents; changing rediscount quotas; altering minimum reserve requirements to non-residents; and granting the so-called "offsetting privilege" to West German banks.

In the summer of 1960, the Bundesbank disallowed the payment of interest on non-resident's sight deposits and banned the sale of domestic money market paper to non-residents under repurchase agreements. On April 1, 1964 the Bundesbank banned the banks from paying interest on non-resident's time deposits. In 1960, the ban was imposed to counteract the increased danger of foreign exchange flowing into Germany on a huge scale due to the Bundesbank's decision to contract the economy by raising interest rates. In 1960, a large surplus year, short-run capital imports were almost DM 2 billion. The rising interest rate differential between Germany and the rest of the world (and concomitant large short-term capital inflows), caused the Bundesbank to take this action.

In 1964, the Bundesbank engaged in a restrictive policy to counteract the domestic boom. Inflows of capital began to undermine this policy and the ban on time deposit interest for non-residents was intended to make such deposits unattractive. Large surpluses flowed into West Germany in the beginning of 1964 and the Bundesbank responded to these capital inflows by instituting the 25 percent investment income tax to be levied on the income from fixed income securities owned by non-residents. Thus, the incentive to invest speculative money in German bonds was greatly diminished, and long-term capital imports to West Germany were reversed. In 1963, the largest capital import balance since Currency Reform of 1948 had reached over DM 2 billion. In 1964, this inflow was reversed and the Bundesbank was the official forward exchange operations. An indepth analysis of this tool along with some simple regression results follows.

Official Forward Operations as an Instrument of Monetary Policy.

The Deutsche Bundesbank, in a form of official intervention, carried out a swap operation in the foreign exchange market with West German banks. The objective of the forward operations from the viewpoint of official policy, is to affect the balance of payments via the international movement of short term capital and at the same time to control domestic liquidity. Short term capital movements are induced in a similar fashion to their response to varying interest rates but without the effect that interest rates exhibit on the domestic economy.

Essentially, the monetary authorities can permit any domestic interest rate in their concern for achieving internal objectives, while at the same time negating the potential flow of short term funds that would normally occur as a result of interest rate differentials. This is achieved by the use of the sqap operation. The importance of this procedure to policy makers cannot be overemphasized, as it is their vested aim to avoid possible conflicts between internal and external objectives.

The swap operation involves the sale of dollars spot to the West German banks (for marks) and the simultaneous purchase of dollars forward by the Bundesbank. The Bundesbank would purchase at a premium or discount (or at par), with respect to the going spot rates, dollars forward according to their desired movement in short term funds. The rationale was to help determine the level of short-term capital held abroad by German banks and at the same time help control domestic bank liquidity. In effect, forward market swap policy by the Deutsche Bundesbank was intended to supplement official open market operations by offsetting balance of payments equilibrium on the money markets.

West German banks, in late 1958, increasingly engaged in international money and credit business and caused the Bundesbank to deal more effectively with monetary and interest rate developments abroad. This situation, of course, was related to the reconvertibility of the DM and other major currencies of European nations in December of 1958. In October of 1958 the Bundesbank offered domestic banks the possibility of engaging in swap agreements in U. S. Dollars for a period of up to three months and in some cases, six months. As mentioned above, when making swap transactions, the Bundesbank sells dollars spot and buys them back forward. Usually, the Bundesbank charged a forward discount for covering the exchange risk, but at other times the swap transactions were made at par or even at a premium. The immediate objective of swap policy is to encourage domestic banks to export money. The original intent in 1958, (about the time of convertibility), was to help build up the holdings of short-term foreign instruments so that the banks could engage to some extent in holding foreign reserves.

The Bundesbank's swap commitment had risen to over DM 4,000 million in 1960 and thereafter began to decrease. By 1963 it was almost completely run down. In 1964, swap agreements began to build again, although at this juncture in time only U. S. Treasury Bills were acceptable to the Bundesbank for exchange risk cover at reduced cost. This was intended to reduce investment in the Euro-money market and stabilize the international money market. In early 1965 the Bundesbank withdrew from its official forward cover operations for more than two years. In late 1967, partially as a reaction to the British devaluation and the necessity to maintain dollar parity and alleviate pressures on the Euro-currency markets, the Bundesbank continued its swap operations.

No restrictions on the type of foreign investments were imposed at this time. In September 1969, the forward operations were discontinued because of the floating of the DM exchange rate. A few months prior to that date, the Bundesbank finally realized that the policy objectives of their swap operations were being undermined by means of transactions by the German banks. In these transactions (roundabout transactions, KARUSSELLGESCHAFTE),the banks were using funds to obtain a profit equal to the difference between the forward rate on the market and that offerred by the Bundesbank. In late 1970 and early 1971, the Bundesbank resumed its swap operations to combat the speculative inflow of short-term funds.[1]

It is interesting to note that there is an equivalent short-run effect on the balance of payments resulting from a change in domestic interest rates or from a change in the premium or discount offered by the central bankers in their forward market operations. However, in the long-run, the two policies will affect the balance of payments quite differently. This can be demonstrated if it is assumed that monetary authorities are interested in inducing a capital outflow, which can be accomplished by either lowering interest rates, or by offering a premium on the official forward exchange market for foreign currency. From a long-run point of view, however, the resultant expansion that the domestic economy will experience, if induced by the lowering of interest rates (on the balance of trade will not occur from forward operations.

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1 Annual Report of the Duetsche Bundesbank 1971.

This uneven effect in the long-run leads to another important problem faced by policy makers, which is the dilemma of how to accomplish one particular objective without creating a more vast problem elsewhere. A case in point would be the situation faced by the nation which exhibits balance of payments surpluses and inflation. If large short-term capital inflows are expanding the money base and causing inflationary pressures, then a policy to reverse this flow must direct itself to the motives of the owners of short-term funds without fueling inflationary fires elsewhere. Lowering domestic interest rates is not a policy that achieves this result. Consequently, the forward exchange operations of the Bundesbank in West Germany was a most attractive instrument from the viewpoint of the policy makers, for it led to a reduction in the money base without affecting interest rates and hence, the economy.

Further analysis of this policy instrument was required in order to discover relationships which would shed some light on the determination of the value of the swap rate and how the Bundesbank responded to changes in money market conditions and short-term balance of payments. In other words, did the Bundesbank react to situations which may have potentially caused payments problems as well as price stability problems? Germany was faced with the problem of having balance of payments surpluses coincide with the inflationary pressures, a difficulty which focuses directly on the impact of international transactions on domestic money markets. The monetary authorities were confronted with the task of identifying the factors which affected the volume and direction of international private short-term funds. Although various types of foreign exchange speculation which stems from speculators' profit expectations are important considerations, it is assumed that interest rate differentials and the cost of forward cover are the determining factors attributed to the German Banking community by the Bundesbank.

Simple regression techniques were utilized to ascertain how the Bundesbank set its forward dollar swap rate and how it varies the rate in response to balance of payments movements. It is assumed that different combinations of independent variables influence the dependent swap rate variable. It can be argues that the Bundesbank, in fixing its forward swap rate, takes into account domestic bank liquidity, various balance of payments measures, interest rate differentials between domestic and foreign money markets, inflationary pressures, and the forward exchange rate quoted in the open market. In addition, the spot exchange rate can be an important variable as well.[2]

The swap rate changed some twenty times during the period under study and the regressions are based solely on these observations. The Deutsche Bundesbank forward swap rate was confined to only one foreign currency, the U. S. dollar. This was due mainly to the fact that the large portion of Germany's commercial transactions with the rest of the world during this period was settled in U. S. dollars. The open market forward exchange rate did not exhibit much variation and thus was not useful in the regressions. Predictably, the Bundesbank attempted to create incentives above and beyond the open market forward rate faced by the West German commercial banks. This was done by offering forward

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[2] Einzig, P., A Dynamic Theory of Forward Exchange, London 1961 page 72.

cover at terms more favorable than the open market rates for forward dollars, mainly to induce capital exports of German banks. This was the extent to which the Bundesbank took the open market forward rate into account. However, this analysis does not explicitly include it.

Regression Analysis and Estimation Results

The dependent variable utilized in the regression was the Bundesbank forward swap rate for U. S. dollars. A discount on forward dollars has a negative sign and a premium on forward dollars has a positive sign. The swap rate was regressed against many balance of payments variables and only one exhibited any strong relationship. This variable was the difference between short-term liabilities to foreigners and short-term assets of foreign investments held by German commercial banks. This result is, of course, consistent with the original intent of the swap policy, i.e. to get German banks to share in the holding of the country's foreign exchange by building up an adequate holding of short-term foreign investments. It is also consistent with the eventual use of the policy, namely offset speculative foreign exchange inflows by channelling them back to foreign money markets. The other explanatory variable used was the difference between the German and foreign interest rate which is thought to have a strong influence on the forward rate to be charged.[3]

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3 Dependent variable = SW, Bundesbank official forward swap rate. Monthly Reports of the Duetsche Bundesbank.

Independent variables: LA, Short-term liabilities to foreignors minus short-term foreign assets of German Banks, quarterly data applicable only for changes in swap rate; International Financial Statistics of I.M.F. 1958-1971.

I = German short-term Frankfurt Call Money Rate minus U. S. short-term Prime Rate, quarterly data applicable only for changes in Swap rate; Main Economic Indicators of O. E. C. D. 1958-1971.

As in most of the analysis, the independent variables affecting policy response are lagged one period (quarter). This has a reasonable conceptional rationale since some time is needed for policy makers to make their decisions. In addition, the best results were obtained with this procedure.

$$(1)\quad SW_t = -1.295 + \underset{(4.81)}{0.0017LA_{t-1}} + \underset{(5.36)}{0.834I_{t-1}}$$

$R^2 = .84$
$F = 46.10$
$S.E. = .90$
$DW = 1.92$

The signs of the estimated coefficients agree with a priori expectations and all coefficients are significantly different from zero at the 001 level of confidence. The numbers in parentheses below the coefficients are T values. The Durbin Watson test indicates that there is no serial correlation in the residuals.[4] This equation (1) simply shows that 84% of the variation in the official swap rate is explained by the short-run liabilities minus assets of the German commercial banks and the short-run interest differential between Germany and the United States.

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4 The Durban-Watson statistic is 1.92. For twenty observations and two independent variables the bounds are 1.10 and 1.54 at the 5% level; Durban, J., and Watson, G., "Testing for Serial Correlation in Least Square Regression," Biometrica 1950.

An increase in short-term foreign liabilities minus short-term foreign assets of 588 million dollars was associated with an increase in the official swap rate of one percentage point (an increase in the swap rate indicates a movement toward a premium), and an increase in the German minus U. S. interest rate of 1.2 percentage points is associated with an increase in the official swap rate of one percentage point. Thus, this Bundesbank policy instrument responded to changes in potential effects of large short-term balance of payments surpluses on the domestic money market. As bank foreign liabilities increased (or foreign assets decreased) the Bundesbank acted to reverse that situation by offering a small discount or even a premium on forward dollars to the banks. The same actions were taken to reverse the capital flows attributed to an increase in German short-term interest rates or a decrease in United States interest rates.

The evidence accumulated from many regression experiments with balance of payments variables (such as the short-run capital account and external reserves) was inconclusive, i.e., no significant relationships could be ascertained between the swap rate and any balance of payments variable except the bank liabilities minus bank assets variable utilized in the above regression. However, the balance of payments experience did lead to the utilization of the swap rate in order to stem the large capital inflows entering the commercial banks. Since the balance of trade was in surplus, this was an intolerable situation and represented a threat to price stability and Bundesbank authority.

Rediscount Quotas

The total volume of rediscount credit available to each bank is limited by rediscount quotas. Most bills rediscounted at the Bundesbank fall under this quota. Any rise in rediscount quotas tends to expand the free liquid reserves of the banking system, while reductions in rediscount quotas have the opposite effect. The Bundesbank reduced the quotas by an average of 20 percent in October 1959 (partly because of reform of the criteria used in their calculation) and in 1960 there were two further cuts. The booming economy of 1959 and 1960 had a great deal to do with this section. The balance of payments which had been in deficit (particularly the capital account), was just turning toward surplus, and the correct monetary policy to achieve equilibrium in the balance of payments would have been an expansionary one. In March and November of 1961, the rediscount quotas were restored, mostly in order to replace liquidity lost as a result of the revaluation of March 1961.

In 1965 rediscount quotas were cut from 1/3 to 1/5 their previous level. Half were implemented in October and half in May. The balance of payments was in deficit at the time so that this was consistent with the Bundesbank's adjusting contractionary policy. Bank structural changes entered into the decision to lower the quotas. In 1965, the worsening balance of trade position in particular and balance of payments position in general led the Bundesbank to raise the ceiling for central bank assistance to the to the Export Credit Company. This made the medium financing of exports easier to transact and represents an adjusting response to the balance of payments.

In March 1969, the Central Bank Council decided to cut rediscount quotas with the Bundesbank by 20 percent. This represented the first major contractionary policy undertaken by the Bundesbank in 1969. In light of the huge capital deficits and declining balance of trade, this was consistent with the restrictive monetary policy associated with an adjusting movement which followed the "rules of the game". It was also a consistent response to the rising price level and economic boom which was occuring at the time in Germany. From June, 1970 rediscount quotas were again cut in an amount equivalent to the growth of liabilities arising from security transactions under repurchase agreements with non-residents.

Qualitative Aspects of Minimum Reserve Policy

The Bundesbank possesses the authority to make liabilities toward non-residents subject to higher reserve ratios than liabilities toward residents. This would be done so as to stem the flow of money into German banks and to provide an additional inducement to export money. The Bundesbank can also fix minimum reserve ratios for any increase in liabilities subject to reserve requirements, especially non-residents deposits.

Higher reserve requirements for non-residents deposits were introduced from May 1957 to March 1959 in order to offset some of the large surpluses of the fifties and mop up the resultant increased liquidity. Higher reserve requirements for increasing in liabilities to foreigners were applied from January 1960 to April 1961. The Bundesbank hoped it could offset some of the increased liquidity caused by the huge short-term capital inflows and obtain greater control over its monetary policy for domestic priorities. Since the economy was experiencing a boom at this time, the Bundesbank, in 1960, applied higher reserve requirements on increases in domestic liabilities as well. From February 1961 to January 1962, higher reserve requirements for non-resident deposits again were instituted. They were brought back into line with domestic liabilities as a result of the revaluation of 1961.

From May 1961 to December 1966 banks had been allowed to deduct the amount of balances and money market investments held abroad from the liabilities to non-residents subject to the reserve requirement. This was the so called "offsetting privilege" which created an incentive to export money. In April 1964, to combat the large capital inflows, the Bundesbank, once again applied higher reserve requirements on liabilities towards non residents. The slackened economy and increased unemployment in late 1966, as well as a large surplus on the balance of payments, caused the monetary authorites to undertake a strong expansionary policy, lowering interest rates. As a part of this policy, in January 1967, the "offsetting privilege" was abolished in order to stem the export of capital so that the easing of liquidity conditions could take effect as far as possible on the domestic money market, and reinforce the downward trend of interest rates. The higher reserve requirements for non-residents' liabilities were terminated in order to further support this policy.

From December 1968 to October 1969 and from April to August 1970, the Bundesbank imposed higher reserve requirements for increases in liabilities to foreigners. The ratio for December 1968 was 100 percent on the growth of external liabilities. This tended to curtail liquidity and to make foreign funds unattractive to the banks. Essentially, this tool was used to neutralize the liquidity entering West Germany during the foreign exchange crises of November 1968. When speculative funds flowed out of German banks in response to the revaluation of 1969, this policy was rescinded. In April, 1970, a 30 percent reserve ratio was imposed on the growth of liabilities to foreigners so that the German banks could not offset the Bundesbanks contractionary policy. From September to November 1970, the Bundesbank imposed higher reserve requirements on increases in domestic liabilities, in order to neutralize the liquidity inflow from abroad. At the same time, the Bundesbank was reducing the discount rate to close the interest rate differential between Germany and the rest of the world.

In the absence of some policy action, flows of interest sensitive short-term capital between West Germany and other nations with convertible currencies will limit the freedom and flexibility of monetary policy. Through the use of these instruments developed by the Bundesbank, greater scope and control over monetary policy was achieved in the area of the domestic economy. The exchange rate revaluations of 1961 and 1969, as well as the floating and realignment of exchange rates of 1971, also achieved this end. These many selective instruments either supported domestic policies which were responding to overall economic objectives (including balance of payments) or reversed large capital account surpluses which were playing havoc with short-term monetary policy.

Most of these unorthodox instruments were implemented to deal with problems of imported inflation, which is caused first by the increased liquidity resulting from the foreign exchange surpluses, and second by market forces acting on the international transmission of prices. The increased liquidity from abroad gives the banks greater independence from the Bundesbank and thus reduces the central bank's effectiveness. Contractionary monetary policies, which raise interest rates in order to combat the inflation, may very well aggravate this condition by attracting more capital. The danger of imported inflation and the high priority assigned to price stability explains some of the unorthodox responses of the Bundesbank to economic policy.objectives during the period under study.

In a sense, this situation of conflict was a small price to pay for the policy of underevaluation followed by West Germany during the sixties. The large export surpluses were extremely important to the growth and prosperity of the West German economy. This policy was threatened when large capital import surpluses were added to the export surpluses to such a degree that the excess liquidity which was created, threatened price stability.

Policies Affecting the Balance of Trade

The pressure on Germany to revalue intensified in the fall of 1968, because of the weakness of the French franc and the strength of the mark. The crisis that resulted in European financial markets manifested itself in a massive transfer of speculative funds from France and other countries into West Germany. The Germans lowered export subsidies (reduced the tax rebate to exporters on the value added tax) from 11% to 7%, thereby impairing the competitiveness of their exports. At the same time, they lowered their border import tax from 11% to 7%, making imports cheaper. Essentially, this is equivalent to a 4% revaluation with respect to the commodity component of the balance of payments. Service and capital transactions were not affected as they would be under actual revaluation and the policy undertaken was much easier to reverse. This West German defacto revaluation was a policy response to the balance of payments (large trade surpluses), but the pressure applied by the deficit countries contributed to that action.

Actually, this policy was not as adjusting as it appeared because the turnover tax, to an extent, had impaired Germany's export position in world markets. Therefore, the value added tax, instituted in 1968, improved the import competitiveness of West Germany. This was true even though exports were exempted from the turnover tax since prior tax applications at various production and distribution stages distorted West German prices viz a viz foreign prices. The turnover tax was also difficult to apply to imports. The value added tax, which replaced the turnover tax in 1968, also exempted exports but did not distort the price relationship.

Thus, the border tax adjustments of 4 percent, were in a sense offsetting some of the additional competitiveness gained by the West Germans as a result of the implementation of the value added tax. Of course, the policy action taken was still an adjusting one.

CHAPTER VII

Fiscal Policy Response to the Balance of Payments

In West Germany throughout the sixties there had been increasing support for greater flexibility in budgetary policy, so that more of the responsibility for regulating the economy could be removed from monetary policy. The trend toward the adoption of medium term economic planning in West Germany came about as part of a general move, to use fiscal policy more effectively as an anticyclical weapon. In addition, there was a move to limit public expenditures from increasing faster than nominal GNP, which was deemed to be a contributory factor towards causing inflation.

The use of fiscal policy as an anticyclical devise in the fifties and early sixties was greatly limited, since the primary objective was to keep the budget balanced. This objective was given added weight as the balancing of the budget was actually stipulated in the Basic Law. Thus, until 1967, West Germany was not institutionally equipped to operate a strong fiscal policy. The economic problems that pressured the Erhard government in 1966 created a need for a new, more flexible budget policy. The Act to Promote Economic Stability and Growth, passed in 1967, transformed the neutral fiscal policy into an anticyclical one, armed with a great many new policy instruments.[1] A wide range of instruments with which to help control the economy was provided for.

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[1] A description of these new policy instruments can be found in chapter 2.

Adjustment of the balance of payments position through the use of fiscal policy requires an expansionary fiscal policy in response to a balance of payments surplus and a contractionary fiscal policy in response to a balance of payments deficit. The adjustment in this way works through the impact on aggregate demand whereby via the marginal propensity to import, the trade balance will be affected. As domestic demand changes, the price relationship between foreign and domestic markets will change, contributing to a change in exports. Thus, playing according to the rules of the game is applied to fiscal policy as well as monetary policy.

The basic procedure to be followed in this chapter is similar to that employed by the chapter concerning subperiods of imbalances of payments. The balance of payments of West Germany is determined to be moving toward deficit, surplus, or neutrality. In the subperiod chapter each policy instrument was examined in order to determine if its response to the balance of payments was adjusting, disadjusting, or stable (i.e., the policy instrument's contribution to aggregate demand was examined with a view toward observing if the instrument aggravated or alleviated the payments position).

In this chapter, the 1967-1971 period will be examined with respect to the overall pattern of fiscal policy, encompassing the many new Keynesian-type fiscal instruments which the 1967 Act introduced to the West German economy. The period before 1967 has been analyzed with respect to the budgetary balance in the subperiod chapter. For reasons desbribed above, it is necessary to analyze the 1967-1971 period more intensively, since the government with its newly equipped policy instruments and changed attitude toward a "centrally directed" economy undertook a more comprehensive approach to fiscal policy as an anticyclical stabilization tool.

The 1967-1971 period includes three subperiods of imbalance of payments which are indicated in Table 7.1. A more precise description and analysis of the subperiods is found in chapter 3. Response to the balance of payments will be inferred from an examination of fiscal policy during each of the three subperiods of imbalance. As in chapter 3, if fiscal policy appears to be manipulated in a direction toward balance of payments adjustment, alternative policy objectives will be examined in order to determine if the appropriation of fiscal policy according to the "rules of the game" was perhaps due to the coincidental movement required to achieve an alternative objective.

The first subperiod of imbalance of payments to be examined in this chapter was one of surplus. The fiscal policies of 1967 and 1968 were observed to be expansionary, indicating an adjusting movement according to the rules of the game. In the beginning of 1967, favorable depreciation allowances for fixed investment were introduced and a Special Investment Budget of 2.5 billion DM was provided for investments in the national railway system, postal services, and roads. In late 1967, a second special investment program of 5.3 billion DM was adopted which had its greatest impact in the construction industry. This increased government investment and, in order to stimulate private investment tax. Most significantly, in this subperiod (III 1966 - III 1968) the budgetary balance moved considerably into deficit, reflecting the trend of strong fiscal stimulus.

The next subperiod (IV 1968 - II 1970) was characterized by a movement toward deficit. Fiscal policy in this period became restrictive. Advance payments of corporate and income taxes were adjusted to the increased profit levels of 1968. The additional revenues were used for the reduction of net borrowing requirements. The total indebtedness of the Public Authorities and their bond issues actually declined in 1969. In March 1969, expenditure plans of the federal government were reduced by about 1.8 billion DM, mainly affecting public consumption and investment. The Federal and Lander government set up contracyclical reserves of 3.6 billion DM, which had a restrictive impact on bank liquidity, in that the monetary base of the economy was reduced by the amount of the reserve. Increased tax revenue resulting from the more rapid growth of GNP was either put into contracyclical reserve or used for redemption of money market paper. In addition, debt management policy, pursued by the treasury, took on a contracyclical approach. During 1969, the amount of outstanding Federal treasury bills (short-term) was reduced by some 6 billion DM and the amount of outstanding long-term bank credits increased by about 4.5 billion DM. This contrasts with 1968, public sector debt management operations increased bank liquidity by some 2 billion DM. There was also the introduction of an anticyclical surcharge and suspension of diminishing balance depreciation allowances. Supporting this trend of restrictive fiscal policy, the budgetary balance moved to surplus during this subperiod. Thus, the contractionary fiscal policy of this subperiod is in an adjusting direction with respect to the balance of payments.

The final subperiod (III 1970 - II 1971) exhibited a balance of payments surplus and fiscal policy became more expansive. Accelerated depreciation allowances were reintroduced and the surcharge on corporate and personal income taxes expired. The investment tax was reduced from 6% to 4% on January 1, 1971. The budgetary surplus of 1969 and the beginning of 1970 began to move again toward a deficit, indicating an adjusting movement with respect to the balance of payments.

Table 7.1 shows the three subperiods with the imbalance of payments characterized by surplus (S) or deficit (D). Fiscal policy, in column 2, has a plus or minus sign attached to it indicating if its movement was in an adjusting (+) or disadjusting (-) direction. In columns 3, 4, and 5, the other major policy objectives are examined with respect to how fiscal policy moved in response to achieving the objectives of price stability, full employment, and economic growth. A plus sign is assigned to columns 3, 4, and 5 if fiscal policy was found to be manipulated in a direction necessary to achieve that objective. A minus sign is attached if fiscal policy did not move in a direction necessary to achieve these objectives, and an asterisk is assigned if a neutral movement was observed. The movements in the policy objectives during the subperiods are designated as low (falling), high (rising), or stable (normal or fluctuates).

The reason for analyzing fiscal policy in general and not merely the budgetary balance is to overcome the problem caused by ex ante and ex post movements in the policy instrument. Such a problem may be caused by a tax cut which stimulates demand and decreases revenues, causing an apparent deficit. The impact of the tax cut on income may cause taxes to rise, increasing revenues and thereby displaying an apparent surplus on the budgetary balance (assuming expenditures are not affected). This kind of result might lead us to the wrong conclusions so that the entire realm of fiscal instruments is examined in order to determine the actual pattern of fiscal response.

TABLE 7.1

Movements of Fiscal Policy and Policy Objectives During
Subperiods of Imbalance of Payments
1967-1971

Subperiods	Balance of Payments (1)	Fiscal Policy (2)	Rate of Change Producer Prices (3)	Unemployment (4)	Rate of Change in Industrial Production (5)
III 1966 - III 1968	Surplus (S)	expansive +	fluctuates *	rising +	fluctuates *
IV 1968 - II 1970	Deficit (D)	restrictive +	high +	falling +	rising +
III 1970 - II 1971	Surplus (S)	expansive +	high -	stable *	falling +

The evidence from Table 7.1 does not contradict the hypothesis that fiscal policy, since 1967, was manipulated in a direction necessary for balance of payments adjustment. This does not necessarily imply that fiscal policy was indeed utilized for balance of payments objectives, however, since domestic objectives also called for the type of fiscal policy that was forthcoming (as Table 7.1 shows). The recession of 1966 and 1967, with rising unemployment, called for expansionary policies and the boom conditions and corresponding pressure on prices in 1969 called for restrictive policies. Thus, in terms of analysing the response of the German fiscal policy makers to the balance of payments since 1967, the results indicate that there was a consistent adjusting movement, but perhaps due to the corresponding movements in and desire to achieve domestic policy objectives. Nevertheless, West German fiscal policy, as West German monetary policy, was manipulated according to the rules of the game.

CHAPTER VIII

Summary and Conclusions

During the period under study, fixed par values of currencies was the structure of the international monetary system, and exchange rate changes were used on occasion to correct a "fundamental disequilibrium" in the balance of payments. The rules of the game which must operate in order to have a smooth functioning of the fixed exchange rate system require expansionary policies in surplus countries and contractionary policies in deficit countries. These policies can take the form of merely not counteracting the automatic forces which act to bring them about, or by an active initiating type of positive action. Exchange rate adjustment, the imposition of controls, and the temporary floating of exchange rates may also act to correct an imbalance of payments.

The major policy problem of balance of payment adjustment in a fixed exchange rate system involves the conflicts that do arise with the internal policy objectives of price stability, full employment, and reasonable rates of economic growth. Of course, conflicts also arise with respect to the internal policy objectives as the inflation-unemployment tradeoff has made us aware of all too often. This tradeoff for West Germany is slightly different from the rest of the world because of the less aggressive and more responsible labor unions as well as the huge supply of foreign labor available. These differences as well as others contributed to the disparity in costs, prices, and growth rates in West Germany vis a vis the rest of the world, and thus contributed to balance of payments disequilibrium.

The four basic methods of dealing with an imbalance of payments situation - changes in aggregate demand; exchange rate adjustment; the imposition of controls; and floating exchange rates, were all utilized in varying degrees in West Germany during the period under study. The conflict with internal objectives, specifically price stability, played a major role in the policy maker's response to the balance of payments. This is consistent with the role that balance of payments adjustment should play, i.e. an element in the overall context of domestic stabilization policy. The emphasis of this study has been placed upon the responsivemess of demand policies to the balance of payments. To a lesser extent, however, the other methods of adjustment have been included.

This study has sought to analyze the adjustment policies of West Germany with respect to the balance of payments. Instruments of monetary and fiscal policy acting upon aggregate demand in response to the balance of payments position make up the major portion of this study. The rules of the game adjustment policies of West Germany are examined in the tradition of some classic works in the field.[1] Nurkse who analyzed the interwar period, and Bloomfield, who analyzed the prewar period, both used annual data and obtained results indicating that in a majority of cases, central bank assets moved in a disadjusting direction, i.e. the rules of the game were not adhered to. Michaely, who uses quarterly data, obtained similar results for the post-war period. However, Michaely modified the rules of the game, suggesting

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1 Nurkse, Ragnar, International Currency Experience, 1944, Montreal, Bloomfield, Arthur, Monetary Policy Under the Gold Standard: 1880-1914, New York, 1959.
Michaely, Michael, op. cit.

that changes in the money supply and the discount rate act as the criteria for obeying the rules of the game. This study, in its analysis of the 1958-1971 period for West Germany adheres to Michaely's interpretation. It would seem apparent from the behavior of the discount rate and the money supply, as well as the total credit supply, that West Germany's monetary policy was manipulated in the direction for balance of payments adjustment. However, if the Nurkse rules of the game are rigorously interpreted, the results become somewhat clouded.[2]

The results of the subperiods of imbalances of payments analysis support the hypothesis that West German monetary policy was manipulated in the direction required for balance of payments adjustment during the period, 1958-1971. The discount rate, open market rate, total credit to the private sector, and the money supply, moved together in the adjusting direction. For the latter half of the period (1964-1971) these policy instruments exhibited an even greater conformity with respect to obeying the rules of the game. The adjustment according to the rules of the game was applied with equal frequency to surpluses as well as to deficits. This was perhaps due to the uniqueness of the West German economy concerning imported inflation and the huge pool of foreign workers employed in West Germany.

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[2] Nurkse's rules of the game are such that central bank assets expand in response to a surplus and contract in response to a deficit.

The massive importation of foreign workers which helped maintain growth in GNP and productivity while tempering wage increases and thus contributing to price stability, had a significant role to play in the West German response to the balance of payments.[3] The adjusting movement of West German monetary policy in the period under study (i.e., expansionary policies in response to surpluses and contractionary policies in response to deficits), owed a major portion of its response to the huge inflow of foreign workers. The reason for this is that as the evidence suggests, the conflicting domestic objectives of unemployment and inflation were not pushed beyond acceptable limits in West Germany as they were in most other nations.[4] Thus, in response to a surplus, West Germany could expand its economy and have less wage pressure contributing to inflation (as well as available labor), as a result of the large source of foreign labor available. In response to a deficit, the West Germans could engage in contractionary monetary policies without fear of causing significant unemployment among the West Germans, since the foreign labor supply lost the overwhelming percentage of the jobs which were cut back.

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3 The number of foreign workers reached over one million in 1965 and over two million in 1971., Monthly Reports of the Duetsche Bundesbank, May 1972.

4 The percent increases and decreases in employment for foreigners were about 10 times that of the total wage and salary earners. Monthly Reports of the Duetsche Bundesbank, May 1972.

The foreign labor supply was characterized by being the "last hired and first fired", a sort of LIFO (last in, first out) situation. Consequently, the rules of the game were obeyed in West Germany, partly because of the existence of the massive foreign labor supply.

The lack of conformity of central bank asset items with the other monetary policy instruments in this study can be explained by the passive open market policy pursued by the Duetsche Bundesbank and by bank profit and operating guidelines. The other major policy objectives were examined in order to determine if the movement of a policy instrument with the balance of payments could be explained by the coincidental movement of an alternative policy objective. The findings indicate that the policy instruments which were responsive to the balance of payments were to some extent responsive to the other targets of economic policy as well. The policy instruments not responsive to the balance of payments were not responsive in any consistent manner to the other policy objectives. In some cases, the minimum reserve ratio in particular, short-term liquidity needs, dictated the responsiveness of the policy instrument.

Fiscal policy, in the form of the budgetary balance, was not found to respond to the balance of payments or any other policy objective for most of the period under study. However, in the last three subperiods, encompassing the years subsequent to the Act to Promote Economic Stability and Growth, the budgetary balance as well as other fiscal policy measures moved in a manner which would not contradict the hypothesis that fiscal policy was manipulated according to the rules of the game.

The multiple regression analysis of chapters 4 and 5 quantify the response of the policy instruments to the balance of payments position of West Germany. The results of these regressions support the hypothesis that monetary policy was manipulated in a direction consistent with the rules of the game. Monetary policy response, however, was dependent on all the major policy objectives and responded to the balance of payments in the context of overall stabilization policy. The balance of payments variables exhibited the "correct" sign and were statistically significant in all of the regression equations.

West Germany utilized various controls to counteract the speculative inflow of short-term funds which were playing havoc with the domestic money market. The implementation of these many controls was a necessary response to the short-run balance of payments surpluses which in conjunction with the usually large trade balance surplus, was threatening price stability. The trade balance was aided in its movement toward large surpluses as a result of the undervalued deutsche mark during the period under study. The controls were needed to help combat imported inflation, which is basically a direct consequence of having an undervalued currency.

Of course, the benefits that were reaped from an undervalued currency far outweighed the costs involved from an imported inflation. The West German undervalued currency of the late fifties and sixties generated the aggregate demand necessary to achieve the high growth rates and employment that they, indeed, experienced. The undervaluation policy resulted in an export-led growth and actually created a need for an adjusting economic policy, if for no other reason than a placating gesture-like means of reducing political pressure from friendly deficit nations.

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Appendix I

West German Balance of Payments Statistics, 1958-71

(millions of DM)

Current Account	Balance of Trade	Long Term Capital Account	Short Term Capital Account	Basic Balance	Official Gold & Foreign Exchange (millions of $)	Current & Capital Account	Year
+5,792	+4,954	-1,457	- 592	+4,341	5,227	+3,543	'58
+3,692	+5,361	-3,739	-2,369	- 47	4,533	-2,167	'59
+4,493	+5,223	- 171	+1,953	+4,322	6,737	+6,393	'60
+2,843	+6,615	-4,203	- 56	-1,360	6,542	-1,442	'61
-1,950	+3,477	- 353	+ 86	-2,303	6,447	-2,208	'62
+ 661	+6,032	+1,546	+ 714	+2,207	7,102	+2,959	'63
- 16	+6,081	-1,034	- 731	-1,050	6,970	-1,792	'64
-6,723	+1,203	+ 957	+1,405	-5,766	6,353	-4,404	'65
+ 68	+7,958	- 762	+1,643	- 694	6,771	+ 927	'66
+9,436	+16,852	-3,180	-6,818	+6,256	7,100	- 576	'67
+10,906	+18,372	-11,411	+4,176	- 505	8,433	+3,515	'68
+6,226	+15,584	-23,069	+4,061	-16,843	6,827	-12,581	'69
+2,673	+15,670	-2,943	+13,953	- 275	12,435	+14,276	'70
+ 584	+15,892	+6,334	+ 829	+6,918	16,718	+7,747	'71

Source: Monthly Reports of the Deutsche Bundesbank, 1958-71;
Main Economic Indicators, OECD, 1958-71.

Appendix II

Guide to Sources

1. Discount rate, quarterly data.

2. Open market rate, quarterly data.

3. Minimum reserve ratio, quarterly data.

4. Money supply (M_1), quarterly data, billions of DM.

5. Bundesbank official forward swap rate, quarterly data.

6. Unemployment percentage, ratio of total unemployed to total employed plus unemployed, quarterly data.

7. Central bank net claims on government, quarterly data, billions of DM.

8. Central bank claims on commercial banks, quarterly data, billions of DM.

Source: Monthly Reports of the Deutsche Bundesbank, 1958-71.

1. Index of industrial production, total excluding construction, (1963=100), quarterly data.

2. Index of producer prices, (1963=100), quarterly data.

3. U.S. government short-term treasury bills, quarterly data.

4. Total credit to the private sector, quarterly data, billions of DM.

5. Frankfurt call money rate, quarterly data.

6. U.S. prime rate, quarterly data.

7. Consumer price index, (1963=100), for West Germany, U.S., France, Japan, Italy, and Holland, quarterly data.

Source: Main Economic Indicators, Organization for Economic Cooperation and Development, 1958-1971.

1. Deposit money bank reserves, quarterly data, billions of DM.
2. Budgetary balance, quarterly data, billions of DM.
3. Government expenditures, quarterly data, billions of DM.
4. Exports and Imports; West Germany, U.S., and industrial countries, annual data, billions of dollars.
5. Export Prices, (1963=100), West Germany, U.S. and industrial countries, annual data.
6. West German commercial banks short-term liabilities to foreigners, quarterly data, billions of DM.
7. West German commercial banks short-term foreign assets, quarterly data, billions of DM.

Source: International Financial Statistics of IMF, 1958-71.