

EXCHANGE RATES AS A DETERMINANT OF
THE BALANCE OF PAYMENTS

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CHAPTER I

INTRODUCTION

The increasing acceptance of the dollar as an international currency arose from the fact that the United States had a substantial surplus in its balance of payments which led to gold reserve accumulations since World War I. Until the 1960s the Bretton Woods agreements recognized the existing practice and declared its unit of account to be equal to the U.S. dollar. The use of a national currency as an international yardstick can continue as long as enough other nations will accept the arrangement and the value of the currency in question remains fixed. The advantage of seeing the dollar used as a reserve currency diminished when other countries, in particular the Western European countries, were accumulating dollar assets and at the same time were uncertain as to the future course of exchange rates. The dominance of the dollar as the world currency faded from 1968 to 1976 with the announcement of the first dollar devaluation and the suspension of gold convertibility in 1971 and the second dollar devaluation in February, 1973. The major currencies have now been allowed to float.

Since the generalized floating of major currencies began in 1973, the fluctuations in exchange rates have been larger

than had generally been expected (26) (28, 1975). Discussions of the present managed floating exchange rate system and the short experience of countries involved have centered so far on questions of the performance of the present floating system. In the 1975 annual meeting of the International Monetary Fund in Washington, D.C., Jean-Pierre Fourcade, the French Minister of Economy and Finance, opposed the floating and said (32, September 15, 1975, p. 268):

...A return to stable but adjustable parities must be the fundamental objective we have to pursue.... Such an objective is in accordance with the interest of the international community. I would like to reaffirm my deep conviction that generalized floating can only further dislocate the international monetary system and delay economic recovery. The economic development both of developing and industrialized countries can only take place in the framework of a monetary system which guarantees stable relationship between currencies.

The opposite view has been expressed by the representative from the United States, William E. Simon, the U.S. Treasury Secretary (32, September 15, 1975, pp. 268-269):

...U.S. policy is to have our own exchange rate determined essentially by market forces, and not by arbitrary official actions....We believe strongly that countries must be free to choose their own exchange rate system and that all countries, whatever choice they make, must be subject to the same agreed-upon principles of international behavior. The right to float must be clear and unencumbered. In view of the great diversity in political systems, institutional arrangements, size of national economies, and degree of dependence on foreign trade and investment, our present world requires an open mind about the future.

It is evident that there is some difference of opinion regarding the current practice of managed floating.

Purpose and Scope of the Study

This study attempts to shed some light on the impact of floating exchange rates in an empirical framework. Accepted doctrine tells us that flexible exchange rates maintain balance of payments equilibrium, require no international currency reserves, and remain as stable as domestic economic developments permit. The floating rates in current use do not follow this pattern, and it is the purpose of this study to discover their actual behavior.

We shall distinguish between flexible and floating exchange rates. A flexible exchange rate system leaves the price of currencies to the forces of demand and supply without official intervention. As Egon Sohmen defines the system as (62, p. viii) "an exchange rate whose level at any instant is determined in a free market without exchange controls and without prescribed limits of fluctuations." A floating exchange rate, however, is determined in the open market within the limits judged prudent by officials who will intervene in order to prevent rate changes which they consider excessive. In this study the terms "managed floating" and "floating" exchange rate will be used interchangeably, since both presume government intervention.

The current experiment of floating exchange rate is not the first such attempt in the history of the international monetary system. Many countries in the past, both the developing as well as the developed countries, have experienced floating rates in a system of either unilateral floating or

joint floating with other countries. This study will first examine what factors caused the current exchange rates to fluctuate other than speculation which is often cited as the major element. The period which the study will cover for statistical analysis begins with 1971, when the dollar departed from its fixed exchange rates.

In the second part, a brief description will be given on the developments of the various balance of payments during the 1960s and the early 1970s. The empirical evidence gathered from a few years of generalized floating permit tentative answers to the following questions:

What has been the impact of floating exchange rates on the adjustment in a country's balance of payments?

Have floating rates contributed to the lesser use of reserves by the monetary authorities than under a regime of fixed exchange rates? This argument is suggested by the advocates of flexible rates. Reserves in this study are defined as official reserves reported by IMF, which include gold, foreign exchange, and the gold tranche of the reserve position at the IMF, in addition to SDRs since 1970.

Only countries whose currencies have long been established and have occupied a major role in international transactions are considered because of the reliability and detail of available data. These countries include Belgium, Canada, France, West Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States, or the "Big Ten" plus Switzerland. Other countries are excluded

because data, although steadily improving, are still incomplete and are often of doubtful quality. The countries included in the study have overwhelming shares in world trade and finance. The study covers the period before and after August, 1971, when the dollar was officially devalued for the first time. It includes the second devaluation of 1973 and its repercussions on 1974 data.

Methodology

This study, first, sketches prevailing economic theory of the demand and supply of foreign exchange. Second, statistical methods are discussed that will properly reflect the causal effect of what caused the exchange rates to fluctuate. Third, an empirical study is attempted to determine, country by country, the impact of floating exchange rates on the balance of payments and on the use of official reserves.

Outline of the Thesis

This study proceeds in the following manner:

- (1) It discusses some economic factors that could be expected to cause an exchange rate to fluctuate,
- (2) it constructs a model that captures the theoretical relationship between the change in the exchange rate and each of the factors discussed in (1) above,
- (3) it then presents the statistical results of the determinants of the exchange rate variations,

(4) it analyzes in the framework of a balance of payments, the use of effective exchange rates, and

(5) it details, country by country, the degree of dependence of a nation on trade and capital investments during the 1960s and the developments of the country's balance of payments. The results are then correlated with the level of exchange rates under various time lags to determine the impact of the latter on the former. In addition, changes caused by managed floating on official reserves are compared with the changes during the period of fixed exchange rates in order to test the thesis that reserves would be used relatively less under floating rates.

Data Sources

Because of their wide use and general acceptance as a source of international financial data, International Monetary Fund, International Financial Statistics will be used as a principal source of data in this study. Additional sources of U.S. data come from the U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business.

CHAPTER II

THE DETERMINANTS OF FOREIGN EXCHANGE

When the demand and supply of foreign exchange are allowed to interact freely in the exchange market, an equilibrium rate of exchange will be determined. The purpose of this section is to inquire into the determinants of the demand and supply of foreign currencies for the purpose of developing a better understanding of the impact of a country's exchange rate on its balance of payments.

Determinants of Foreign Exchange

After World War I major European currencies were allowed to float for a period of several years in foreign exchange markets. The magnitude and frequency of the variation were wider than expected, i.e., greater than their gold points. Several studies have attempted to analyze what caused the rates to fluctuate so sharply. Nurkse studied the inter-war currency experience of some major European countries. His observation was (41, pp. 137-8, p. 118):

If there is anything that inter-war experience has clearly demonstrated, it is that paper currency exchange cannot be left free to fluctuate from day to day under the influence of market supply and demand. ...If currencies are left free to fluctuate, "speculation" in the widest sense is likely to play havoc with exchange rates....Anticipatory purchases of

foreign exchange tend to produce or at any rate to hasten the anticipated fall in the exchange value of the national currency, and the actual fall may set up or strengthen expectation of further fall. The dangers of such cumulative and self-aggravating movements under a regime of freely fluctuating exchanges are clearly demonstrated by the French experience of 1922-26....But the phenomenon of disequilibrium capital movements under conditions of fluctuating exchanges was by no means confined to France....it affected in varying degrees most of the other depreciated currencies in Europe in the early 'twenties,' once it was realized that a return to par could not be taken for granted.

Friedman contends in opposition (23, p. 170):

Nurkse examined only one period in anything approaching the required detail, the depreciation of the French franc from 1922 to 1926. For the rest he simply lists episodes during which exchange rates were flexible and asserts that in each case speculation was destabilizing. Even for the French episode, the evidence given by Nurkse does not justify any firm conclusion. Indeed, so far as it goes, it seems to me clearly less favorable to the conclusion Nurkse draws, that speculation was destabilizing, than to the opposite conclusion, that speculation was stabilizing.

Such opposing conclusions drawn from the post-WW I currency experience have generated empirical studies attempting to determine factors that contributed to rate fluctuation.

Various statistical methods have been employed to obtain goodness of fit between exchange rate changes and some explanatory variables. S. C. Tsiang (66) explains the movements in the French franc as a result of expansive credit and money supply during the period. Aliber (1) studies the movements in spot rates of the French franc in comparison to the forward rates during the same period and, like Nurkse before him, concludes that speculation was destabilizing. Lloyd

Thomas (64) (65) employs a distributed lag method to estimate the linear relationship in the form:

$$R_t = (1 - B_e)R_{t-1} + (m + nB_e)P_t - (1 - B_e)mP_{t-1}$$

where R is the spot exchange rate expressed in U.S. cents, P is the ratio of the price index of the country in question to that of the United States, B_e is the coefficient of expectations, and t is time. His estimated B_e coefficient for the U.S.-France case was significantly greater than zero, implying that expectations were not highly inelastic and thus destabilizing in the case of France. Pippinger (60) (61) refutes Aliber's claims that speculation was destabilizing and argues that the French franc movements were in response to inflationary pressures. Hodgson (27) employs a generalized least squares technique to examine the dollar-sterling rate movements during the 1919-1925 period. He found no evidence of destabilizing effects and that the variations in the rates came from specific events such as restrictions on capital exports and certain imports related to British economic policies.

Choice of Variables

Although speculation in foreign exchange is important to an explanation of exchange rate movements, recent research yields inconclusive effects concerning the impact of exchange speculation. The reason for not being able to come to a more definite conclusion are found in the lack of data than can be attributed directly to speculation under different assumptions.

The current floating exchange rate regime has exhibited sharp changes and wide amplitude of rate movements on a number of occasions since early 1973. Such fluctuations cannot be interpreted merely by analyzing whether the movements have been under the pressure of exchange speculators. It is necessary to explore other economic factors that could be significant in rate variations.

One essential determinant of exchange fluctuations is exports and imports of traded goods. For most countries, exportation of goods is a major source of foreign earnings, while imports represent use of foreign exchange. In the foreign exchange market, the demand and supply of foreign exchange is matched by exchange dealers. When an excess demand for foreign exchange develops, the rate appreciates until it reaches a level at which the buyers consider the rate too high and at which additional sellers will be attracted to the market. When an excess supply develops, the exchange depreciates until it reaches a level at which the sellers consider it too low to sell and it attracts additional buyers to the market. An equilibrium rate of exchange will be determined when the quantity demanded equals the quantity supplied. In the process of selling and buying of foreign exchange the dealers are aware of the seasonal demand and supply and thus will quote higher prices at the time when imports exceed exports and lower rates when exports exceed imports. Foreign exchange dealers are also influenced by the published trade data although they know that the trade surpluses or deficits occurred

in the last period (19). If the trade balance shows a deficit, it has repercussions on the market for the national currency.

A second determinant of rate movements is relative inflation rates by comparing domestic and foreign price levels. There are several reasons why keeping domestic price stability relative to foreign prices is important to the stability of exchange. Stable prices mean, for external reasons, steady economic growth. It strengthens a country's international trade competitiveness and external economic position.

The causal relationship between exchange rate movements and price inflation has been widely discussed, but the results are still inconclusive among academic observers as well as the practitioners and exchange dealers. Nevertheless, conventional economic theory provides a useful conceptual framework for the analysis of the impact of price inflation on a country's currency exchange. The theory suggests that if the price inflation of a country is consistently higher than the type experienced by its trading partners, this will, in due course, be reflected in a downward movement in the exchange rate, while a country having an inflation rate consistently lower than its trading partners will have its currency appreciated.

In practice, exchange dealers play an important and influential role in determining which currencies are strong by judging the future trend of relative price inflation rates among leading countries.

Many financial men, by virtue of their own experience and training, place relatively greater weight on price stability than on some of the other objectives of economic policy, such as growth and full employment....As a result, price stability may assume more weight in assessing a currency by those whose judgments are most critical than it would in some 'objective' and more balanced view of economic targets (10, pp. 179-180).

An example will help to illustrate the point. The United Kingdom and Italy are among the countries included in this study that consistently have the highest rate of inflation in the recent past, and the trends of both currency exchanges are moving downward. On the other hand, West Germany and Switzerland have maintained relatively better price records than many other industrialized countries and thus have experienced an upward trend in their exchange rates.

A third determinant consists in the interest rate arbitrage approach. According to this view, when the domestic interest rate level is low relative to the foreign level, the interest rate arbitragers will buy foreign currencies and invest them in foreign assets. An outflow of funds will exert downward pressure on the value of a currency. The opposite would be the case when the domestic interest rates are higher than abroad. This view, however, is subject to two qualifications. First, it is based on the assumption that the transfer of funds is exempt from government controls and regulations. If such capital barriers exist, the fund transfer would be difficult and the pressure on exchange would be reduced. Second, the argument assumes that the change in exchange would be less than the change in interest

rate in order to have the funds flow out, while a change in the interest rate is necessarily smaller than a change in the exchange rate to have an inflow of funds. If a change in the rate is expected to be the same percentage as the opposite change in the interest rate, there would be no incentive to transfer the funds for profits.

The impact of interest rate arbitrage on exchange rate movements could be substantial. Kreinin and Gilbert (40) estimate the sensitivity of the commercial banks to the interest rate differentials in seven European countries. The estimated results indicate that during the period from the 1960s through 1970 a one-percentage-point increase in the Eurodollar interest rate induced the German and Italian banks to hold more foreign currencies and mainly dollars to an equivalent of \$287 and \$129 million, respectively, and lesser amounts in the smaller countries. It must be noted, however, that the dollar exchange rate was still rigidly pegged at that time.

In order to prevent a massive outflow of arbitrage funds and to maintain exchange rate stability, the concerned central bankers have raised their short-term interest rates from time to time to a level that makes such transfer no longer profitable. In the recent past, for example:

The United Kingdom led the way, with short-term rates being adjusted upward in the six months following the floating of sterling in June, 1972. However, in the first half of 1973 the initiative was taken over by Germany and the United States, which on domestic grounds raised their official discount rates progressively to reach peak levels

by the summer. At this point the United Kingdom gave a further sharp boost to short-term interest rates to help protecting sterling, and long-term yields also began to move steeply upwards. Similar action proved necessary in November, when the Bank of England's minimum lending rate was raised to a peak of 13 percent (5, 1974, p. 22).

A fourth determinant of the exchange rate fluctuations is a country's economic growth as expressed by the percentage change in industrial production. A continuous economic growth for a country is necessary in order to achieve a strong external position through accumulation of international reserves. However, rapid growth may increase imports and reduce exports because when income increases, more goods and services will be consumed domestically and less will be left for exports. In addition, as income increases, imports tend to rise. The relationship of imports to increases in domestic output depends on the import elasticity.¹

Strong economic growth will also induce capital inflows and discourage outflows. Strong growth means high potential profits, which is also accompanied by high interest rates which will attract capital from abroad. Williamson (72) has made an empirical study of the U.S. economy concerning economic growth and the balance of payments during the 1820-1913 period and also during the 1950s. His findings are that during the period of rapid growth imports tended to increase more than exports. However, both growth and the balance of

¹The estimated income elasticities for imports with respect to economic activity ranges from the lowest 1.02 for Sweden to the highest 1.81 for the United States (63).

payments were moving upward together since economic progress was accompanied by increasing relative rates of return on American securities. Thus a deteriorating trade balance was more than compensated by net capital inflows.

The empirical evidence leads us one step further: higher growth rates should be positively related to appreciation of a currency, and vice versa. The evidence, however, gives no clear-cut answer. Kern indicates that (37, p. 33):

...it is not surprising that whereas Japan and Germany combined a higher rate of economic growth with a rapid rate of currency appreciation, in the case of France the rapid rate of economic growth coincided with large falls in the value of its currency, while at the other extreme, the United Kingdom, in spite of the rapid decline in the value of its currency, experienced a very low rate of economic growth.

The rate of economic growth is an important factor in determining the performance of a country's exchange rate, but we have a very imprecise notion of how important. Thus, it is appropriate to include the growth factor as one of the determinants.

CHAPTER III

A MODEL OF THE DEMAND AND SUPPLY OF FOREIGN EXCHANGE

In the preceding chapter the study presented the relative influence of varying factors on the fluctuations of the exchange rate. The study singled out four factors that could be expected to cause the exchange rate to fluctuate, namely, the ratio of exports to imports, relative price levels, relative interest rates, and the level of economic growth expressed in terms of the index of industrial production. This assumed that these factors were allowed to respond to underlying disturbances without implying that the central bankers do not intervene in the foreign exchange markets at all. They may be actively engaged in smoothing out day-to-day fluctuations in the rates as they claim but they do not counteract the long-term trend of the rate of exchange. The following discussion presents (1) a mathematical model of the demand and the supply of foreign exchange, (2) the measurement of each variable, and (3) the statistical approach to be used in order to verify the relative importance of each factor.

The Demand and Supply of Foreign Exchange

The demand for foreign exchange depends for the most part on the price of foreign currencies in terms of the national currency, the relative inflation rates between countries, the relative interest rates of the nations concerned, the ratio of exports to imports, and the level of economic growth of the country. Likewise, the supply of foreign exchange is determined by the exchange rate, the relative inflation rates, the relative interest rates, the relative values of exports to imports, and the level of economic growth. The demand and supply of foreign exchange are matched simultaneously by exchange dealers. The rate of exchange at which the quantity demanded equals the quantity supplied in a particular period of time does not necessarily imply that either the balance of trade or balance of payments is in equilibrium at that rate of exchange. It can be argued, however, that the deficit or surplus cannot be maintained for long because the exchange rate will depreciate or appreciate until the imbalance is eliminated. The long-run equilibrium exchange rate is reached when the balance of payments shows neither deficit nor surplus over a period of time.

The discussion can be summarized as follows:

the demand for foreign exchange

$$D = f(R, T, G, I, P)$$

and the supply of foreign exchange

$$S = g(R, T, G, I, P)$$

where D is the domestic demand for foreign currency in the exchange markets for the purpose of making payments abroad, S is the supply of foreign currency to the domestic exchange markets resulting from exportation of goods and services, securities, payments from abroad, and from hoarding, R is the spot exchange rate, T is the ratio of export to import values (X/M), G is the rate of economic growth, I is the ratio of the domestic to foreign interest rates (i_d/i_f), P is the ratio of the domestic to foreign price levels (P_d/P_f). The linear approximation of the demand and supply of foreign exchange can be expressed as:

$$D = a_0 + a_1R + a_2T + a_3G + a_4I + a_5P + u_1 \quad (1)$$

$$S = b_0 + b_1R + b_2T + b_3G + b_4I + b_5P + u_2 \quad (2)$$

where $a_0, a_1, a_2, a_3, a_4, a_5$ and $b_0, b_1, b_2, b_3, b_4, b_5$ are parameters to the estimated, and u_1 and u_2 are error terms.

Theoretically, the domestic demand for foreign currency is expected to be positively correlated with the price of foreign currency, imports, domestic price inflation, foreign interest rate, i.e., $(\partial D/\partial R) > 0$, $(\partial D/\partial M) > 0$, $(\partial D/\partial P_d) > 0$, $(\partial D/\partial i_f) > 0$, while the demand for it is expected to be negatively correlated with foreign price inflation, and domestic interest rate, i.e., $(\partial D/\partial P_f) < 0$, $(\partial D/\partial i_d) < 0$. For the rate of economic growth, the demand for foreign exchange may increase or decrease because as the economic growth progresses, imports will rise, which lead to higher demand for foreign exchange, but as economic growth is seen sustainable,

profit rates may be higher than abroad; thus the demand for foreign exchange may fall. The theoretical sign of the growth factor is indeterminate. The partial derivatives of the demand for foreign exchange with respect to the respective ratio forms are $(\partial D/\partial R) > 0$, $(\partial D/\partial T) < 0$, $(\partial D/\partial I) < 0$, $(\partial D/\partial P) > 0$. That is, the theoretical expected signs of the coefficients are: $a_1 > 0$, $a_2 < 0$, $a_3 = \text{unknown}$, $a_4 < 0$, $a_5 < 0$.

On the supply side, it is theoretically expected that the domestic supply of foreign exchange will increase when there is an increase in the amount of exports, the foreign price inflation, and the level of domestic interest rates, that is, $(\partial S/\partial X) > 0$, $(\partial S/\partial P_f) > 0$, $(\partial S/\partial i_d) > 0$, and the supply will decrease when there is an increase in the price of foreign currency, imports, the domestic price inflation, and foreign interest rate, i.e., $(\partial S/\partial R) < 0$, $(\partial S/\partial M) < 0$, $(\partial S/\partial P_d) < 0$, $(\partial S/\partial i_f) < 0$. The impact of economic growth on the supply of foreign exchange cannot be determined. The reason is similar to the reason given to the demand for foreign exchange. The partial derivatives of the supply function with respect to each variable are: $(\partial S/\partial R) < 0$, $(\partial S/\partial T) > 0$, $(\partial S/\partial G) = \text{unknown}$, $(\partial S/\partial I) > 0$, $(\partial S/\partial P) < 0$. The expected signs of the coefficients are: $b_1 < 0$, $b_2 > 0$, $b_3 = \text{unknown}$, $b_4 > 0$, $b_5 < 0$.

The balance of payments accounts show the quantity demanded and quantity supplied of foreign exchange in the accounting framework, that is, debit and credit entries. The

balance of payments in a particular period of time showing a deficit or a surplus is a result of the excess demand or excess supply caused by the underlying disturbances, such as those factors on the right-hand side of the equations (1) and (2). Under the regime of fixed exchange rates, the exchange rate R was maintained constant most of the time. In order to eliminate disequilibrium in the balance of payments, official control and various restrictions were imposed in addition to fiscal and monetary policy measures. In analyzing the surplus or deficit, most studies concentrate on other factors in the framework of constant exchange rates.

This study, as stated earlier, is concerned with the analysis of the impact of the present floating exchange rates on the country's balance of payments. In other words, the exchange rate R in the equations (1) and (2) is fluctuating. In fact, the day-to-day and week-to-week movements in the exchange rates have shown sharp changes and wide amplitude, which have a significant impact on the quantity demanded and the quantity supplied. The data of the demand and supply shown in the balance of payments, however, are published quarterly. The quarterly figures obtained by averaging the daily rates of exchange would wash out the variabilities of the exchange rates within the quarter period, and consequently the influence of the exchange rate variations would be reduced.

In equilibrium, the quantity demanded and the quantity supplied are equal, thus equation (1) equals equation (2):

$$D = S \quad (3)$$

Note that equations (1) and (2) are not statistically identified because, in view of equation (3), they are simply linear combinations of the same variables. If all error terms are zero, i.e., $u_1 = u_2 = 0$, then all observations should be at the intersection of the supply and demand functions. Because of the stochastic nature of the equations, observations will not lie at the intersection point but will scatter in the neighborhood of the point. This problem is called the identification problem. Such difficulty is common to all studies (16, 17, 27). The problem arises because the specification of the model is not sufficient to discriminate between the demand and supply.

Due to the lack of statistical identification and to bring out the important role of floating exchange rates, the study solves for R from equations (1) and (2) in terms of other explanatory variables:

$$a_0 + a_1R + a_2T + a_3G + a_4I + a_5P + u_1 =$$

$$b_0 + b_1R + b_2T + b_3G + b_4I + b_5P + u_2$$

or

$$(a_1 - b_1)R = (b_0 - a_0) + (b_2 - a_2)T + (b_3 - a_3)G \\ + (b_4 - a_4)I + (b_5 - a_5)P + (u_2 - u_1)$$

$$R = \frac{b_0 - a_0}{a_1 - b_1} + \frac{b_2 - a_2}{a_1 - b_1} T + \frac{b_3 - a_3}{a_1 - b_1} G + \frac{b_4 - a_4}{a_1 - b_1} I + \frac{b_5 - a_5}{a_1 - b_1} P + u. \quad (4)$$

The reduced form equation to be used for empirical estimation is:

$$R = c_1 + c_2T + c_3G + c_4I + c_5P + u \quad (5)$$

where

$$c_1 = \frac{b_0 - a_0}{a_1 - b_1}, \quad c_2 = \frac{\begin{matrix} (+) \\ (b_2 - a_2) \\ (+) \end{matrix}}{(a_1 - b_1)}, \quad c_3 = \frac{\begin{matrix} (\text{unknown}) \\ (b_3 - a_3) \\ (+) \end{matrix}}{(a_1 - b_1)},$$

$$c_4 = \frac{\begin{matrix} (+) \\ (b_4 - a_4) \\ (+) \end{matrix}}{(a_1 - b_1)}, \quad c_5 = \frac{\begin{matrix} (-) \\ (b_5 - a_5) \\ (+) \end{matrix}}{(a_1 - b_1)}.$$

The expected signs of the coefficients are:

$$c_2 > 0, \quad c_3 = \text{unknown}, \quad c_4 > 0, \quad c_5 < 0.$$

Measurement of the Variables

The Spot Exchange Rate (R)

The exchange rate used for the statistical analysis is the spot market rate measured in terms of U.S. cents per unit of foreign currency. Monthly exchange rate data are the averages of daily rates in the month. The study covers the series of exchange rates from January, 1971 to August, 1971, when the rates were fixed, and from August, 1971 to December, 1975. During the latter period the dollar exchange rates were first allowed to change in August, 1971, and have been floating since early 1973. For the Canadian dollar, the study covers the exchange rate series beginning in January, 1970 because the Canadian dollar was fixed from January to May, 1970 before it was allowed to float in June, 1970.

The Ratio of Export to Import Values (T)

Export and import values are those reported in the trade balance statistics which include only internationally traded goods. In order to conform to other variables in the model in terms of unit of measurement, the ratio form is used rather than the absolute value of the net trade balance. Theoretically, the demand for foreign exchange is positively related with imports but negatively correlated with exports. On the supply side, it is expected that the supply of foreign exchange increases with exports but decreases with imports. The relationship between the exchange rate and the export-import ratio is expected to be positive. The higher the ratio, that is, exports are relatively higher than imports, the greater the currency appreciation. Conversely, the lower this ratio, the greater the depreciation of the exchange rate. The sign of the coefficient c_2 is expected to be positive.

Economic Growth as Expressed by the Index of Industrial Production (G)

Other things being equal, a high level of economic growth may induce foreign capital to flow in since higher growth rates usually are associated with higher profits and interest rates. It is expected that the exchange rate would appreciate with economic growth. Higher growth, however, may cause imports to increase relative to exports. The exchange rate would be negatively related with economic growth. The sign

of the coefficient c_3 cannot be estimated in advance. Economic growth of a country is usually measured in terms of real gross domestic product or real gross national income. However, this study is concerned with monthly analysis in the movements of all the variables and since data of gross domestic product or gross national income are published only in quarterly series, the industrial production index is used. The index shows the monthly level of industrial production, which includes mining, manufacturing, electricity, gas, and water. It is thus a satisfactory proxy for a country's real GNP.

The Ratio of Domestic to Foreign

Interest Rates (I)

The observed domestic interest rates are those rates that reflect short-term money market conditions. In this study most of the interest rates are those for three-month treasury bills. However, for Italy, three-month treasury bond rates are used. For France and Japan, day-to-day loans or call money rates are used because they reflect money market conditions in those countries.

The rapid growth of the eurodollar market both in volume and in number of transactions in the last decade clearly demonstrates an alternative source of credit outside the domestic market. Eurodollars are time deposits--denominated and payable in U.S. dollars--held in banks outside the United States, including foreign branches of U.S. banks. Their

maturity ranges from a few days to more than one year. But the majority of the deposits have a maturity of less than six months (43). The interest rates paid on deposits and charged on loans by the eurodollar banks are competitive rates since the banks are not subject to reserve requirements. This implies that borrowers would be able to obtain funds at a lower cost and lenders to receive a higher rate of return in the eurodollar market than in the national market. Allowance should be made, of course, for the exchange rate changes in lending and borrowing. This study chooses the eurodollar interest rates quoted in the London market as an approximation of foreign interest rates. On theoretical grounds, as the level of domestic interest rates increases relative to the eurodollar rate, the higher yields would keep funds from flowing out and at the same time attract more capital to flow in, thus the excess supply would cause the exchange rate to appreciate. The opposite would be the case when the excess demand develops. The expected sign of c_4 is positive.

The Ratio of Domestic to Foreign

Price Inflation Rates (P)

Economic theory leads to the expectation of a negative relationship between the exchange rate and the relative price inflation. When the domestic inflation rises relative to the trading partners, the demand for foreign currency would be higher to pay for more imports of goods and services and securities, and would cause the exchange rate to depreciate.

When the domestic inflation is relatively lower than abroad, the supply of foreign exchange would increase resulting from higher exports and lower demand for foreign currency; the lower ratio would cause the exchange rate to appreciate.

The consumer price index is used to gauge the degree of domestic price inflation. For foreign inflation, the study constructs the weighted average of the price levels of the country's trading partners taken as a group, as shown in Tables I to IV. The weights used are obtained from relative shares in trade in manufactured goods. The weighted average of the consumer price indexes of major industrialized countries is being used instead of comparing the consumer price index of the country in question to the price index of one particular country because the actual trade flows indicate two broad patterns of trade among countries included in the study. On the one hand, the Western European countries have higher trade ratios among them than with the United States, Canada, or Japan. On the other hand, Canada, Japan, and the United States have higher relative shares in trade among each other than with the European countries. In this study, the trade flows are restricted to miscellaneous manufactured goods (SITC 8) because export subsidies and other discriminating measures distort competitive conditions in the trade of other commodity classifications.

In constructing the weighted average of foreign price inflation, it is necessary to compute the weights to be

TABLE I
DISTRIBUTION OF TRADE IN MANUFACTURED GOODS (SITC 8), 1969*

	BELGIUM	CANADA	FRANCE	GERMANY	ITALY	JAPAN	NETHERLANDS	SWEDEN	SWITZERLAND	BRITAIN	U.S.A.
BELGIUM	--	.007	.154	.092	.048	.013	.255	.028	.029	.031	.030
CANADA	.005	--	.017	.012	.015	.058	.005	.008	.019	.067	.171
FRANCE	.236	.034	--	.180	.203	.022	.089	.060	.130	.079	.054
GERMANY	.226	.040	.289	--	.311	.072	.368	.260	.293	.124	.101
ITALY	.078	.033	.215	.205	--	.018	.092	.097	.117	.066	.124
JAPAN	.016	.100	.019	.037	.015	--	.028	.052	.052	.061	.307
NETHERLANDS	.285	.007	.065	.167	.064	.025	--	.048	.026	.074	.025
SWEDEN	.009	.004	.013	.035	.020	.013	.014	--	.034	.070	.018
SWITZERLAND	.026	.023	.075	.106	.064	.036	.021	.091	--	.093	.062
BRITAIN	.030	.085	.049	.048	.039	.045	.063	.199	.099	--	.109
U.S.A.	.089	.668	.103	.119	.222	.698	.065	.157	.202	.335	--
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

*Each number in the table represents the proportion country in heading imports and exports of manufactured goods (SITC 8) from country in stub, in relation to its imports and exports of the same classification of manufactures with 10 countries combined.

Source: Organisation for Economic Co-operation and Development (OECD), Foreign Trade, Series B; Commodity Trade Analysis by Main Regions, 1970.

TABLE II
DISTRIBUTION OF TRADE IN MANUFACTURED GOODS (SITC 8), 1970*

	BELGIUM	CANADA	FRANCE	GERMANY	ITALY	JAPAN	NETHERLANDS	SWEDEN	SWITZERLAND	BRITAIN	U.S.A.
BELGIUM	--	.008	.153	.093	.048	.013	.248	.033	.028	.034	.029
CANADA	.005	--	.017	.011	.015	.052	.004	.009	.016	.059	.166
FRANCE	.219	.035	--	.166	.170	.024	.088	.060	.128	.074	.053
GERMANY	.239	.040	.299	--	.343	.085	.383	.255	.302	.133	.101
ITALY	.078	.036	.192	.215	--	.022	.088	.087	.120	.067	.128
JAPAN	.017	.098	.021	.042	.017	--	.030	.049	.055	.063	.314
NETHERLANDS	.296	.008	.073	.178	.065	.028	--	.051	.026	.088	.024
SWEDEN	.010	.004	.013	.032	.017	.012	.014	--	.033	.072	.017
SWITZERLAND	.025	.020	.080	.104	.066	.038	.019	.092	--	.103	.058
BRITAIN	.032	.083	.050	.050	.040	.047	.071	.217	.112	--	.108
U.S.A.	.079	.669	.102	.108	.219	.678	.056	.148	.180	.308	--
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

*Each number in the table represents the proportion country in heading imports and exports of manufactured goods (SITC 8) from country in stub, in relation to its imports and exports of the same classification of manufactures with 10 countries combined.

Source: Organisation for Economic Co-operation and Development (OECD), Foreign Trade, Series B; Commodity Trade Analysis by Main Regions, 1971.

TABLE III

DISTRIBUTION OF TRADE IN MANUFACTURED GOODS (SITC 8), 1971*

	BELGIUM	CANADA	FRANCE	GERMANY	ITALY	JAPAN	NETHERLANDS	SWEDEN	SWITZERLAND	BRITAIN	U.S.A.
BELGIUM	--	.007	.160	.094	.049	.015	.248	.031	.026	.035	.027
CANADA	.005	--	.017	.010	.015	.055	.003	.012	.017	.063	.174
FRANCE	.232	.038	--	.179	.169	.027	.091	.055	.139	.083	.052
GERMANY	.238	.038	.313	--	.359	.093	.386	.261	.307	.134	.096
ITALY	.074	.034	.178	.216	--	.023	.085	.082	.124	.068	.123
JAPAN	.018	.101	.022	.044	.018	--	.029	.048	.055	.067	.321
NETHERLANDS	.304	.006	.077	.187	.068	.030	--	.051	.028	.099	.026
SWEDEN	.009	.005	.010	.028	.015	.011	.011	--	.032	.066	.015
SWITZERLAND	.022	.022	.081	.102	.069	.039	.019	.098	--	.099	.056
BRITAIN	.033	.091	.053	.049	.042	.053	.075	.225	.110	--	.109
U.S.A.	.066	.657	.088	.092	.197	.656	.052	.137	.162	.285	--
	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

*Each number in the table represents the proportion country in heading imports and exports of manufactured goods (SITC 8) from country in stub, in relation to its imports and exports of the same classification of manufactures with 10 countries combined.

Source: Organisation for Economic Co-operation and Development (OECD), Foreign Trade, Series B; Commodity Trade Analysis by Main Regions, 1972.

TABLE IV

AVERAGE OF DISTRIBUTION OF TRADE IN MANUFACTURED GOODS (SITC 8), 1969-1971*

	BELGIUM	CANADA	FRANCE	GERMANY	ITALY	JAPAN	NETHERLANDS	SWEDEN	SWITZERLAND	BRITAIN	U.S.A.
BELGIUM	--	.007	.156	.093	.048	.014	.250	.031	.028	.033	.029
CANADA	.005	--	.017	.011	.015	.055	.004	.010	.017	.063	.170
FRANCE	.229	.036	--	.175	.181	.024	.089	.058	.132	.079	.053
GERMANY	.234	.039	.300	--	.338	.083	.370	.259	.301	.130	.099
ITALY	.077	.034	.195	.212	--	.021	.088	.089	.120	.067	.125
JAPAN	.017	.100	.021	.041	.017	--	.029	.050	.054	.064	.314
NETHERLANDS	.295	.007	.072	.177	.066	.028	--	.050	.027	.087	.025
SWEDEN	.009	.004	.012	.032	.017	.012	.013	--	.032	.069	.017
SWITZERLAND	.024	.022	.079	.104	.066	.038	.020	.094	--	.098	.059
BRITAIN	.032	.086	.051	.049	.040	.048	.070	.214	.107	--	.109
U.S.A.	.078	.665	.098	.106	.213	.677	.058	.147	.181	.309	--
TOTAL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

*Each number in the table represents the proportion country in heading imports and exports of manufactured goods (SITC 8) from country in stub, in relation to its imports and exports of the same classification of manufactures with 10 countries combined.

assigned to the country's trading partners.¹ In this study the trade flows are confined to manufactured goods exports to and imports from eleven countries. Data on f.o.b. imports are obtained from export data. For instance, Canada's exports to the United States are the same as the United States imports from Canada in f.o.b. prices, and the United States exports to Canada are the Canadian imports from the United States. The sum of Canada's exports to and imports from the United States is divided by Canada's total exports to and imports from ten other countries. The pure number represents Canada's trade weight with respect to the United States. Estimates of weights are given in Table I for the year 1969. In that year, Canada's exports to and imports from the United States accounted for 66.8 percent of its total exports to and imports from ten other countries. Reading vertically, Britain accounted for 8.5 percent of Canada's exports and imports in merchandise trade, Switzerland has a weight of 2.3 percent, etc., to a total of 100 percent for the ten countries.

In order to allow for shifts in the trade patterns over time, the weights also have been calculated for the years 1970 and 1971, as shown in Table II and Table III. Table IV shows the average of the weights for the years 1969 through

¹IMF Annual Report also employs a similar technique to show graphically the relative price inflation rates of the country in question to the weighted average of seven major industrialized countries (28, 1975). The computation method employed here follows the method used by Fred Hirsch and Ilse Higgins (25).

1971. It can be seen that the relative shares in manufactured goods during those three years have been rather stable. The higher weights show a closer trade relationship between the country in question and its trading partners. Thus, price inflation of the country will be compared to its closer trading partners with relatively higher weights assigned.

Next, to obtain a weighted average of foreign inflation rates, apply the weights from Table IV to its corresponding consumer price index:

$$P_f = w_1P_1 + w_2P_2 + \dots + w_{10}P_{10}$$

where w_1, w_2, \dots, w_{10} are the relevant weights which sum to unity, and P_1, P_2, \dots, P_{10} are respective consumer price indexes of ten other countries. When the domestic price index of the country in question is compared to the weighted average of the price indexes of its trading partners, it will clearly show the relative inflation rates as measured by the consumer prices.

Data Sources

Monthly data of exchange rates, the consumer price index, the three-month eurodollar rates in London, and the values of exports and imports for countries in this study are found in International Financial Statistics, IMF. The data of the index of industrial production are taken from Main Economic Indicators, Organisation for Economic Co-operation and Development (OECD). Data of domestic interest rates are from OECD Financial Statistics.

Statistical Method Used in the Analysis

One important objective of the study is to determine, among the four explanatory variables mentioned earlier, which factor has contributed relatively more weight to the determination of the demand and supply of foreign exchange. The independent variables included in equation (5) will be used to explain the fluctuations of currency exchanges of countries included in this study. In order to make a statistical selection of the first factor that is significantly correlated to the exchange rate level, then the second significant variable, if any, correlated to the dependent variable, and so forth, the stepwise regression analysis is adopted in this study.

The stepwise regression involves a step-by-step approach in selecting significant variables in the model. First, it selects among the variables the first variable that is most correlated to the dependent variable Y , say X_1 ; then the coefficient a_{11} is calculated such that $E(Y - a_{11}X_1)^2$ is minimized. The variable X_1 possesses the highest calculated partial F value and compared to a predetermined significant level of the appropriate F -distribution. If the calculated partial F value is greater than the F statistics at the .05 level, the variable and its coefficient are entered in the model. This represents the first step. The second step involves selecting which of the remaining variables that is most correlated to Y subject to meeting the partial F

criterion. The selection process continues until no variable is included as its F value fails to meet the F criterion.

Problems Related to Multiple Regression

Analysis Using Time Series Data

The linear multiple regression model using time series data usually encounters autocorrelation problems. The autocorrelation is a result of the disturbances being interdependent, that is, their expected value of errors u_t and u_{t+s} is not zero for all t and for all $s \neq 0$, or $E(u_t u_{t+s}) \neq 0$. One possible cause of the interdependence of the disturbances is an incorrect specification of the model (35). For example, the relationship between the dependent and independent variables is assumed to be linear when the true relationship is non-linear. A second possible cause is the exclusion of some variables from the model. In a model, only certain variables are included because they are relevant to the problem and other variables are subsumed under the disturbance term. This error term must then represent the influence of omitted variables. A third reason is the pure existence of serial correlation in the disturbances. The pattern assumed is that the correlation coefficient between the t and $t+s$ in disturbances is ρ^s and $-1 < \rho < 1$.

CHAPTER IV

TIME SERIES ESTIMATIONS OF THE EXCHANGE RATE DETERMINANTS

The basic model of the demand and supply of foreign exchange was developed in the previous section. In this section, the study presents (1) the statistical results obtained by stepwise regression technique, and (2) a modified version of the basic equation by taking into account the lagged dependent variable as an explanatory variable.

Results From Stepwise Regression

Equation (5) was first estimated using the stepwise approach. The results for each country are presented in Table V.¹ In this table are presented the estimates of the coefficients, the t-ratios of these coefficients, the coefficients of determinations (R^2), the F-value for each equation, and the Durbin-Watson test statistics (D-W). The regression analysis in Table V may be described as follows. For Belgium, the first variable chosen to help explain the Belgium franc

¹Switzerland is not included in the statistical analysis because of a lack of production data in the monthly series. In fact, the data for all production and income of Switzerland, which can be used as a proxy for the economic growth variable, are all collected on the quarterly basis.

TABLE V
ESTIMATES BY THE STEPWISE
REGRESSION APPROACH

<u>Country</u>		<u>R²</u>	<u>F</u> <u>Value</u>	<u>D-W</u>
Belgium:	N = 60			
	R = 1.97 + .006 I (3.24)**	.16	10.48	
	R = 0.81 + .005 I + .01 G (3.32)** (3.26)**	.29	11.45	.26
Canada:	N = 72			
	R = 84.43 + .13 G (5.13)**	.27	26.35	
	R = 83.49 + .18 G - .07 I (8.03)** (5.95)**	.52	37.39	
	R = 170.36 + .12 G - .08 I - .81 P (5.28)** (7.86)** (5.12)**	.65	42.74	.37
France:	N = 60			
	R = 7.40 + .12 G (3.76)**	.20	14.10	
	R = -8.18 + .15 G + .12 P (4.70)** (2.66)**	.28	11.33	
	R = -117.3 + .16 G + .16 T + 1.03 P (5.58)** (3.90)** (3.86)**	.44	14.38	.54
Germany:	N = 60			
	R = 44.21 - .72 P (8.58)**	.56	73.60	
	R = 50.80 - .55 P + .31 T (7.87)** (6.34)**	.74	81.71	
	R = 44.21 - .62 P + .21 T + .23 G (8.89)** (3.69)** (2.95)**	.77	64.76	.53

TABLE V (Continued)

<u>Country</u>		<u>R²</u>	<u>F</u> <u>Value</u>	<u>D-W</u>
Italy:	N = 60			
R =	25.39 - .09 P (8.84)**	.57	78.08	.21
Japan:	N = 60			
R =	10.41 + .20 G (9.07)**	.59	82.35	.26
The Netherlands:	N = 60			
R =	-6.77 + .35 G (5.03)**	.30	25.26	
R =	176.44 + .56 G - 2.01 P (7.96)** (5.25)**	.53	32.17	
R =	153.83 + .49 G - 1.91 P + .21 T (6.49)** (5.26)** (2.85)**	.59	26.85	.65
Sweden:	N = 60			
R =	4.06 + .16 G (8.68)**	.57	75.42	
R =	39.80 + .10 G - .29 P (3.92)** (3.56)**	.64	51.60	.38
The United Kingdom:	N = 60			
R =	380.45 - 1.27 P (9.26)**	.60	85.72	
R =	350.48 - .81 P - .19 I (4.53)** (3.59)**	.67	58.05	.35

where

- R = the spot exchange rate measured in U.S. cents per unit of foreign exchange,
T = the ratio of export to import values in U.S. dollars,
G = the index of industrial production seasonally adjusted,
I = the ratio of the domestic interest rate to the euro-dollar rate,
P = the ratio of the domestic consumer price index to the trade weighted average of the consumer price indexes of trading partners.

exchange rate movements was the interest rate ratio, which accounted for 16 percent of the total fluctuations. The next variable to come in was the economic growth factor measured by the index of industrial production. The two variables showed the correct signs and were statistically significant at the .01 level; together they accounted for 29 percent of the variations. For Canada, the growth variable was selected first, and the second was the interest rate variable. However, the interest rate ratio showed a negative sign which is inconsistent with the theoretical expectation. The variables included in the final model were the economic growth, the interest rate ratio, and the relative price inflation rates. All variables gave the correct signs. For France, Germany, and the Netherlands, the fluctuations of their exchange rates were explained by the changes in growth, price, and trade variables. The difference among them was due to the order of the selection process based on the relative values of the F statistics. The growth variable was chosen first for France and the Netherlands but not for Germany. Instead, the movements in the Deutsche mark were first explained by the relatively lower domestic inflation rate than its trading partners. All but one of the coefficients of the price variable yielded the expected correct signs except for France, which was positive. Next, the relatively higher price inflation than its trading partners was responsible for the movements of the Italian lira, while the fluctuations of the Japanese yen were explained by the

strong economic growth. For Sweden, the economic growth and the relative price variables were included in the final model. The relatively high inflation rate in the United Kingdom was the first factor that explained the fluctuations of the pound sterling. The next variable chosen to help explain the movements of the pound was the interest rate ratio, but the sign of the coefficient was incorrect (negative).

In summary, all the variables entered in the model showed high t values and were significant at the .01 level. In seven out of nine instances, the growth and the price variables were chosen by the stepwise approach to help explain the exchange rate movements. The growth factor was positive in all cases, while the price variable showed a negative sign in all cases except for France. The export-import ratio appeared in three out of nine instances and emerged with the expected (positive) sign. The interest rate variable was included in two equations; however, both instances gave the incorrect sign. The overall explanatory power of the selected variables was on the average above 50 percent except for Belgium and France, which showed a low value of R^2 . The validity of these statistics, however, is suspect, because in all cases the Durbin-Watson test statistics yielded a relatively low value.² It indicates

²The critical values for rejection of the hypothesis of no first order serial correlation in the residuals at the .05 level are 1.48 for France, Germany, and the Netherlands, 1.51 for Belgium, Sweden, the U.K., 1.52 for Canada, and 1.55 for Japan and Italy.

significant first order autocorrelation. Therefore, the final equation for each country was re-estimated subject to the errors following a first order autoregressive process

$$v_t = \rho v_{t-1} + s_t$$

where ρ is the coefficient of autocorrelation, and $|\rho| < 1$. An estimate of ρ can be derived from $1 - \frac{(D-W)}{2}$ in which D-W is the Durbin-Watson statistic appeared in Table V for the relevant country, and s_t is assumed to have classical properties.

Adjustments for Autocorrelation

To eliminate the autocorrelation problem, the final equation for each country was transformed by multiplying through by ρ , with all the variables lagged one period. Then run a least squares regression on the transformed variables:

$$\begin{aligned} R'_t = R_t - \rho R_{t-1} = & c_1(1 - \rho) + c_2(T_t - \rho T_{t-1}) + \\ & c_3(G_t - \rho G_{t-1}) + c_4(I_t - \rho I_{t-1}) + \\ & c_5(P_t - \rho P_{t-1}) + (u_t - \rho u_{t-1}), \end{aligned}$$

which gives a minimum sum of squares with respect to ρ , and tests the residuals from this equation for autocorrelation.

The re-estimated results are shown in Table VI. The overall value of the Durbin-Watson statistic for all countries were improved significantly, and yet most of the values were relatively low except for Japan, whose value was greater than the critical value. Table VI also shows that those

TABLE VI

ESTIMATES THE FINAL EQUATION IN TABLE V OF EACH COUNTRY,
CORRECTED FOR SERIAL CORRELATION

<u>Country</u>		<u>R²</u>	<u>F</u> <u>Value</u>	<u>D-W</u>
Belgium:	N = 59			
(2) ' R' =	28.50 + .08 I' + .07 G'	.01	.43	.95
	(11.7)** (.75) (.57)			
Canada:	N = 71			
(3) ' R' =	24.25 + .11 G' - .02 I' - .04 P'	.23	6.64	1.24
	(7.5)** (2.7)** (1.57) (2.61)*			
France:	N = 59			
(3) ' R' =	-1.69 + .11 G' + .05 T' - .09 P'	.19	4.34	.70
	(.25) (3.3)** (2.17)* (.47)			
Germany:	N = 59			
(3) ' R' =	25.53 - .76 P' + .06 T' + .06 G'	.42	13.42	1.02
	(5.8)** (5.5)** (2.1)* (.89)			
Italy:	N = 59			
(1) ' R' =	2.60 - .07 P'	.05	3.06	1.39
	(5.7)** (1.75)			
Japan:	N = 59			
(1) ' R' =	2.97 + .09 G'	.08	5.18	1.54
	(5.1)** (2.28)*			
The Netherlands:	N = 59			
(3) ' R' =	17.02 + .28 G' - .49 P' + .01 T'	.23	5.40	.62
	(1.6) (4.0)** (1.48) (.28)			
Sweden:	N = 59			
(2) ' R' =	9.67 + .01 G' - .30 P'	.16	5.46	1.14
	(5.1)** (.51) (3.19)**			

TABLE VI (Continued)

<u>Country</u>	<u>R²</u>	<u>F</u> <u>Value</u>	<u>D-W</u>
The United Kingdom: N = 59			
(2) ' R' = 47.56 - .15 P' - .05 I' (7.1)** (.43) (1.20)	.03	.86	.99

*Indicates the .05 significant level.

**Indicates the .01 significant level.

variables which were significant in Table V become insignificant in several cases. The growth and price variables showed the expected signs and were significant at least at the .05 level in 4 and 3 instances, respectively, whereas in Table V each variable was significant and appeared in 7 equations. The trade variable emerged with the correct (positive) sign and was significant at the .05 level in 2 cases, down from 3 in Table V, while the interest rate variable was insignificant in all instances.

As noted earlier, one explanation of the autocorrelation problem is that there may be some significant variables which were excluded from the model. Table V as well as Table VI show only variables that were selected by the stepwise regression process and thus some variables were omitted.

To test the hypothesis that coefficients of omitted variables (c's) in the final model for each country were equal to zero, the appropriate formula is:

$$\frac{(R_3 - R_1)(N - 5)}{(1 - R_3)(5 - L)}$$

where R_1 is the multiple correlation coefficient from Table V, R_3 is the multiple correlation coefficient from the regression using all independent variables presented in Equation (5), N is the number of observations, and L is the number of variables in the regression equation in Table V including the constant term. The results are presented in Table VII. For each country the calculated F value was compared with the F statistic. If the calculated value is

less than the F criterion at the .05 level, the hypothesis is that $c's = 0$ is accepted. However, if the calculated F value is greater than the F statistic, $H_0: c's \neq 0$ is accepted. According to the test performed, coefficients of omitted variables for each country are insignificant, as seen in Table VII; therefore, $H_0: c's = 0$ is accepted.

TABLE VII

RESULTS OF TESTING THE HYPOTHESIS THAT COEFFICIENTS OF OMITTED VARIABLES ARE NOT STATISTICALLY SIGNIFICANT

<u>Country</u>	<u>Calculated</u> <u>F</u> <u>Value</u>	<u>F</u> <u>Statistic</u>	<u>Degrees</u> <u>of</u> <u>Freedom</u>
Belgium	.577	< 3.17	F(2, 54)
Canada	0	< 4.98	F(1, 67)
France	2.282	< 4.02	F(1, 54)
Germany	.925	< 4.02	F(1, 54)
Italy	1.027	< 2.78	F(3, 54)
Japan	1.011	< 2.78	F(3, 54)
The Netherlands	.040	< 4.02	F(1, 54)
Sweden	1.543	< 3.17	F(2, 54)
The United Kingdom	.510	< 3.17	F(2, 54)

In this study we explored the possibility of the multicollinearity problem, that is, a linear dependence exists between the explanatory variables. If such a problem exists, it affects the standard errors of coefficients, which in turn yields biased test statistics. By dropping variables from a regression, resulting from biased t-ratios, that perhaps belong in the equation, the Durbin-Watson becomes significant. Upon examining the partial correlation coefficients among the independent variables in (5), it did not appear that these variables are highly correlated. For the evidence that the problem is not resulting from omitted variables is presented in Table VIII. In this table, the values of the Durbin-Watson test statistic as well as the coefficients of determination and F-test for all countries are shown. All values were higher than those shown in Table V, but the problem of serial correlation still prevails.³ Note that all variables that showed significant at the .01 level in Table VIII were the same as those shown in Table V. In other words, variables excluded by the process of stepwise regression were insignificant to the determination of the exchange rate movements, which supported the test results in Table VII.

Since the values of the Durbin-Watson statistic shown in Table VIII were relatively low for all countries, the study thus re-estimated the basic model using the Cochrane-Orcutt

³The critical values for rejection of the hypothesis of no serial correlation in the residuals at the .05 level are 1.50 for Canada, and 1.44 for other countries.

TABLE VIII
ESTIMATES THE VARIABLES IN EQUATION (5)

<u>Country</u>		<u>R²</u>	<u>F</u> <u>Value</u>	<u>D-W</u>
Belgium:	N = 60			
R =	-2.83 + .004 I + .013 G + .035 P + .001 T (.83) (1.93) (3.18)** (1.07) (.04)	.29	5.63	.30
Canada:	N = 72			
R =	170.39 + .120 G - .080 I - .810 P - .005 T (9.81)** (4.01)** (7.37)** (4.94)** (.01)	.65	31.58	.37
France:	N = 60			
R =	-107.90 + .160 G + .170 T + .920 P + .020 I (3.69)** (5.47)** (4.15)** (3.30)** (1.51)	.46	11.60	.62
Germany:	N = 60			
R =	41.89 - .590 P + .210 T + .230 G - .020 I (4.06)** (7.60)** (3.75)** (2.97)** (.97)	.78	48.77	.55
Italy:	N = 60			
R =	22.04 - .100 P + .020 G + .020 T + .002 I (9.83)** (6.14)** (1.58) (1.48) (.39)	.60	20.31	.32

TABLE VIII (Continued)

<u>Country</u>		<u>R²</u>	<u>F Value</u>	<u>D-W</u>
Japan:	N = 60			
R =	4.85 + .190 G + .050 P + .005 T + .0007 I (0.73) (5.19)** (1.05) (.24) (.06)	.61	21.35	.26
The Netherlands:	N = 60			
R =	159.23 + .490 G - 1.96 P + .210 T - .005 I (3.54)** (6.71)** (4.24)** (2.83)** (.19)	.59	19.80	.65
Sweden:	N = 60			
R =	39.54 + .100 G - .320 P + .030 T + .003 I (3.03)** (3.41)** (3.17)** (1.74) (.43)	.66	27.06	.46
The United Kingdom:	N = 60			
R =	326.35 - .810 P - .180 I + .110 G + .130 T (8.10)** (4.49)** (3.16)** (0.42) (1.01)	.68	28.79	.36

The numbers in parentheses are t ratios; ** indicates significant at the .01 level.

technique, which yields an approximation to generalized least squares. The results are presented in Table IX. Note that the overall values of the Durbin-Watson statistic were higher compared with the corresponding values in Table VIII, but they still were less than their respective critical values.⁴ The coefficients of R^2 for all countries were greatly reduced and some variables became insignificant. The growth and the price variables showed the correct signs and were significant at least at the .05 level; each appeared in 4 of 9 instances. The trade variable gave the correct sign and was significant at the .05 level in two cases. The interest rate ratio variable was insignificant in all cases. The results presented in Table IX are similar to those reported in Table VI in that both tables have the same number of significant variables for each country.

Modification of the Model

The presence of the relatively low values of the Durbin-Watson statistic in Table IX after the correction for serial correlation casts doubt on the static model presented in Equation (5). There is a question of whether the demand for and the supply of foreign exchange depend only on the prevailing price of the currency exchange. That is, do participants in the foreign exchange markets attribute significant weight on the past exchange rate movements when the rates

⁴See the critical values in footnote 3.

TABLE IX
RE-ESTIMATES EQUATION (5), CORRECTED FOR SERIAL CORRELATION

<u>Country</u>		<u>R²</u>	<u>F</u> <u>Value</u>	<u>D-W</u>
Belgium:	N = 59			
	R = .60 + .001 I + .0006 G - .02 P + .001 T (1.3) (.99) (.43) (.63) (1.44)	.06	.822	.82
Canada:	N = 71			
	R = 23.94 + .11 G - .02 I - .40 P - .009 T (7.42)** (2.52)* (1.6) (2.56)* (.57)	.23	4.87	1.23
France:	N = 59			
	R = -.82 + .10 G + .04 T + .07 P - .002 I (.13) (3.19)** (2.11)* (.38) (.21)	.18	3.01	.74
Germany:	N = 59			
	R = 25.45 - .74 P + .06 T + .06 G - .02 I (5.68)** (5.23)** (2.04)* (1.0) (.87)	.44	10.59	1.04
Italy:	N = 59			
	R = 3.84 - .07 P - .01 G + .003 T - .0003 I (7.53)** (2.16)* (1.0) (.61) (.09)	.12	1.91	1.24

TABLE IX (Continued)

<u>Country</u>		<u>R²</u>	<u>F</u> <u>Value</u>	<u>D-W</u>
Japan:	N = 59			
R =	2.23 + .09 G + .04 P + .009 T + .004 I	.12	1.84	1.46
	(1.93) (2.18)* (.51) (1.3) (.52)			
The Netherlands:	N = 59			
R =	10.83 + .23 G - .32 P + .0006 T + .004 I	.19	3.08	.64
	(1.2) (3.49)** (.96) (.02) (.24)			
Sweden:	N = 59			
R =	12.31 + .02 G - .34 P + .003 T + .001 I	.23	3.97	1.14
	(5.23)** (.86) (3.58)** (.30) (.24)			
The United Kingdom:	N = 59			
R =	41.53 - .13 P - .05 I + .23 G + .04 T	.06	.83	1.01
	(5.45)** (.37) (1.03) (1.24) (.54)			

The numbers in parentheses are t ratios; ** indicates significant at the .01 level;
 * indicates significant at the .05 level.

have been allowed to float? Expectations are formed in many ways (44); in this study we assume that the weight attached to the observed exchange rate in the last period is very high.

To describe expectations in terms of Equations (1) and (2), it is assumed that the demand and supply of foreign exchange depend on the current spot rate as well as on the rate in the previous period, that is, the demand function:

$$D_t = h(R_t, R_{t-1}, T_t, G_t, I_t, P_t)$$

and the supply function:

$$S_t = k(R_t, R_{t-1}, T_t, G_t, I_t, P_t).$$

The above equations are statistically unidentified. Solve for R_t in terms of other explanatory variables and express it in the reduced form:

$$R_t = g_0 + g_1 R_{t-1} + g_2 T_t + g_3 G_t + g_4 I_t + g_5 P_t + w_t \quad (6)$$

where $w_t = Lw_{t-1} + e_t$ with $|L| < 1$ and the e_t 's have the classical properties. If L (alpha) were known, transform equation (6) would obtain the best linear unbiased estimates (BLUE) of the coefficient g 's. In fact, the value of L is unknown, this study employs a search routine for a set of L values in the range from .1 to .9 to obtain a range of values for the sum of squares. Select the L value which gives the smallest sum of squares, then transform Equation (6) by multiplying through by L , with all variables lagged one period:

$$\begin{aligned} LR_{t-1} = & g_0^L + g_1^L R_{t-2} + g_2^L T_{t-1} + g_3^L G_{t-1} + g_4^L I_{t-1} + g_5^L P_{t-1} \\ & + Lw_{t-1} \end{aligned} \quad (7)$$

then (6) - (7):

$$\begin{aligned}
 R_t - LR_{t-1} = & g_0(1 - L) + g_1(R_{t-1} - LR_{t-2}) + g_2(T_t - LT_{t-1}) \\
 & + g_3(G_t - LG_{t-1}) + g_4(I_t - LI_{t-1}) \\
 & + g_5(P_t - LP_{t-1}) + e_t .
 \end{aligned} \tag{8}$$

The expected sign of the coefficient g_1 is to be positive and the signs of the other coefficients remain the same as those presented in Equation (5). Equation (8) indicates that a change in the exchange rate from its previous level is the linear function of a change in the past exchange rates, a change in the growth rate from its previous rate, a change in the relative price inflation rates, a change in the export-import ratio, and a change in the interest rate ratio. Equation (8) has a dynamic property since the lagged dependent variable is included in the model.

Table X summarizes the findings for each country. The table includes the estimations of coefficients of determination, values of coefficient g 's with the corresponding estimated t ratios in parentheses below, the h statistic,⁵ and the values of L . The results can be described as follows. For Germany, Italy, and the United Kingdom, their exchange

⁵The Durbin-Watson test was designed for the case when no lagged dependent variable is included in the equation. The h -test is applied when the lagged dependent variable is in the model and the sample size is large (not less than 30). The formula for the h -test is:

$$h = \rho \sqrt{\frac{n}{1 - nV'(r)}} , \quad \text{where } V'(r) \text{ is the estimate of the variance of } r, n \text{ is the sample size, and } \rho \text{ is derived from } 1 - \frac{(D-W)}{2}.$$

TABLE X
ESTIMATES THE VARIABLES IN EQUATION (8)

<u>Country</u>	<u>No. of Months</u>	<u>Constant</u>	$R_{t-1} - LR_{t-2}$	$G_t - LG_{t-1}$	$P_t - LP_{t-1}$	$T_t - LT_{t-1}$	$I_t - LI_{t-1}$	<u>R²</u>	<u>L</u>	<u>h-stat</u>
Belgium	57	.232 (.922)	.491 (4.33)**	.0004 (0.37)	-.014 (0.57)	.002 (2.56)*	.0006 (0.67)	.30	.9	.139
Canada	69	-18.944 (0.16)	-.188 (1.65)	.208 (0.94)	1.870 (1.55)	-.563 (2.55)*	-.129 (1.37)	.19	.1	-2.207
France	57	-13.955 (1.77)	.847 (13.66)**	.034 (2.04)*	.194 (1.49)	.036 (2.37)*	-.003 (0.52)	.85	.4	-.144
Germany	57	8.388 (1.60)	.825 (10.29)**	-.019 (0.41)	-.112 (1.38)	.049 (1.95)	-.018 (1.32)	.90	.4	.555
Italy		2.934 (4.11)**	.394 (3.43)**	-.008 (1.15)	-.039 (1.55)	.004 (0.89)	.001 (0.51)	.29	.8	-.224
Japan	57	5.284 (2.09)*	.864 (15.2)**	.055 (2.96)**	.017 (0.69)	.014 (1.84)	.006 (1.01)	.92	.1	.018
Netherlands	57	22.363 (2.53)*	.885 (15.1)**	.107 (2.79)**	-.469 (2.56)*	-.047 (2.28)*	-.007 (0.77)	.88	.5	.009
Sweden	57	10.627 (2.67)**	.755 (9.12)**	.003 (0.18)	-.161 (2.49)*	-.001 (0.16)	-.002 (0.50)	.81	.5	.421

TABLE X (Continued)

<u>Country</u>	<u>No. of Months</u>	<u>Constant</u>	$\frac{R_{t-1} - LR_{t-2}}$	$\frac{G_t - LG_{t-1}}$	$\frac{P_t - LP_{t-1}}$	$\frac{T_t - LT_{t-1}}$	$\frac{I_t - LI_{t-1}}$	<u>R²</u>	<u>L</u>	<u>h-stat</u>
United Kingdom	57	23.860 (1.49)	.681 (7.12)**	.157 (1.10)	-.025 (0.13)	.064 (1.10)	-.012 (0.33)	.59	.6	1.094

**Indicates significant at the .01 level.

*Indicates significant at the .05 level.

rates were determined by a change in their past exchange rates. This lagged dependent variable was significant at the .01 level in all cases. A change in the exchange rate of the Belgium franc was a response to a change in previous exchange rates and a change in the trade account. These two variables were significant at the .05 level and gave the correct signs. For France, the French franc fluctuations were determined by a change in her industrial production in addition to the export-import ratio and the performance of her past exchange rates. These variables were significant at the .05 level and yielded the correct signs. Next, a change in the economic growth rate and the performance of past exchange rates were significant and positively related with the fluctuations of the Japanese yen. For the Dutch guilder, a change in the past rates, the growth rate, the relative inflation rates, and the trade ratio were all significant at least at the .05 level; all the coefficients emerged with the expected signs except the trade variable, which exhibited the incorrect (negative) sign. The movements in the Swedish krona exchange rate were in response to a change in the past rates and a change in the relative inflation rates. Both were significant and yielded the correct signs. In the case of Canada, only the export-import ratio was significant at the .05 level but the sign of the coefficient was incorrect (negative). However, the h-test shows that serial correlation is significant (the critical value is 1.645). Therefore, the t value for the trade variable is biased. The

values of h-statistic in the last column indicate that there is no serial correlation in all equations except for Canada.

In summary, the lagged dependent variable was significant at the .01 level in eight of nine equations and gave the correct sign. The growth variable was significant in three instances, while the relative inflation variable was significant in two equations. The trade variable was significant at the .05 level in three equations (the case for Canada is excluded because of the presence of serial correlation) but gave the incorrect sign in the equation for the Netherlands. The findings presented in Table X seem to suggest that the dynamic model in Equation (8) provides an accurate description of the present floating exchange rate system. When the exchange rates have been allowed to fluctuate in response to the demand and supply of foreign exchange, exchange dealers may pay more attention to previous rates than when the exchange rates were pegged. Expectations of future rates are formed based on the movements in the past exchange rates.

CHAPTER V

THE BALANCE OF PAYMENTS AND AN EXCHANGE RATE

This chapter reviews, since the currency realignment in 1971, the development of the balance of payments of the countries included in this study. The results are analyzed in each case and correlated with the exchange rate changes. More specifically, this chapter studies the proposition that the floating exchange rate system has contributed to the balance of payments adjustment of each country concerned. We clarify first the significance of major sections included in the balance of payments, which will be used for this analysis. Since details vary from one country to another, this study focuses only on major sections as commonly used in country publications: specifically, the balance of merchandise trade, the balance of services including transfer payments, the balance of long-term capital movements, and the balance of short-term capital including errors and omissions. The second section explains the concept of the trade-weighted or effective exchange rate, which has been generally accepted as a close approximation of measuring the change in a country's exchange rate.

The Concept of the Balance of Payments and Its Components

The balance of payments is a record of all transactions which have taken place between residents of one country and residents of the rest of the world over a period of time. The balance of payments consists of a series of debit and credit entries. Any transaction that gives rise to a foreign claim on residents is recorded as a debit or a minus sign entry. Any transaction giving rise to a monetary claim by residents on foreigners is recorded as a credit or plus entry.

For the purpose of this study, the balance of payments will be divided into five sections.

The merchandise trade account records transactions arising out of imports and exports of traded goods. When merchandise exports are greater than imports, the result is a credit entry or a positive sign in the balance of trade account. When imports exceed exports, a debit entry or a negative sign appears in the trade balance.

The trade balance does not include receipts or payments resulting from services rendered. Service accounts, sometimes called invisible trade accounts, are made up of receipts or payments for transport services, insurance, travel, investment income, and other services as well as fees and royalties. Transfer payments comprise gifts, foreign aid, private remittances, charitable donations, all of which do

not generate quid pro quo. Service accounts together with transfer payments constitute the second section in the balance of payments.

The third section is the long-term capital account. It comprises the net acquisitions of long-term claims on foreigners by both the private and government sectors. Private long-term capital movements are broadly divided into direct investments abroad and portfolio investments with an original maturity of more than one year. The broad distinction between the two is that portfolio investments by residents do not confer control over the operation of the issuer of the debt instrument, whereas direct investments have voting control over the assets acquired or, in the case of foreign affiliates, operating controls. Other long-term capital transactions include government loans and securities issued abroad. Loans may be granted, for instance, from EEC Agricultural funds or from European Investment Banks. Capital accounts are reported net indicating only the balance of flows. A minus sign indicates outpayments exceed inpayments, while a positive sign indicates the opposite.

The sum of the current balances (the balance on goods, services, and transfer payments) and the balance on long-term capital is called the basic balance.¹ This balance is often considered as an indicator of underlying long-term trends of the payments position.

¹This classification is commonly used in textbooks of international trade and finance; see, for example, (71).

This basic balance was originally conceived as an indicator that dominated most transitory effects and served to illustrate basic or underlying economic trends. Presumably, it is these underlying trends that exert their influence upon real income, employment levels and upon policy goals so that the basic balance is perhaps the best indicator of what has been referred to as a nation's "international health". A basic balance of zero would show that the increase in the international net worth of a country was just equal to the long-term assets which it had acquired (24, p. 63).

The fourth section covers short-term financing including errors and omissions. The short-term capital account includes purchases and sales of financial assets with a maturity of less than one year. Thus, short-term capital involves the international flows of funds into bank deposits, trade accounts, commercial and government short-term papers, and other short-term securities. Errors and omissions covers a residual item that is not otherwise accounted for.

The sum of the basic balance and the balance on short-term flows including errors and omissions is described as "autonomous," "fundamental," "above the line" items because the transactions are responding to general economic or political factors.² Export and import trade is a result of relative prices among trading countries and the unequal distribution of natural resources in the world as well as a result of changes in tastes and preferences. Profit opportunities give

²The sum of these balances is also called the liquidity balance. However, some short-term items are placed below the line as a means of settlement or financing. Such items are those banks' net foreign position with foreigners, excluding trade credit received or extended.

rise to investment flows. Political instability would also motivate funds to be transferred out of the country.

The conceptual distinction between short- and long-term capital movements is based on the argument that the two types of transactions are motivated by different considerations. While the rationale may be valid, the statistical distinction is based entirely on the original maturity of the assets bought and sold. Thus, the short-term assets may change to long-term ones simply by rolling them over at maturity for new obligations. Conversely, long-term assets with maturity of more than one year may represent short-term movements of funds to be sold a few weeks or months after they were bought. In recent years, financial flows have increased tremendously and a satisfactory distinction between short- and long-term capital flows via the banks have become more and more difficult. Hence, the conceptual distinction cannot be captured by statistical methods.

The fifth section includes official reserves. It comprises gold, foreign exchange, IMF reserve positions, and Special Drawing Rights. This account records transactions undertaken by public authorities. In the system of fixed exchange rates government officials were obliged to maintain exchange rates within a narrow margin. The imbalances that developed in the basic balance as well as in the short-term capital account were settled or financed by changes in reserves.

In present floating, the choice between allowing exchange rates to vary in accordance with market pressure and the financing of imbalance, arises continuously rather than merely from time to time, as it did under fixed rates (28, 1975, p. 37).

On many occasions the government authorities encourage the non-bank and banking sectors to borrow abroad. Thus:

...if monetary authorities exert a direct influence on commercial banks' foreign position, or if they intervene in the forward exchange market, in such case, changes in banking or forward positions may assume the same function as changes in monetary authorities' foreign position and may become a proxy for changes in official reserves (70, p. 25).

This study thus examines the developments of financing the imbalance by analyzing the changes in official reserves and banks' external position.

The five sections making up the country's balance of payments can be summarized as shown in Table XI.

TABLE XI
EXCHANGE RATES AND THE
BALANCE OF PAYMENTS

1. Merchandise Trade:
Exports, f.o.b.
Imports, f.o.b.
2. Services and Transfer Payments
3. Long-term Capital
Basic Balance
4. Short-term Capital Including Errors and Omissions
Liquidity Balance
5. Balance of Payments (or Financing):
Reserves
Banks' Short-term External Position

Non-balance Items Affecting Payments:
Effective Exchange Rate
Dollar Exchange Rate
Change in the Rate (in percent)

In Table XI, short-term capital is the residual item, in addition to errors and omissions. The short-term account consists of transactions that are sensitive to changes in interest rates and trade credit terms, which are classified as non-monetary transactions (29). In the U.S. balance of payments, the non-monetary items are classified as non-liquid.³

Liquidity balance⁴ is obtained by adding the short-term, non-monetary transactions (or short-term non-liquid private capital in the U.S. balance of payments definition) to the basic balance.

The accounts omitted from the liquidity balance are shown "below" the line as financing items which comprise reserve changes and net changes in commercial banks' short-term position with foreigners. Therefore, when an imbalance

³Such capital flows are short-term liabilities net of short-term claims to private foreigners reported by non-banks. In the United States they are considered to be non-liquid and thus are placed above the line. The liquid claims and liabilities to foreigners reported by U.S. banks are considered to be liquid and are placed below the line. The original purpose of the distinction between liquid and non-liquid claims was to measure potential pressure on U.S. reserve assets. However, the practice of the distinction between liquid and non-liquid claims was to measure potential pressure on U.S. reserve assets. However, the practice of the distinction between the two types has been discontinued due to the subjective nature of this classification. Furthermore, since the present international monetary arrangement is under managed floating and the dollar is no longer convertible into assets such as gold and SDRs, the pressure on the dollar in the foreign exchange market is now reflected in the appreciation and depreciation of the dollar.

⁴It is called "overall balance" in the annual report published by the Bank for International Settlements (5).

develops, either one or both items below the line must accommodate the imbalance. Thus, the inclusion of banks' external position to changes in official reserves has two significances:

First, this balance...is an indicator of the impact of external transactions on domestic liquidity....Second, it is relevant whenever commercial banks' transactions are or may be subject to the control of the monetary authorities....the changes in net official reserves do not reveal the full exchange-market gap that had to be financed by monetary authorities and thus convey an incomplete measure of the pressure to which the national currency was exposed in the exchange-market (70, p. 28).

The Concept of the Trade-Weighted

Exchange Rate

The exchange rates measured both on a trade-weighted basis and at the dollar rate of the currency in the spot market are also presented in Table XI along with the balance of payments. A priori, payments imbalances should cause balancing movements in the exchange rates under the present floating exchange rate system. Temporary pressures from changes in international transactions should be absorbed by rate movements rather than reserve changes. In contrast, in a fixed rate regime, payments imbalances are financed by changes in reserves.

The concept of trade-weighted or effective exchange rate is "the change that would induce the same alteration in its trade balance expressed in the numeraire currency as that brought about by a given realignment of all exchange rates".

(2, p. 606). An index can be computed by comparing the actual exchange rate of the country with the trade-weighted average of the rates of its trading partners. The index of trade-weighted exchange rates, however, ignores capital movements which in the case of Switzerland may be larger than trade. Therefore, the market exchange rate of the currency against the dollar is needed to show the pressure of international capital movements on the currency of the country, even though the overall change or the effective rate may exhibit small or no change at all.

Because of their wide use and general acceptance, the series of exchange rates and the balance of payments published in International Financial Statistics (IMF) will be employed. Note that the short-term capital account published in IFS is further divided into deposit money banks and other short-term capital accounts, the latter is classified as the non-monetary sector and thus is placed "above the line," whereas the former is recorded "below the line" as a financing item. The grouping of various sections as presented in Table XI will be followed in the subsequent analysis to the extent to which exchange rate changes contributed to payments adjustment in each country. For the United States, the balance of payments will be recast to conform with the current presentation (69, June, 1976).

CHAPTER VI

A COUNTRY-BY-COUNTRY ANALYSIS OF EXCHANGE RATES, THE BALANCE OF PAYMENTS, AND RESERVE RELATIONSHIPS

In the country-by-country analysis, it starts with a brief description of the country's foreign sector in relation to its gross domestic product in order to measure the extent of the country's exposure to foreign business. Next, it surveys the recent trends of trade and capital accounts and the means of financing imbalances that developed prior to the currency realignment in 1971. Then the stage is set for the analysis of the impact of the exchange rate variations on payments adjustment. The criterion to be used in determining whether exchange rate movements have contributed to the balance of payments adjustment is the following: If the exchange rate variability consistently moves in the direction that helps balance the payments, skillful use of managed floating will be assumed. The movements of the basic balance indicate the direction of imbalance. However, if no consistent pattern is found, it will be concluded that the exchange rate variations did not serve as a tool of balance of payments adjustment. Reserve changes will not be used as an indicator

of payments imbalance because, as stated earlier, the imbalance may be partly shared by changes in commercial banks' short-term external position. However, a comparison will be made of actual reserve changes before and after the floating has been adopted. Advocates of fluctuating exchange rates claim that a floating exchange rate system would reduce the use of reserves.

To investigate the statistical relationship between the change in the basic balance and the exchange rate, a simple linear model is formulated:

$$B_t = k_1 + k_2 X_{t-1} + k_3 X_{t-2} + e_t \quad (9)$$

$k_2, k_3 < 0$, e_t is $N(0, \sigma_e^2)$

where B_t is the dollar amount in the basic balance at time t , X_t is the level of exchange rate expressed in terms of U.S. cents per unit of national currency, and e_t is a stochastic distribution. A rise in the rate, that is, the value of X increases means appreciation of the domestic currency; the basic balance will tend to fall. The expected signs of the coefficients k_2 and k_3 are negative. Note that if X is measured in terms of national currency, for example, DM 3 per U.S. \$1, a rise in X means depreciation of the German mark, so that the expected signs of the coefficients are positive. Equation (9) is established on the assumption that intervention in the foreign exchange market is confined to maintaining orderly market conditions as often claimed by government authorities. The transactions in the basic balance are also

affected by a wide variety of other factors, most of which can for present purposes be regarded as random shocks. The one and two period lag is introduced into the model because current flow of trade and payments is determined by previous orders and cannot respond in the short run to the current exchange rate. This model examines some specific items "above the line" as opposed to the strictly monetary approach which is looking at the monetary transaction items "below the line."

The channels through which the exchange rate affects the basic balance operate via the combination of relative price effect, absorption effect, real balance effect, and interest rate effect. The relative price effect or the price elasticities approach starts from partial equilibrium analysis. It focuses on the demand and supply of imports and exports of traded goods. The condition for which the balance of payments adjustment will be attained when the sum of the elasticities of demand for imports exceeds unity (the Marshall-Lerner stability condition). The absorption approach focuses on the relationship between the balance of payments and domestic income conditions. This approach supplements the price elasticities approach. When the currency is depreciated or appreciated, the changes will have an impact on relative prices and income. For a deficit (surplus) country, a decline (increase) in aggregate expenditures on goods including international traded goods relative to income must take place in order for devaluation (revaluation) to

adjust to the imbalance. The real balance effect or the monetary approach focuses on real level of cash balances people desire to hold. A devaluation implies, with a time lag, higher domestic prices and consequently lower real cash balances. In order to maintain the real balance previously attained, they must increase saving or reduce the expenditures relative to income. As a result, an excess supply of goods develops. The reverse phenomenon occurs in the country that appreciates its currency. The real cash balance increases brought about by lower domestic prices. To maintain the level of real balances, people must increase spending including that on imports relative to income. The outcome of the analysis is that there will be a reduction in the deficit for the devaluing country and a reduction in the surplus for the revaluing country.

The interest rate effect focuses on monetary policy regarding the money supply and interest rates. In the deficit country, the monetary authorities may restrict the supply of money and force interest rates upward in order to prevent price inflation resulting from an export boom. Hence, it reduces capital outflow. In the surplus country, on the other hand, the money supply and the interest rate level may fall in order to avoid recession due to imports increasing faster than exports as a consequence of the exchange rate adjustment. In this case, capital tends to flow out.

In the analysis of the short-run effects on the balance of payments and the exchange rate, there are various

approaches to such a problem. The classical approach concentrated on the purchasing power parity, which explains the effect of relative price inflation rates on the country's balance of payments in a two-country model; the consequence of higher price inflation at home than abroad is the deterioration in the balance of payments (the sum of the current and capital accounts) and thus contributes to the exchange rate depreciation. The monetary approach, on the other hand, explains the balance of payments adjustment through the loanable fund theory. One version of the monetary approach is to have an expected shift in assets (assuming only two assets in a small economy: domestic paper currency and foreign money) by way of expectation of the exchange rate depreciation. This causes an increase in lending abroad. The outflow of funds causes the exchange rate to fall. The depreciation causes the current account to move to a surplus (the excess of domestic output over domestic absorption). The surplus gradually increases the stock of foreign assets, which tends to raise the exchange rate and cause the current account surplus to diminish. The equilibrium condition is established when the exchange rate is at a higher level than the initial position and the balance on current account is zero. In short, the current account adjusts over time to the exchange rate which is determined by shifting in foreign assets through the expectations of the changes in the exchange rate (38). The approach used in this study assumes that the basic balance adjusts, with a time lag, to the

exchange rate which is determined by some economic factors other than a wealth effect.

Belgium

The economy of Belgium depends considerably on its foreign trade sector. It ranks second to the Netherlands among the industrialized countries in terms of foreign trade value as a percent of gross domestic product. In 1971, imports accounted for 41 percent of the GDP, while exports were 43 percent. Of total exports in 1968, 88 percent went to OECD countries,¹ 79 percent of which were supplied to the original six EEC nations.² On the import side, Belgium's imports have come mainly from OECD, and particularly from EEC countries. For instance, in 1968, 80 percent of imports was from OECD countries and 79 percent of which from the EEC. Belgium's foreign trade sector is closely linked with the EEC. France,

¹There are twenty-four member countries in OECD: Australia, Austria, Belgium, Canada, Denmark, Finland, France, West Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

²European Economic Community (EEC) or European Common Market was established in 1958 under the Treaty of Rome. The original six member countries were: France, West Germany, Italy, Belgium, Luxembourg, and the Netherlands. Since January, 1973, the official name has been changed to the European Community (EC) as it encompasses three additional nations. The new member countries are: the United Kingdom, Denmark, and Ireland. In addition, Greece and Turkey have joined the EEC but they have been granted associated status (see 39).

West Germany, the Netherlands, and more recently, the United Kingdom, all neighboring countries, are the major sources of Belgium trade flows. Main export products of Belgium are manufactured goods and, to a lesser extent, machinery and transport equipment, which accounted for 42 and 21 percent in 1973, respectively. Its imports also include manufactured goods, machinery, and transport equipment, each comprising approximately 25 percent of total imports in 1973, in addition to food, since the country is too small to feed its population.

The trade balance during the 1960s fluctuated considerably; it registered a deficit of \$94 million in 1966 to a surplus of \$800 million in 1970. On the average of the whole period the trade balance showed a small surplus. The service accounts were in balance during the first half of the 1960s, followed by a significant increase in earnings in the second half, whereas the balance on the transfer account recorded a small net inflow in the early 60s, then it showed a net outflow of some \$50 million in the late 60s. On balance, the current account was in equilibrium in the first half of the 60s, followed by a gradual increase in net inflow.

On the capital side, the net capital outflows tend to offset the current account surplus, but the amount is less than the surplus from trade. Therefore, a continuous surplus on the liquidity balance is reflected in the accumulation of official reserve assets.

Table XII shows Belgium's balance of payments from 1971 to 1975 along with the exchange rates measured both on the trade-weighted basis and the market rate vis-a-vis the dollar. Beginning of the floating in the first quarter of 1973, the market rate of the Belgium franc appreciated gradually until the third quarter when it reached a maximum. Then the rate began to depreciate in the next two quarters, and then appreciated further, with a slight decline in 1974: III until the end of the first quarter of 1975 before it started to slide down throughout the rest of 1975.

The trade-weighted exchange rate also shows a similar pattern with an exception in the third quarter of 1974, when the market rate exhibited a decline, whereas the trade-weighted rate showed an upward movement. The difference between the two series is that the market rate fluctuates with a wider amplitude. The quarter-to-quarter change of the average rate of the Belgium franc in the foreign exchange market has shown a wide margin (in eight out of twelve quarters the change was no less than 5 percent from the preceding quarter). The index of the trade-weighted exchange rate in 1975:IV showed a small depreciation (103.8) compared with 104.2 in 1973:I (May, 1970 = 100), whereas the level of the franc during the same period slightly appreciated above the 1973:I level.

The result of a simple linear regression of the relationship, corrected for autocorrelation, between quarterly changes in the dollar amount of the basic balance and the

TABLE XII

BELGIUM: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars; a minus sign indicates an outflow)

	1971	1972	1973				1974				1975			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	.77	1.03	.29	.34	.34	.26	.27	.01	.35	.25	.47	.18	.02	.01
Exports, f.o.b.	10.61	13.11	3.88	4.48	4.86	5.11	5.30	6.16	6.42	6.71	6.81	6.55	5.41	5.98
Imports, f.o.b.	-9.84	-12.08	-3.59	-4.14	-4.52	-4.86	-5.03	-6.15	-6.07	-6.46	-6.34	-6.37	-5.44	-5.99
2. Services and Transfer	.08	.08	.08	-.10	-.13	.07	.07	-.13	-.02	.12	.15	.04	.05	.26
3. Long-term Capital	-.31	-.56	-.22	-.08	-.12	.01	.03	.06	.01	-.29	-.04	-.32	.01	.01
Basic Balance	.54	.55	.15	.16	.09	.33	.37	-.06	.33	.08	.58	-.18	.04	.24
4. Short-term Capital														
Incl. Errors and Omissions	-.08	-.36	.21	-.31	.16	-.04	-.17	.17	.39	-.35	.13	.22	-.10	-.23
Liquidity Balance	.46	.19	.36	-.15	.25	.29	.20	.11	.72	-.27	.71	.04	-.06	.01
5. Balance of Payments (or Financing):														
Reserves	.39	.40	.68	.09	.18	-.13	-.37	-.09	.58	.25	.49	.12	-.03	-.03
Banks' External Position	.16	-.17	-.31	-.24	.08	.42	.57	.20	.14	-.52	.22	-.08	-.03	.04
Non-balance Items Affecting Payments:														
Effective Exchange Rate (May, 1970 = 100)	100.3	103.3	104.2	105.1	105.1	103.3	102.6	106.1	106.4	106.9	109.3	108.1	105.2	103.8
Dollar Exchange Rate* Quarterly Percentage Change	2.06	2.27	2.39	2.56	2.74	2.59	2.42	2.60	2.59	2.65	2.87	2.56	2.63	2.55
Change	-	10.40	5.15	7.28	7.02	-5.50	-6.48	8.00	-1.26	2.63	8.10	-.35	-8.15	-2.75

*Quarterly figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

level of exchange rates with one and two quarter lagged is as follows:

$$B_t = 836.7 - 561.3 X_{t-1} + 222.6 X_{t-2}$$

(0.73) (1.17) (0.54)

$$R^2 = .15, D-W = 1.955, L = .2, n = 8,$$

where B is the basic balance, X is the spot exchange rate, and the figures in parentheses are t ratios. The coefficients of the lagged variables are not statistically significant at the .05 level. The exchange rate explains only 15 percent of the total variations. Since the value of Durbin-Watson statistic lie between d_u and $4-d_u$, the residuals are not autocorrelated at the 95 percent confidence level.³

Figure 1 shows quarterly changes in the basic balance and the level of the Belgium franc exchange rate against the dollar. Quite clearly, the exchange rate variations have no significant impact on alleviating the imbalance.

Table XIII shows the quarterly changes in reserves expressed as a percent of the preceding quarter. The reserve changes, regardless of the sign, will be used to evaluate how extensive official reserves have been used before and after the floating began. On the quarter average changes shown in the last column, 1973 was the year that showed the change amounted to 8.7 percent, the highest percent change

³Since the number of observations is small (8 observations), the critical region of rejecting or accepting the null hypothesis in the Durbin-Watson test of autocorrelation is derived by extrapolation: $d_1 = d_1(15) - 7(.03) = .95 - .21 = .74$; $d_u(15) - 7(.0) = 1.54 - 0 = 1.54$ [see (36, pp. 365-369)].

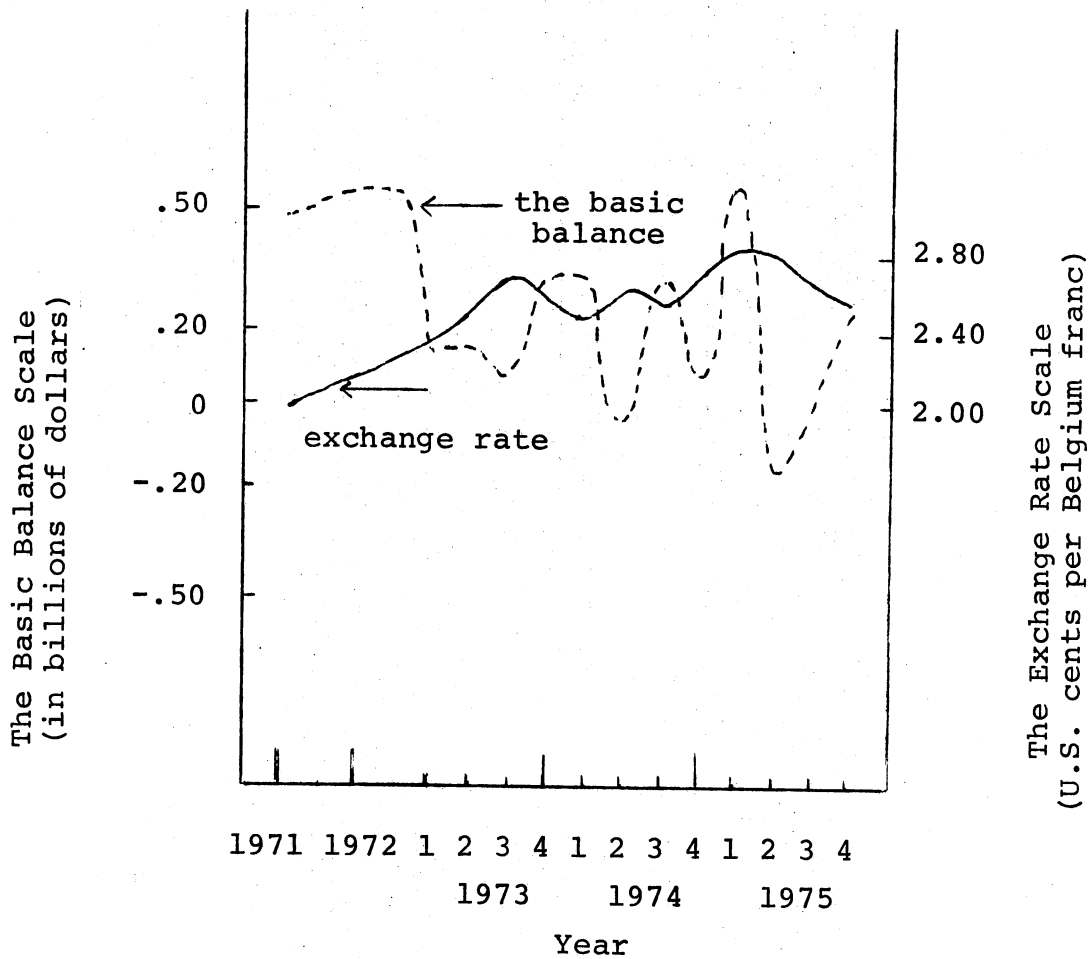


Figure 1. Belgium: The Market Rate of the Belgium Franc and the Change in the Basic Balance

TABLE XIII
 BELGIUM: QUARTER-TO-QUARTER CHANGE IN RESERVES,
 EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	3.89	5.19	1.58	9.74	5.10
1970	5.95	2.69	7.39	2.04	4.51
1971	7.94	4.00	7.13	1.43	5.13
1972	5.76	4.66	5.10	4.21	4.93
1973	25.74	3.93	3.07	2.15	8.72
1974	6.29	3.18	11.50	3.61	6.14
1975	10.25	1.60	3.77	.62	4.06
1976	7.94	2.44			

Source: IMF, International Financial Statistics,
 August, 1976 and earlier issues.

during the seven-year period from 1969 through 1975. The second highest reserve use was in 1974 when the oil crisis erupted. Then came 1975; the use was less in comparison with the preceding years. It can be concluded from the evidence of reserve changes that reserves have been used relatively less than during the fixed rate regime as the managed floating has assumed an increasing role.

To further investigate the relationship between the fluctuation of the Belgium franc and reserve changes, data of reserve changes point to the monetary policy of restraining excessive fluctuation of the franc due to the agreements made within EEC regarding the 4 1/2 percent fluctuation limits of the "snake."⁴ For instance, in the first quarter of 1973 the expectation that the Belgium franc would be revalued caused short-term capital to flow in, in the amount of \$210 million. As a result of intervention, reserve assets increased by \$680 million, partly offset by a reduction in the banks' short-term external position in the amount of

⁴In March, 1972, the original six members in the EEC nations agreed to limit the range of fluctuations between their currencies to only 4 1/2 percent. The arrangement is sometimes referred to as "snake in the tunnel," which means the currencies can deviate 2 1/4 percent from either side of their respective central rates established at the Smithsonian Conference in December, 1971. Thus, the band of 4 1/2 percent is the tunnel in which the currencies can fluctuate. However, the tunnel was disregarded in 1973, but the currencies of the EEC countries still are pegged to each other and floated jointly with the dollar, with a maximum spread of 2 1/4 percent between the dollar rates of the strongest and weakest currencies. (Sweden and Norway also adhere to the joint float, even though they are not the members of the EEC.) The arrangement is referred to "snake without a tunnel."

\$310 million. During the period of floating rates, official reserves moved in the same direction as the change in the level of the franc. Reserves increased when the franc appreciated and decreased when the franc was falling. Official interventions occurred in 8 out of 12 quarters from 1973:I through 1975:IV.

Since the floating, the surplus on the liquidity balance persisted in spite of the offsetting outflows of capital and the appreciation of the franc exchange rate. However, it is not surprising when the trading relationship of Belgium with the EEC is taken into account. In terms of the exchange rate, the Belgium franc is fixed in relation to the German mark, the Netherland guilder, and, to a lesser extent, the French franc because France left the "snake" in late January, 1974, rejoined in July, 1975, and left again in March, 1976. Hence, the Belgium economy is much influenced by the position of its trading partners.⁵ The strong balance of payments is essentially coming from the export sector because "export prices seem on the whole to have remained competitive" (46, 1973, p. 21).

Canada

Canada's foreign trade in relation to its GDP is in the neighborhood of 22 percent (47, 1975). Canada has a close

⁵Note that the smaller rate of inflation experienced by the German economy in 1976 makes it increasingly more difficult to retain the fixed rate with Germany without severe trade losses.

economic relationship with the United States. In 1973, Canadian exports to the United States accounted for 68 percent of the total, while imports were 71 percent. The second largest market share of the Canadian exports goes to the Common Market, and particularly the United Kingdom. Her exports to the Community in 1973 amounted to 12.5 percent of the total, of which 50 percent went to the U.K., while imports from the Community accounted for 10.6 percent of the total, 40.5 percent of which came from the United Kingdom. Japan is equally important for Canada in trade. In 1973, exports to Japan amounted to 7.1 percent of total exports, while imports accounted for 4.4 percent. Canada's major exports are machinery and transport equipment, crude materials excluding fuels, and basic manufactures, which accounted for 31, 23, and 18 percent, respectively in 1973. Main imports are machinery and transport equipment (50 percent), basic manufactures (15 percent), and miscellaneous manufactured goods (9 percent) (67, 1974).

Before the Canadian dollar was allowed to float in June, 1970, the merchandise trade account shows a consistent surplus. However, the balance on current account shows a consistent deficit resulting from the deficit on services and transfer payments (the balance on interest and dividends is by far the largest cause of outpayments). To finance the deficit on current account, foreign borrowings have been regularly sought by floating new issues of long-term bonds in

the international markets. Hence, the annual figures on the basic balance indicates net inflows for many years.

During the five-year period preceding the adoption of the floating exchange rate by the Canadian government, the overall balance showed a small surplus and thus contributed to an annual accumulation of international reserves.

Table XIV presents the balance of payments and the Canadian exchange rates from 1970:I through 1975:IV. On the whole, the basic balance shows a small surplus. However, when a deficit developed in the basic balance, in most cases the deficit was a result of unusually high net payments for interest and dividends and to a lesser extent a relative decline in long-term capital inflow. For instance, in the fourth quarter of 1971 as well as in the first quarters of 1972 and 1973, the net outflows for services and transfer payments were recorded in the amount of \$700, \$750, and \$890 million, respectively. In the same period, long-term investments in Canada were relatively low. The deficit on the basic balance reappeared again throughout 1974 and in the first half of 1975. The principal cause of the deficit was again the large outflows for services and transfer payments, which together exceeded \$1 billion in the first and fourth quarters of 1974 and also in the first quarter of 1975. For the second and third quarters of 1975, however, it was the net outflows on long-term capital that caused the deficit on the basic balance. In 1975:IV, despite a large payment on debt service (\$1.43 billion), the net inflow of long-term

TABLE XIV

CANADA: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1970-1975

(in billions of dollars; a minus sign indicates an outflow)

	1970				1971				1972			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	.65	.64	.75	1.02	.73	.61	.66	.56	.31	.48	.30	.76
Exports, f.o.b.	3.96	4.52	4.07	4.37	4.08	4.67	4.36	4.76	4.42	5.37	4.58	5.76
Imports, f.o.b.	-3.31	-3.88	-3.32	-3.35	-3.35	-4.06	-3.69	-4.20	-4.11	-4.88	-4.28	-5.00
2. Services and Transfer	-.65	-.52	-.33	-.40	-.60	-.48	-.35	-.70	-.75	-.55	-.32	-.71
3. Long-term Capital	.59	.00	.13	.03	.30	.03	.05	.10	.28	.59	.25	.53
Basic Balance	.59	.12	.55	.65	.33	.16	.36	-.04	-.16	.52	.23	.58
4. Short-term Capital Incl.												
Errors and Omissions	-.38	.47	-.14	-.14	-1.10	-.24	-.55	.35	-.24	-.72	-.38	-.28
Liquidity Balance	.21	.59	.41	.51	-.77	-.08	-.19	.31	-.40	-.20	-.15	.30
5. Balance of Payments (or Financing)												
Reserves	.53	.78	.22	.13	.17	.01	.14	.58	.18	.32	.00	-.17
Banks' External Position	-.22	-.17	.18	.33	-.69	-.10	-.32	-.28	-.46	-.51	-.14	.47
Non-balance Items Affecting Payments:												
Effective Exchange Rate (May, 1970 = 100)	--	--	--	--	--	--	--	--	100.7	102.2	102.7	102.1
Dollar Exchange Rate* Quarterly Percentage Change	93.21	96.70	98.13	98.98	99.20	97.71	99.10	99.78	100.31	101.49	101.69	100.44
	-	3.74	1.48	.87	.22	-1.50	1.42	.69	.53	1.18	.20	-1.23

TABLE XIV (Continued)

	1973				1974				1975			
	I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	.53	.73	.59	.87	.55	.49	.29	.19	-.56	-.20	-.13	.11
Exports, f.o.b.	5.68	6.61	5.82	7.33	7.12	8.39	8.00	8.87	7.54	8.86	7.80	8.91
Imports, f.o.b.	-5.15	-5.88	-5.23	-6.46	-6.57	-7.90	-7.71	-8.68	-8.10	-9.06	-7.93	-8.80
2. Services and Transfer	-.89	-.60	-.38	-.83	-1.09	-.66	-.35	-1.06	-1.35	-.87	-.62	-1.43
3. Long-term Capital	.18	.15	.01	.03	.46	-.01	-.04	.63	.43	.61	.79	1.83
Basic Balance	-.18	.28	.22	.07	-.08	-.18	-.10	-.25	-1.48	-.46	.04	.51
4. Short-term Capital Incl.												
Errors and Omissions	-.23	-.21	-.23	.16	.79	.54	.11	.59	1.08	-.05	-.38	-.11
Liquidity Balance	-.41	.07	-.01	.23	.71	.36	.01	.34	-.40	-.51	-.34	.40
5. Balance of Payments (or Financing):												
Reserves	-.08	-.11	-.32	.05	.33	.02	-.28	-.05	-.04	-.47	.02	.10
Banks' External Position	-.33	.18	.31	.18	.38	.34	.29	.39	-.36	-.04	-.36	.29
Non-balance Items Affecting Payments:												
Effective Exchange Rate (May, 1970 = 100)	104.0	102.1	100.8	102.2	105.9	106.3	105.4	104.7	102.2	99.7	100.4	102.2
Dollar Exchange Rate*	100.27	100.00	99.63	100.03	102.04	103.63	101.97	101.42	100.15	97.87	97.01	98.28
Quarterly Percentage Change	-.20	-.27	-.37	.40	2.01	1.56	1.60	-.54	-1.25	-2.28	-.88	.13

*Quarterly figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, August, 1976 and earlier issues.

capital more than offset the current account deficit, thus giving rise to a surplus on the basic balance.

The Canadian dollar has oscillated around the U.S. \$1 parity. The percent change of the Canadian dollar in the foreign exchange market was small (in 12 out of 23 quarters, the change was less than 1 percent, while in 8 quarters the change was between 1 and 2 percent). The highest level of the Canadian exchange rate attained was U.S. \$1.0363 in 1974:II, and the lowest level was U.S. \$.967 in 1970:II, the period in which the Canadian dollar was first allowed to float. The effective exchange rate of the Canadian dollar generally moved in line with the market rate against the U.S. dollar.

To substantiate the finding, data adjusted for autocorrelation were employed in the estimation of linear relationship between the quarterly change in the basic balance (B) and the level of exchange rates (X) from 1970:II through 1975:IV. The result is:

$$B_t = 8043.6 - 32.3 X_{t-1} - 66.1 X_{t-2}$$

$$(2.12) \quad (0.61) \quad (1.21)$$

$$R^2 = .19, D-W = 1.18, L = .2, n = .19.$$

The numbers in parentheses are t ratios. Although the signs are correct, the coefficients are not statistically significant at the .05 level. The explanatory power of the lagged exchange rates is low ($R^2 = .19$). Since the value of D-W lies between d_1 and d_u , the autocorrelation may or may not exist at the 95 percent confidence level.

Figure 2 illustrates the movements of the Canadian exchange rate and the change in the basic balance. It has become apparent that there is no consistent pattern of the Canadian dollar exchange rate to correct the deficit on the basic balance.

Table XV presents the quarterly change in reserves expressed in a percentage. The erratic changes in reserves were apparent in the first two years of the floating (1970:II through 1971:IV); after that reserve changes were relatively small until 1975, when the use of reserves began to increase moderately. In comparison with reserve use prior to the adoption of the floating in 1970:II, the quarter average figures during the floating were relatively larger than the period before the floating except in 1968. In the first quarter of 1968 the reserve loss was heavy due to speculative attack on the Canadian dollar as a result of the announcement of the new United States balance of payments program on January, 1968, which would affect capital flows to Canada. In addition, foreign direct investments in Canada dropped to almost zero in that quarter, but they rose sharply in the second quarter and remained high throughout 1968 (6, 1968, pp. 35-45).

Between 1971 and 1975 the balance on reserve account showed a small surplus. In 1970 a post-war record gain in reserves was registered resulting from a very high increase in exports of many agricultural products. Reserves continued to rise in 1971 and 1972, and then declined in 1973. In 1974

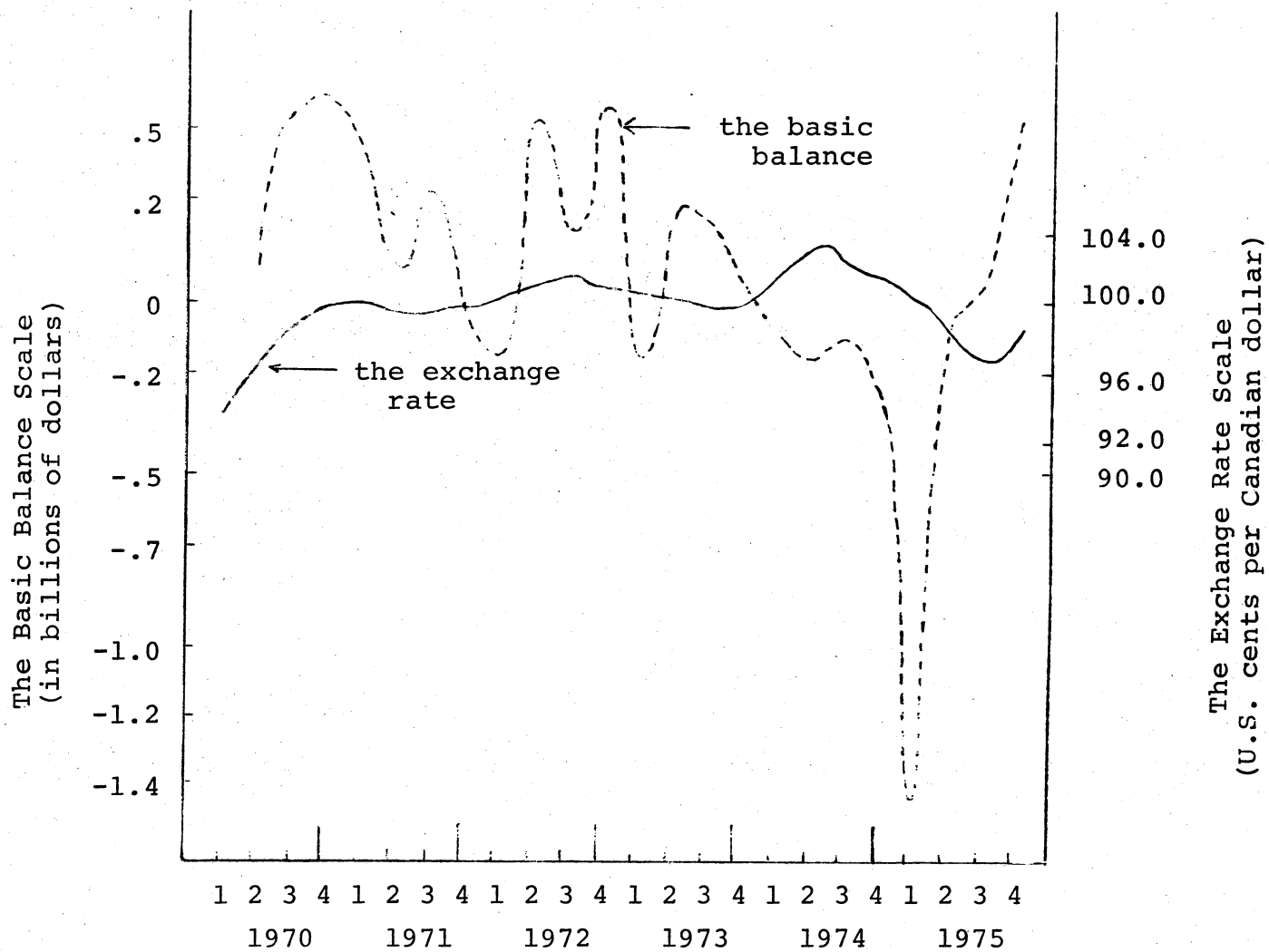


Figure 2. Canada: The Market Rate of the Canadian Dollar and the Change in the Basic Balance

TABLE XV
CANADA: QUARTER-TO-QUARTER CHANGE IN RESERVES,
EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1967	.52	1.82	1.89	1.04	1.32
1968	16.78	19.90	1.00	11.25	12.23
1969	1.15	1.66	.17	5.06	2.01
1970	15.84	20.43	5.08	2.77	11.03
1971	3.55	.15	2.89	14.20	5.20
1972	3.32	5.57	.05	2.75	2.92
1973	1.69	1.72	5.39	.83	2.41
1974	5.77	.36	5.13	.28	2.89
1975	.03	8.53	2.10	2.07	3.18
1976	9.41	2.71			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

reserves rose again in the first half and then fell off for the next four quarters before picking up in the second half of 1975.

Paul Wonnacott has made a remark on the experience of the floating exchange rate of the Canadian dollar during the 1950s that (73, pp. 177-178):

On the whole, the Canadian experience with a flexible exchange rate has been a happy one....Most striking, perhaps, has been the over-all strong position of the Canadian dollar in spite of current account deficit. This strength, plus the patently favourable position of both Canadian corporations and Canadian governments in gaining access to the American capital market, has given short shrift to any widespread doubts as to the ability of Canada to maintain a strong international currency.

The situation differed in the 1970s when all currencies were floating and Canada was no longer alone in adjusting its currency to its needs. In spite of these difficulties, such remarks can be equally applied to the experience during the 1970s since the Canadian dollar has exhibited small variations compared with other major currencies. In addition, during the same period, reserves have shown on the whole no significant change.

France

The dependence of the French economy on foreign trade is modest compared with other countries in Western Europe. Imports and exports accounted for 16.4 and 17.2 percent, respectively, of GDP in 1972 (48, 1976). Her trade relationship with the OECD nations is strong. In 1974, the value of

exports to OECD amounted to 75 percent of the total, 71 percent of which went to the EEC. The business with the EEC countries has been maintained rather stable since the organization was founded in 1958. France, however, is losing her export share in the Franc area.⁶ In 1965, the value of exports was 8 percent of the total, and it went down to 4 percent ten years later. On the import side, France also imports mostly from the OECD countries (68 percent of the total in 1974), and particularly from EEC. Her imports from the Franc area went down from 6 percent of the total in 1965 to 3 percent in 1974. Major items in foreign trade are basic manufactures, machinery and transport equipment, in addition to exportation of food as the third major category.

The trade balance of France shows a modest surplus from 1965 through 1968, then the balance turned to a deficit of around \$900 million due to strong import demand. In 1970 the trade surplus re-emerged, and the trend continued throughout the 1970s. However, the balance on the invisible trade account is overshadowed by transfer payments (both private and official) which show a substantial but rather stable net outflow of approximately \$1 billion annually, mainly due to immigrants' remittances (48). Hence, when a small surplus appeared in the trade sector, the large outflow of transfer payments tended to erase the gain from trade. As a deficit

⁶Countries included in the Franc area are: Algeria and the Sahara, Morocco, Tunisia, the thirteen nations of tropical Africa, and the Malagasy Republic.

developed, the net outpayments of immigrants' remittances tended to aggravate it. Thus, the current account exhibits a surplus when the export surplus is large, and a deficit when the trade balance shows a small surplus or a deficit.

The trend of long-term capital presents a net outflow due to medium and long-term export credits linked with the expansion in the export of capital goods. This movement could continue because of the time lag between orders and deliveries. The capital outflows became pronounced when the franc exchange rate was expected to drop, as occurred in 1968 and 1972 as well as in 1973.

All in all, the annual figures of the basic balance tend to move in line with the current account. Over the period from 1968 through 1972 the deficit in the balance of payments is mainly reflected in the changes in official reserves and partly financed by short-term capital inflows and changes in commercial banks' external position. Reserve losses were heavy in 1968 prior to the devaluation in 1969 and again in 1973.

Table XVI shows the balance of payments and the franc exchange rates from 1971 through 1975. The annual figures of the trade balance show a surplus from 1971 through 1973, then it turned to a deficit largely due to high payments for oil.⁷ The current account deficit was financed by heavy

⁷Oil imports on the average amounted to \$2.5 billion between 1970 and 1972, accounted for 10 percent of total imports, then the oil payments jumped to \$10.27 billion, or 19 percent of total imports (30, 1975).

TABLE XVI

FRANCE: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars, a minus sign indicates an outflow)

	1971	1972	1973				1974				1975			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	1.11	1.30	.12	.51	.14	.00	-1.13	-1.51	-.97	-.26	.26	1.21	.39	.04
Exports, f.o.b.	20.68	26.15	7.78	9.31	8.74	10.06	10.37	11.66	11.09	12.70	13.02	14.03	11.27	12.97
Imports, f.o.b.	-19.57	-24.85	-7.66	-8.79	-8.60	-10.06	-11.50	-13.17	-12.05	-12.96	-12.78	-12.82	-10.88	-12.94
2. Services and Transfer	-.58	-1.00	-.35	-.24	-.68	-.20	-.48	-.35	-.96	-.29	-.63	-.27	-.52	-.15
3. Long-term Capital	.01	-.65	-.33	-.24	-1.07	-.60	-.19	.20	.24	-.43	.17	-.26	-.96	-.19
Basic Balance	.54	-.35	-.56	.03	-1.61	-.80	-1.79	-1.66	-1.69	-.98	-.20	.68	-1.09	-.30
4. Short-term Capital														
Incl. Errors and Omissions	1.34	.64	.68	.40	.45	.59	1.27	.76	.87	.88	1.21	1.46	1.52	.55
Liquidity Balance	1.88	.29	.12	.43	-1.16	-.21	-.52	-.90	-.82	-.10	1.01	2.14	.43	.25
5. Balance of Payments (or Financing):														
Reserves	3.29	1.64	.62	-.09	-2.35	-.08	-.62	.01	.44	-.18	.61	1.27	.35	1.31
Banks' External Position	-1.41	-1.35	-.52	.52	1.19	-.13	.10	-.91	-1.26	.08	.39	.87	.09	-1.07
Non-balance Items Affecting Payments:														
Effective Exchange Rate (May, 1970 = 100)	98.4	101.7	103.7	107.4	108.1	106.0	99.0	96.0	100.1	101.9	106.1	111.5	109.8	109.8
Dollar Exchange Rate* Quarterly Percentage Change	18.15	19.82	20.86	22.58	23.89	22.69	20.26	20.51	20.90	21.53	23.35	24.50	22.95	22.45
	-	9.24	5.24	8.22	5.79	-5.21	-10.71	1.23	1.91	2.99	8.46	4.93	-6.33	-2.18

*Quarterly figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

inflows of short-term capital and by further increases in banks' external liabilities through borrowing abroad. The latter marks a change in the monetary policy towards tighter domestic credits (48, 1975). The turnaround in the trade balance occurred in the first three quarters of 1975 mainly as a result of the monetary policy which provided an incentive for firms to cut their purchases abroad by making it more difficult to finance stocks (30, 1976), in addition to limiting oil imports (oil payments went down to \$9.54 billion in 1975). The trend in the basic balance shows a continuous deficit throughout the 1970s, with an exception in 1971, the year in which exports registered a large surplus, assisted by a reduction in long-term capital outflow.

The French franc in the foreign exchange market shows wide fluctuations from quarter to quarter. The exchange rate of the franc against the dollar appreciated during the first three quarters of 1973, then it weakened in 1973:IV. France then decided to leave the Community "snake" in January, 1974 and let the franc float independently. The exchange rate of the franc went down another 10.7 percent in 1974:I, then picked up strength and continued to appreciate further for five quarters. In July, 1975, the French government rejoined the joint float arrangement; the franc depreciated in the second half of 1975 through the first quarter of 1976. The franc once again left the "snake" in March, 1976. The percent changes in the franc exchange rate on the quarterly basis show a wide amplitude. In 7 out of 12 quarters the

change was no less than 5 percent. The trade-weighted exchange rate of the franc has moved in line with the market rate. On the trade-weighted basis, the franc has appreciated 9.8 percent in 1975:IV from the base period in May, 1970.

To further investigate the relationship between the change in the basic balance (B) and the level of the franc exchange rates (X), a regression was run using quarterly data, adjusted for autocorrelation, for the period from 1973:I through 1975:IV, the result is:

$$B_t = 6768.9 + 237.4 X_{t-1} + 53.0 X_{t-2}$$

$$(2.08) \quad (1.30) \quad (0.35)$$

$$R^2 = .28, D-W = 2.63, L = .1, n = 8.$$

The t ratios are in parentheses. The coefficients are not statistically significant at the 95 percent confidence level, and the signs are opposite of those expected from a theoretical standpoint. The lagged exchange rates explain only 28 percent of the total variations. The value of D-W indicates the absence of autocorrelation.

Figure 3 depicts the movements of the franc exchange rate and the change in the basic balance. The evidence so far shows no balancing impact of the exchange rate changes on the long-term trend in the basic balance.

Table XVII shows quarter-to-quarter change in reserves expressed as a percent of the previous quarter. It clearly shows that reserves have been used extensively during the float, contrary to the advocates of greater exchange rate flexibility. Note that in 1974 when France left the "snake" in January and the franc floated independently, the reserves

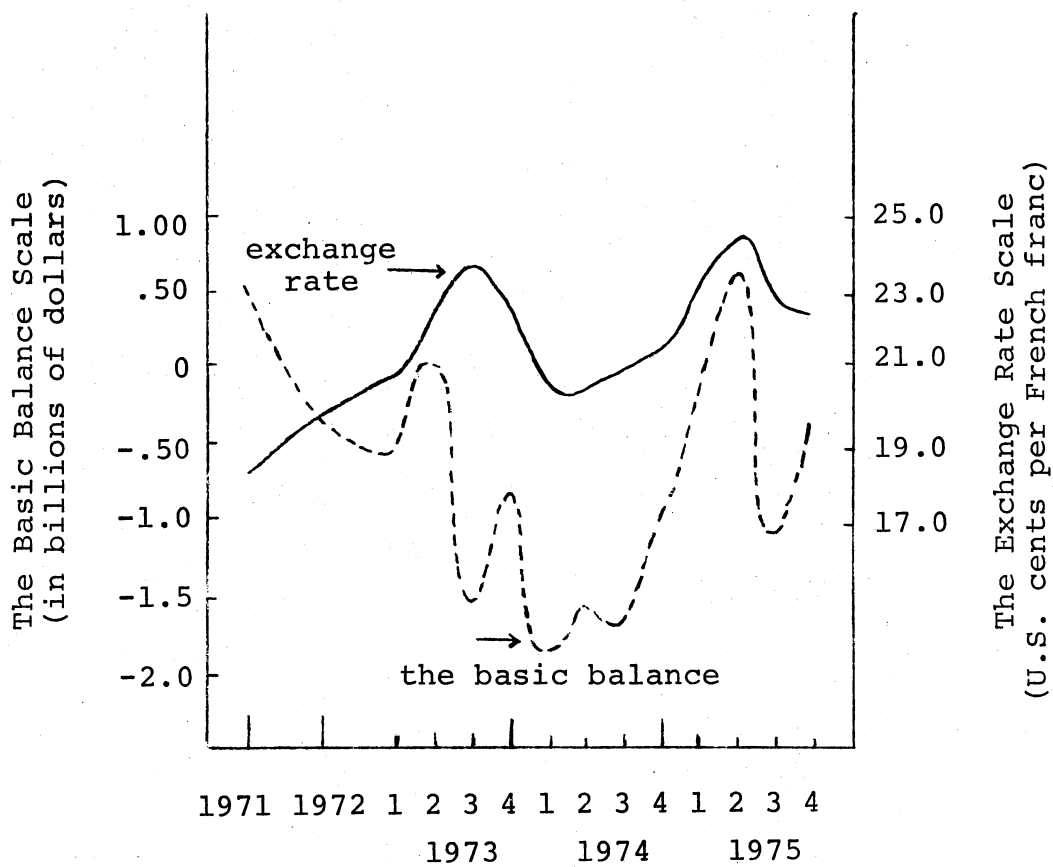


Figure 3. France: The Market Rate of the French Franc and the Change in the Basic Balance

TABLE XVII

FRANCE: QUARTER-TO-QUARTER CHANGE IN RESERVES,
EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	5.09	9.43	10.94	4.32	7.45
1970	7.64	7.78	6.66	4.58	6.67
1971	10.69	3.01	29.27	12.90	13.97
1972	2.62	10.97	6.61	.04	5.06
1973	11.65	3.67	3.18	24.00	10.63
1974	4.73	.52	4.29	3.92	3.37
1975	5.91	12.18	1.24	18.28	9.40
1976	11.58	13.75			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

used, on the average, were relatively lower than the preceding years. Banks' short-term liabilities to foreigners in 1974, on the other hand, showed a huge increase in the second and the third quarters as a result of the monetary policy that restrained credits. Furthermore, the French government abandoned a two-tier system as the franc floated independently (during 1972-73, when a two-tier system was implemented, the French retained the old fixed exchange rate to the dollar for commercial transactions including travel, and permitted the franc to float for capital transfer). Overall, the use of reserves has been extensive in 1973 and 1975, but not in 1974, due primarily to the policy of adhering to the Community "joint float." In comparison with the period under the fixed exchange rates, the reserves have not shown a decline in transactions.

West Germany

The foreign trade sector of Germany is quite large. In absolute terms, the dollar value of exports and imports is the second largest in world trade after the United States. In relation to its GDP, the export trade sector accounted for about 25 percent, with imports somewhat smaller. Germany has also a close economic relationship with the OECD nations. Trade with these countries accounted for two-thirds of total trade flows. More importantly, about one-half of Germany's trade is with EEC. On a bilateral basis, the trade position, measured as the excess of exports of Germany with its major

trading partners, namely, Belgium, France, Switzerland, the United Kingdom, has been strong. However, trade with Italy, the Netherlands, and the United States gives different trends. With Italy, the surplus trend was maintained during the first half of the 1960s, then it swung to a deficit in the second half and continued until 1972 and started to emerge with a surplus afterwards. Germany's trend in its trade with the Netherlands shows a similar pattern; it differs from the Italian case in the date of the turning point from a surplus to a deficit which occurred in 1970 and continues into the 1970s. Germany's trade position with the United States moved from a weak to a strong position. The Germans imported more merchandise than they exported to the United States throughout the 1960s. A reversal began in 1970, and Germany maintained a surplus but reduced it sharply beginning in 1974.

The balance on services and transfer payments shows increasing outflows. Service payments together with transfer payments show net outpayments of \$3 billion annually in the 1960s and tend to increase further in the 1970s. Despite the deficit on the service account, the current account yielded a substantial surplus before it started to decline in the early 70s.

On the capital side, long-term capital inflows were relatively larger than the outflows in the mid-1960s, and the turnaround began in 1967 as a result of the decline in private foreign investments in Germany coupled with large

outflows of portfolio investment abroad as well as trade credits. The outflow continued for three years, when it reached its peak in 1969, and the surplus reappeared through early 1970.

The overall trend of the basic balance, the sum of the current and long-term capital balances, was in equilibrium during the 1960s period.

Table XVIII presents the German balance of payments and the movements of the Deutsche mark exchange rate from 1971 through 1975. The surplus on the trade account continues from the 1960s. The strong position of the German trade reached its peak in 1974 and started to decline slightly in 1975. The outflow on the service account and particularly foreign travel shows an upward trend, which suggests that price elasticity with respect to foreign travel is higher than trade (5, pp. 103-104). The current account, however, remains strong.

The tendency of long-term capital movements to offset the current account surplus began in 1974 and 1975, after they helped to strengthen the German trade position in the early 1970s. The expansion of the net outflow of long-term funds was mainly the increase in German investment abroad through commercial banks' long-term loans to foreigners. In addition, "the diminished foreign interest in the Federal Republic was a reflection not only of the recession, but also of higher relative production costs there as a result of the appreciation of the Deutsche Mark" (5, 1976, p. 66).

TABLE XVIII

WEST GERMANY: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars; a minus sign indicates an outflow)

	1971	1972	1973				1974				1975			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	6.63	8.17	2.59	3.51	4.80	4.32	5.41	5.03	5.00	6.51	5.10	4.26	3.74	4.02
Exports, f.o.b.	39.10	46.12	13.89	16.05	18.47	19.58	20.45	23.35	22.61	24.77	23.15	24.22	21.50	23.68
Imports, f.o.b.	-32.47	-37.95	-11.30	-12.54	-13.68	-15.26	-15.04	-18.32	-17.61	-18.26	-18.05	-19.95	-17.76	-19.66
2. Services and Transfer	-6.31	-7.13	-2.03	-2.47	-3.97	-2.40	-2.62	-2.80	-4.13	-2.63	-2.90	-3.40	-4.15	-2.83
3. Long-term Capital	1.89	4.61	1.09	1.74	1.44	.66	-.70	-.20	-.81	-1.19	-1.42	-2.24	-2.08	-1.06
Basic Balance	2.21	5.65	1.65	2.78	2.27	2.58	2.71	2.03	.05	2.69	.78	-1.38	-2.49	.13
4. Short-term Capital														
Incl. Errors and Omissions	1.95	-.64	3.09	.43	.92	-2.06	-2.70	-.07	-1.15	-.42	1.70	1.44	1.56	-1.48
Liquidity Balance	4.15	5.01	4.74	2.21	3.19	.52	.01	1.96	-1.09	2.27	2.48	.06	-.93	-1.35
5. Balance of Payments (or Financing)														
Reserves	4.96	5.03	6.59	1.08	3.49	-1.75	-.12	1.35	-2.45	.65	2.14	-1.67	-1.06	-.22
Banks' External Position	.59	-.13	-1.84	1.12	-.30	2.27	.13	.61	1.35	1.62	.33	1.74	.14	-1.14
Non-balance Items Affecting Payments														
Effective Exchange Rate (May, 1970 = 100)	103.6	107.1	109.7	115.9	127.9	123.7	122.2	128.5	124.1	127.3	131.4	129.4	124.9	124.5
Dollar Exchange Rate* Quarterly Percentage Change	28.72	31.36	33.21	36.55	41.78	39.23	36.60	39.95	38.30	39.65	42.78	42.47	39.17	38.51
Change	-	9.17	5.90	10.05	14.33	-6.11	-6.70	9.15	-4.12	3.52	7.87	-.71	-7.76	-1.70

*Quarterly figures are obtained from monthly average figures.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

The basic balance also is strong from 1971 through 1975:I, then it shows a deficit in the second and third quarters before it came to a small surplus again in the last quarter of 1975. The deficit in the basic balance in 1975, the first time since the second quarter of 1970, was primarily the result of both the decline in long-term capital inflow and the increase in net outflow.

Table XVIII also clearly shows the change in the quarter average of the exchange rates of the D-mark as a percent of the previous quarter. It exhibits erratic movements from quarter to quarter, except in the second quarter of 1975, which shows the depreciation was less than one percent. The D-mark was revalued twice in 1973, one in March and the second one in June, then the mark continued to appreciate further, with a decline in the last quarter of 1973 and in the first quarter of 1974. The D-mark reached its peak in 1975:I; at that level the quarter average exchange rate was U.S. 42.775 cents per one DM, an increase of 60 percent over its annual average rate in 1970. On the trade-weighted basis, however, the DM exchange rate appreciated by 31 percent from its base rate in May, 1970. The D-mark then started to weaken in the second half of 1975.

To further investigate the impact of the D-mark exchange rate on the change in the basic balance, quarterly data, corrected for autocorrelation, of the basic balance were regressed on the D-mark exchange rate, with one and two period lagged, the result is:

$$B_t = 4034.9 + 74.0 X_{t-1} - 148.3 X_{t-2}$$

$$(0.61) \quad (0.59) \quad (0.99)$$

$$R^2 = .14, D-W = 1.64, L = .2, n = 9.$$

The t ratios are in parentheses. All the coefficients are not statistically significant at the .05 level. The explanatory power of the lagged variables is low ($R^2 = .14$). The value of D-W indicates the absence of autocorrelation (the critical values of D-W are $d_l = .77$ and $d_u = 1.54$).

Figure 4 depicts the movements of the D-mark exchange rate and the change in the basic balance. The evidence thus far does not lend support to the exchange rate impact on the basic balance, especially the trade sector. On the contrary, despite rather erratic and pronounced fluctuations in the exchange rate of the D-mark, exports expanded rapidly during the first two years of the float.

Various factors have been suggested to explain the phenomenal rise in exports: the rapid acceleration of world trade, the coincidence of excessive boom conditions in Germany's main foreign markets and competing countries, higher rates of inflation abroad, favorable German commodity and geographical export structure, bilateral trade agreements and, last but not least, expectations of further DM revaluations (49, 1974, p. 25).

Furthermore, German business men are extremely export conscious and have carefully nursed their markets, and they are continuously adapting their production to changes in demand. It thus seems quite possible that this strong export orientation is playing an increasingly important role in strengthening the competitive position of German industry (22, p. 32).

In evaluating the impact of the D-mark exchange rate, the OECD Economic Survey of Germany comments (49, 1976, pp.

12-13):

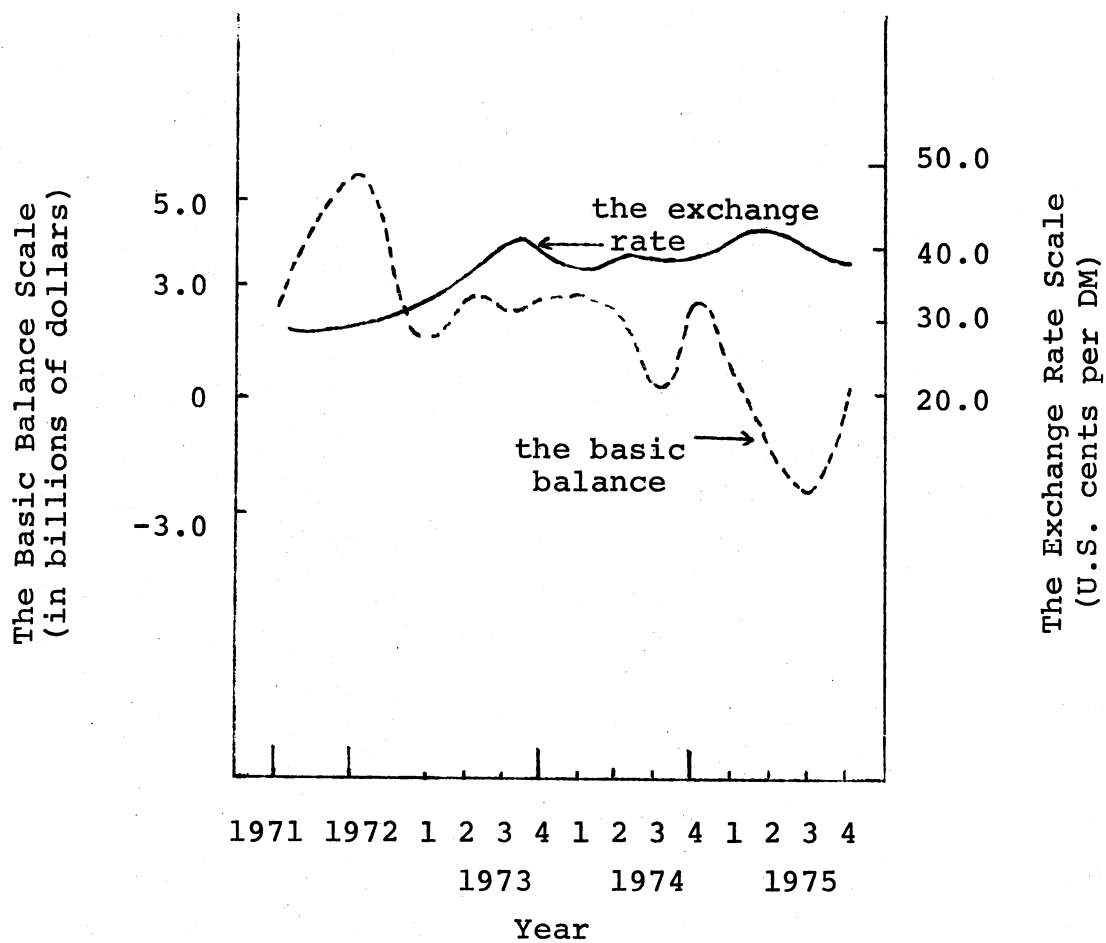


Figure 4. West Germany: The Market Rate of the Deutsche Mark and the Change in the Basic Balance

The impact of revaluation on Germany's external competitive position is difficult to quantify. Up to 1973, there is little doubt that the major effect was to raise export prices relative to those of important trading partners, but with buoyant world demand and easier supply conditions in Germany than in other industrialized countries, the impact of export volume was rather small and the net effect therefore "perverse." Since 1974 with inflation running well below the OECD average, the price gap began to close again. However, much of this appears to have been at the expense of profit margins, as labor costs continued to rise relative to those of trading partners, whereas relative export unit values were on the whole falling.

Private short-term capital movements tend to move generally in line with the changes in the exchange rate. The inflow of short-term funds occurred when the DM was rising and the outflow appeared as the DM was falling. Therefore, the liquidity balance is most of the time influenced by short-term capital movements. On the annual basis, the liquidity balance still shows an overall surplus throughout the seventies.

Reserve changes as presented in Table XIX clearly show a decline in use in 1974 and 1975 compared with earlier years. The erratic movements in reserves were apparent in 1969 as the D-mark was allowed to float temporarily in October and was revalued later in the month. In 1970 the unrest in the foreign exchange markets precipitated the temporary float of the D-mark and the Netherlands' guilder in May, 1971 before the D-mark was revalued again in December. Since the second quarter of 1973, the beginning of generalized floating, reserves have been used relatively

TABLE XIX
GERMANY: QUARTER-TO-QUARTER CHANGE IN RESERVES,
EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	17.52	23.80	19.89	41.46	25.67
1970	3.31	19.70	28.19	20.43	17.91
1971	16.11	5.64	1.52	10.08	8.34
1972	7.34	14.55	6.97	3.07	7.98
1973	35.90	.22	9.30	5.90	12.84
1974	.89	4.11	4.92	.44	2.59
1975	6.16	5.07	4.64	.31	4.04
1976	12.12	4.22			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

less than before the international monetary arrangement with fixed exchange rates.

Reserve changes are in line with the movements of the DM exchange rate. In all twelve quarters from 1973:I through 1975:IV reserve increases were accompanied by upward movements in the exchange rate and reserve decreases were followed by the falling of the exchange rate. Despite the massive intervention in the foreign exchange markets, the variations of reserve assets have been relatively less than reserves used under the fixed exchange rate system.

Italy

In the Sixties the foreign trade sector of the Italian economy accounted for 20 percent of GDP and this share rose to 25 percent in the Seventies. In the first half of the 1960s, Italy experienced a deficit in the trade account; however, the reverse trend occurred in the second half. Her main trading partners are the neighbor countries on the European continent, and particularly the countries in the Common Market. The major export items are engineering products, chemicals, textile materials and products, which accounted for 27, 14, and 12 percent, respectively, of total exports in 1968. Main imports comprise, from high to low order, food, engineering products, and crude oil, which together accounted for one-half of all imports in 1968. In 1974, as a consequence of higher oil prices, crude oil imports accounted for 24 percent, the highest import share.

During 1961-1972 the share of exports of goods and services in GNP at 1963 prices increased at an average annual rate of 1.1 percent, the share of imports at a rate of 0.9 percent (50, 1975).

The net inflow on the service account helped to strengthen the balance in the 1960s. The positive net balance on foreign travel and the inflow of funds from workers' earnings abroad which taken as a part of services rendered, both amounted to an annual average rate of \$1.5 billion in the second half of the Sixties. Thus, the current balance registered from a small surplus of \$320 million in 1964 to \$2.34 billion in 1969, then the surplus was sharply reduced in the early Seventies.

On the capital side, net long-term direct investment in Italy during the second half of the 1960s showed a small inflow. A major capital outflow which also counts as part of long-term capital investments is remittances by foreign banks of Italian banknotes. These transactions tend to wash out the surplus on current account. In 1964 the outflow of Italian banknotes registered \$577 million, then it rose to \$2.25 billion in 1969. In all, long-term capital showed an offsetting tendency to the current account surplus.

A wide margin was maintained between the current and long-term capital accounts in the first half of the 1960s, so that the basic balance recorded a substantial surplus. The margin then was reduced sharply in 1967-68 due to a

marked increase in the outflow of banknotes.⁸ In 1969, the basic balance recorded a deficit as a result of a huge outflow of banknotes. The basic balance in 1970 showed a marked contrast compared with 1969; there was a sharp reduction in the banknotes outflow, the reversal of a deficit to a surplus in the trade account began in the mid-1970s.

Italy's balance of payments along with the movements of the lira exchange rate are presented in Table XX. In 1971 and in 1972 the annual figures of the trade balance showed a continuation of the trade surplus from the late 1960s. The reverse trend occurred in the first quarter of 1973, and the deficit continued. The decline in exports continued in 1973 due mainly to the strikes which took place at the beginning of the year. To reduce the uncertainty caused by fluctuations of the lira, a two-tier exchange market was introduced in January, 1973 (50, 1975). In 1974 the increase in the deficit on the trade balance was recorded at \$8.5 billion, compared with \$3.97 billion a year before. The large deficit was mainly the result of high payments for oil. In March, the Italian government decided to abolish the two-tier system since it was unable to keep the two markets separate, that is, a possible profit can be made when the gap between the official exchange rate and the market rate

⁸The Italian balance of payments is heavily influenced by the domestic political situation. When uncertainty rises at home, domestic capital formation no longer leads to new economic activities, but it is exchanged into banknotes which are sold abroad to take Italian capital out of the potential control of future government.

TABLE XX

ITALY: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars; a minus sign indicates an outflow)

	1971	1972	1973				1974				1975			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	.58	.82	-.78	-1.06	-.84	-1.29	-2.30	-2.52	-2.13	-1.53	-.36	-.11	.10	-.77
Exports, f.o.b.	14.89	18.44	4.15	5.33	6.00	6.58	6.17	7.17	8.07	8.40	7.97	8.53	8.60	9.26
Imports, f.o.b.	-14.31	-17.62	-4.93	-6.39	-6.83	-7.87	-8.47	-9.69	-10.20	-9.92	-8.33	-8.64	-8.50	-10.03
2. Services and Transfer	1.46	1.45	.08	.32	.82	.23	-.20	.08	.71	.06	-.10	.25	.76	-.31
3. Long-term Capital	.78	.31	-.32	.37	2.18	1.77	.73	1.15	.50	.86	.57	.16	-.18	.14
Basic Balance	2.82	2.58	-1.02	-.37	2.16	.71	-1.77	-1.29	-.92	-.61	.11	.30	.68	-.94
4. Short-term Capital														
Incl. Errors and														
Omissions	-1.57	-3.02	.19	-.27	-.97	-.68	-.17	-1.23	1.19	-.60	-.29	-.61	-.94	-.34
Liquidity Balance	1.25	-.44	-.83	-.64	1.19	.03	-1.94	-2.52	.27	-1.21	-.18	-.31	-.26	-1.28
5. Balance of Payments														
(or Financing)														
Reserves	-1.06	-.71	-.59	-.23	.58	.04	-1.50	-1.34	-.51	-1.28	-.11	.06	-1.40	-1.08
Banks' External														
Position	-.17	.44	-.23	-.41	.61	-.01	-.44	-1.18	.79	.07	-.07	-.36	1.14	-.19
Non-balance Items Affecting														
Payments:														
Effective Exchange Rate														
(May, 1970 = 100)	98.80	98.50	95.50	88.80	86.70	87.50	83.60	81.40	80.80	78.20	77.70	78.40	77.80	77.10
Dollar Exchange Rate*	.1617	.1713	.1731	.1690	.1741	.1700	.1549	.1566	.1530	.1507	.1568	.1591	.1504	.1471
Quarterly Percentage														
Change	-	5.56	1.17	-2.31	2.96	-2.30	-8.82	1.29	-2.55	-1.31	3.97	1.27	-5.66	-2.00

*Quarterly figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

is becoming large. However, an import deposit scheme was introduced in May, 1974 to curb the deficit on the trade account. Importers were required to deposit 50 percent of the imports value in a non-interest-bearing account with the Bank of Italy for a period of 180 days. The depreciation of the lira has also induced substitution of domestic goods for imported products (50, 1975, pp. 32-33). In effect, imports were down substantially in 1975 compared with one year earlier. Thus, the size of the deficit on the current account was drastically reduced. Tourist spending in Italy coupled with remittances of workers' earnings abroad have helped to reduce the trade deficit. The net inflow in the service account recorded \$1.5 billion annually between 1971 and 1972, the highest ever; then it gradually declined. In all, the current account was in surplus between 1971 and 1972, then it swung to a deficit; in 1975 the account was in balance.

Capital movements exhibit different patterns. In the 1970s the annual net figures of long-term capital showed net inflow due largely to heavy borrowing by state companies (50). Therefore, the deficit on current account was mostly financed by borrowing abroad. Short-term capital, including errors and omissions showed a large outflow in 1972, mainly because the speculative attack on the lira caused by the floating of the British pound in June, 1972. In July, 1973, a compulsory advance deposit of 50 percent in a non-interest-bearing account was introduced for residents buying foreign

securities. However, such restrictions were abolished in March, 1975. Consequently, capital outflows resumed.

The lira exchange rate shows a downward trend. When the lira was allowed to float in February, 1973 the exchange rate floated up in the first quarter, then it weakened in the second quarter before it picked up strength in the next quarter. The lira came under attack and slid downward for two quarters before it started to strengthen in 1974:II. However, the rate was under renewed pressure in the next quarter and fell for six months. In 1975 the lira was strong, and appreciated in the first half, but fell back again in the second half. Despite the up-and-down movements of the lira in the foreign exchange markets, the percent changes of the rate from quarter to quarter were relatively small compared with the currencies in the "joint float." In 9 out of 12 quarters, the percentage changes were between 1 and 3 percent. The trade-weighted exchange rate of the lira did not fluctuate as wide as the market rate. Instead, it exhibited a continued downward trend. In the fourth quarter of 1975 the lira exchange rate against the dollar was at the lowest level; it depreciated by 7 percent from the 1970 annual rate, whereas the trade-weighted rate showed a 23 percent decline from the base rate in May, 1970.

Reserve losses were large in 1974, amounting to \$4.6 billion, compared with the loss of only \$200 million one year earlier. The loss was a result of difficulty in borrowing in the euro-market (5, 1975, pp. 92-93). In 1975

reserve losses were relatively smaller than in 1974, but still substantial (\$2.4 billion), due partly to repayment on previous loans and partly to the termination of the import deposit scheme.

To further estimate the relationship between the basic balance (B) and the level of exchange rates (X), this study employs a regression technique by regressing the change in the basic balance on the level of lira exchange rate with one and two quarter lagged, the result is:

$$B_t = -2658.4 + 1107.5 X_{t-1} - 955.0 X_{t-2}$$

(0.39) (2.02) (1.64)

$$R^2 = .35, D-W = 2.063, L = .1, n = 8.$$

The t ratios are in parentheses. Like the previous estimates, all the coefficients are not statistically significant at the 95 percent confidence level. The lagged independent variables explained 35 percent of the total variations. The value of D-W statistic indicates the absence of autocorrelation.

Figure 5 depicts the movements of the lira exchange rate and the change in the basic balance. It is apparent that the depreciation of the lira has not fully corrected the imbalance.

Turning to examine the fluctuations of reserve assets, Table XXI presents the quarter-to-quarter change in reserves as a percent of the previous level. Based on the quarterly average figures, reserve changes prior to the generalized floating in March, 1973 were relatively less than during the

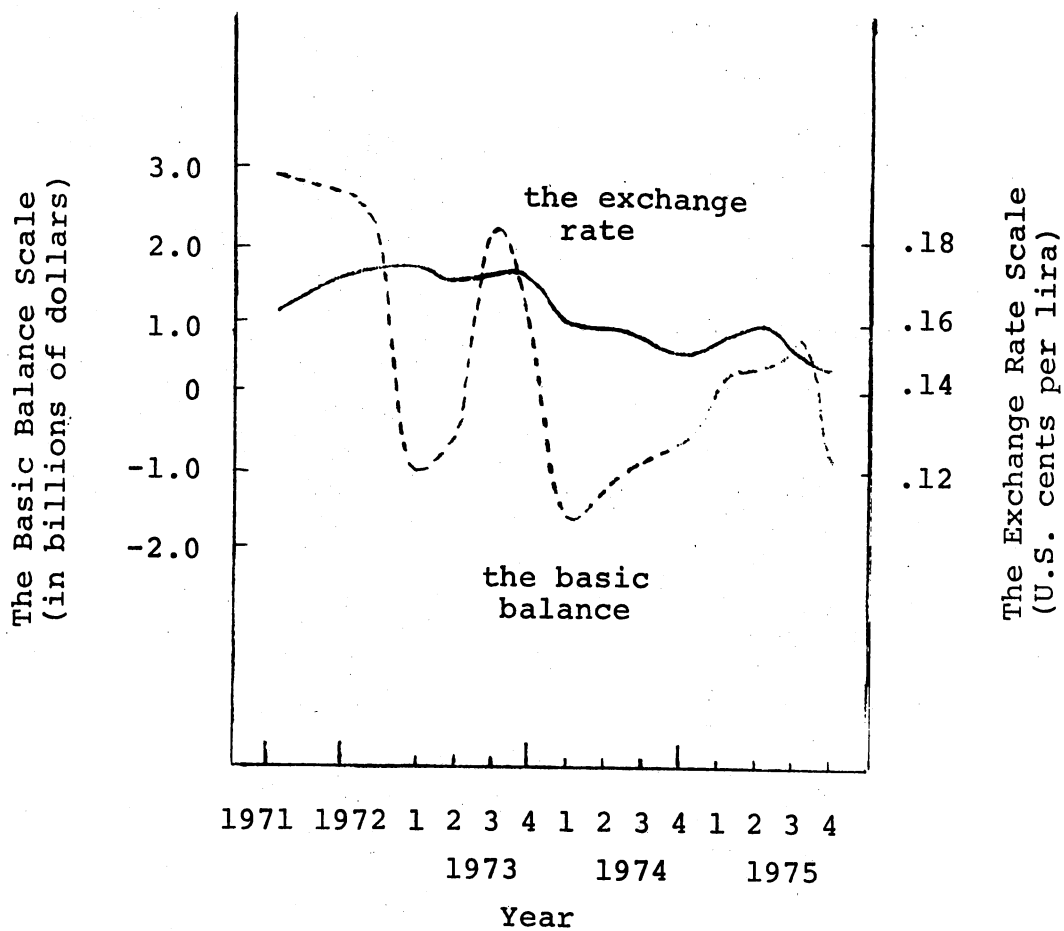


Figure 5. Italy: The Market Rate of the Italian Lira and the Change in the Basic Balance

TABLE XXI

ITALY: QUARTER-TO-QUARTER CHANGE IN RESERVES,
EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	5.35	1.96	2.45	4.36	3.53
1970	.69	7.91	3.29	18.30	7.55
1971	12.74	.96	9.42	1.82	6.24
1972	1.96	3.35	.26	5.22	2.70
1973	3.01	3.45	9.97	3.04	4.87
1974	4.68	21.14	43.06	8.68	19.39
1975	2.07	1.50	13.38	17.72	8.67
1976	2.74	6.73			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

floating, particularly in 1974 and to a lesser extent in 1975. The dramatic increase of 43.06 percent in reserves in 1974:III was a result of the Bank of Italy obtaining a \$2 billion six-month loan from the Duetsche Bundesbank (5, 1975, pp. 92-93). The relatively small reserve use in 1973 was due to the substitution of borrowing by state enterprises from the international money market. The comparison of reserve use in the period before and after the floating suggests that reserve assets have fluctuated wider margins than under the fixed exchange rate system. However, there has been some tendency for reserve use to decline further when comparing reserve changes in 1975 with 1974. It can be concluded that reserves still occupy a significant role despite the abandoning the defense of the fixed exchange rates.

Japan

The dollar volume of the Japanese trade flows is large, comparable to those of France and the United Kingdom. However, in relation to its GDP, exports accounted for only 11 percent, while the value of imports was 8.5 percent in 1972 (51, 1975), the second lowest foreign trade ratio next to the United States. The geographic distribution of Japan's trade relation is different from the country sections described previously. Of total imports and exports, about one-half is directed to the developing countries, while trade with the United States accounted for one-third, and the remainder is with the rest of the world. Japan's main export

products are machinery including transport equipment, manufactured goods, and chemicals; together they accounted for 80 percent of the total. On the import side, over 70 percent of the total are composed of basic materials, fuels, and food.

Japan's trends to bilateral trade with main geographic regions can be briefly described as follows: Trade deficits are incurred with countries that are sources of primary products, such as Australia, Canada, New Zealand, and South Africa. In addition, since Japan depends entirely on imported fuels, the trade deficits are also incurred with the with the oil-producing countries. The surpluses have been recorded with southeast Asia countries and Western Europe in general. Japan's trade with the United States was in the deficit prior to the mid-1960s; then the turnaround occurred in 1964, and the surplus trend has continued since then (51, 1972, pp. 39-41).

The deficits in the invisible trade account have been steadily increasing. The regular deficits have been recorded with both the United States and Western Europe due mainly to transportation costs. However, the service account deficit with the European countries has begun to exceed the trade surplus since 1969 (51, 1972, p. 41). Transfer payments are generally in deficit as a result of foreign aid given to the developing countries, and this trend continues to rise moderately in the Seventies. The overall trend of Japan's current

account exhibited a steadily growing surplus during the Sixties.

Long-term capital continues to show an outflow to the developing countries. Beginning in 1964, capital exports started to rise very rapidly. Capital transactions with the industrialized countries exhibited erratic movements. The net long-term capital balance with the United States showed a large inflow during the first half of the Sixties, then Japan became a net capital exporter until 1969. Western Europe also exported capital to Japan during the early 1960s. However, the funds transferred were relatively smaller than those from the United States. Then the European countries began to import capital from Japan during the 1965-67 period before they started to export the capital again in the late 1960s.

In all, the basic balance showed a surplus during the Sixties. The trend, however, can be divided into two phases. In the early 1960s, the basic balance showed a small deficit, then the reverse position has been recorded since 1965; only one deficit appeared in 1967, mainly as a result of the fall in exports combined with higher payments for transport costs [the closedown of the Suez Canal in 1967 (51, 1968, pp. 13-15)].

The liquidity balance also exhibited a similar pattern as the basic balance. It showed a small deficit during the early 1960s, then it reversed to a surplus from 1965 to 1972, with one interruption in 1967 which showed a deficit. The

liquidity balance recorded a surplus of over \$6 billion in 1971 and in 1972 as a result of the inflow of a huge amount of short-term funds in response to expectations of a yen revaluation.

A gain in reserve assets has begun to merge since 1968 after they were in balance during the period of the early Sixties as a whole. In 1972 the increase in reserves registered at \$10.4 billion, the highest ever recorded.

The major sections of the Japanese balance of payments and the movements of the yen exchange rate are presented in Table XXII. The surplus in the trade account started to fall after it reached a recorded high in 1971 and 1972. A deficit in the trade account occurred in the first half of 1974, then an improvement began to show after the second half. However, the size of the gain from trade in 1975 is not quite as large as in the earlier years because payments for oil have taken a sizable share from the export earnings (the share of imported oil and related materials during 1974-75 has increased to over 40 percent of the total imports, compared with 24 percent in 1972).

The traditional deficit in the service account exhibits the rising trend during the Seventies owing to increasing transport costs. Thus, the current account was in deficit in 1973 as a result of higher imports combined with higher service costs, it was the first deficit since 1967. The current account deteriorated further in 1974 before it

TABLE XXII

JAPAN: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars; a minus sign indicates an outflow)

	1971	1972	1973				1974				1975			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	7.79	8.97	1.05	.59	1.00	1.04	-1.85	-.85	1.52	2.62	.66	1.08	1.40	1.89
Exports, f.o.b.	23.57	28.03	7.41	8.51	9.43	10.91	10.09	13.47	14.68	16.23	12.88	13.48	13.52	14.86
Imports, f.o.b.	-15.78	-19.06	-6.37	-7.92	-8.42	-9.87	-11.94	-14.32	-13.17	-13.62	-12.22	-12.40	-12.11	-12.97
2. Services and Transfer	-1.99	-2.35	-.56	-1.01	-.90	-1.36	-1.44	-1.56	-1.65	-1.48	-1.58	-1.38	-1.43	-1.32
3. Long-term Capital	-.96	-3.02	-1.77	-1.97	-2.08	-2.64	-1.55	-1.04	-.56	-.44	.19	.73	-.40	-.60
Basic Balance	4.84	3.60	-1.28	-2.39	-1.98	-2.95	-4.84	-3.44	-.69	.69	-.73	.43	-.42	-.03
4. Short-term Capital														
Incl. Errors and Omissions	2.93	2.44	.73	-.63	.18	-.73	.76	.36	.13	.34	.03	-1.00	-.20	-.55
Liquidity Balance	7.77	6.04	-.55	-3.02	-1.80	-3.68	-4.08	-3.08	-.56	1.03	-.70	-.57	-.62	-.58
5. Balance of Payments (or Financing)														
Reserves	10.40	3.01	-.45	-2.92	-.40	-2.55	.18	1.00	-.22	.28	.59	.47	-1.20	-.47
Banks' External Position	-2.50	3.18	-.10	-.10	-1.39	-1.13	-4.26	-4.08	-.34	.75	-1.30	-1.04	.58	-.11
Non-balance Items Affecting Payments:														
Effective Exchange Rate (May, 1970 = 100)	102.4	114.5	122.4	126.3	123.2	121.0	117.5	119.4	113.2	111.3	111.4	111.6	112.6	111.2
Dollar Exchange Rate*	.2878	.3299	.3520	.3773	.3773	.3641	.3421	.3583	.3394	.3333	.3409	.3420	.3356	.3294
Quarterly Percentage Change	-	13.24	8.31	7.10	-0-	-3.45	-6.04	4.68	-5.31	-1.77	2.70	.32	-1.75	-2.08

*Quarterly Figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

started to show an improvement in 1975 resulting from increases in exports coupled with the reduction in imports.

The Japanese monetary policy has switched from encouraging capital outflows during the 1972-73 period to encourage capital inflows as a consequence of high payments for oil. In 1972 various policy measures were adopted to stop the inflow of speculative funds combined with the liberalization on purchases of foreign securities and investments in real estate abroad. As a result, in 1972 long-term capital showed a net outflow of \$3.02 billion, increased from \$960 million in the preceding year. The commercial banks' external position recorded an outflow of \$3.18 billion, compared with an inflow of \$2.5 billion in 1971. In addition, short-term funds registered a \$2.44 billion inflow in that year for speculative reasons. The trend of long-term capital outflow continued into 1973.

The shift in policy regarding capital transactions occurred in November, 1973 as a result of the deterioration in the trade account and the outbreak of the oil crisis (51, 1974, pp. 38-40). Controls on non-resident purchases of Japanese stocks and bonds were lifted and purchases of short-term foreign securities were restricted. Investments abroad in real estate were withdrawn from the foreign currency lending program. The outcome of this change in external policy was a reduction in long-term capital outflow and more inflows of funds in short-term capital account. Banks' position with non-residents showed net inflow of funds through borrowing

from the U.S. and the eurodollar money markets (51, 1975, pp. 34-35).

The basic balance showed an annual surplus during the period of 1971-72, and went to a deficit from 1973 through 1975.

In the foreign exchange markets, the yen was allowed to float independently in February, 1973. It appreciated and reached a maximum in 1973:III and remained at that level for another quarter, then it weakened in the next two quarters before it recovered in 1974:II. The yen exchange rate, however, has not been allowed to rise to its record level in 1973:II. The yen then depreciated again in the second half of 1974 and recovered the following six months before it fell back in the second half of 1975. The fluctuations of the yen exchange rate showed erratic movements during the 1973-74 period and variations were relatively smaller in 1975. The rate in the fourth quarter of 1975 showed an appreciation of 18 percent from the annual rate in 1970, while on the trade-weighted basis, it increased by 11 percent.

Using the regression technique to determine the relationship between the change in the basic and the lagged level of exchange rates, corrected for autocorrelation, the following result is recorded:

$$B_t = -3218.0 - 321.1 X_{t-1} + 396.5 X_{t-2}$$

$$(0.49) \quad (0.69) \quad (1.17)$$

$$R^2 = .16, D-W = 1.605, L = .6, n = 9.$$

The figures in parentheses are the t ratios. All the regression coefficients are not statistically significant at the .05 level. The explanatory power of the independent variables are low ($R^2 = .16$). The value of D-W statistic indicates the absence of autocorrelation at the .05 level.

Figure 6 illustrates the movements of the yen exchange rate and the change in the basic balance. It can be seen that there is no strong indication of any relationship between the two. The insignificant result from the statistical test, despite the recent downward fall in the trade account as well as the deficit showing in the basic balance, can be explained by, first, the aggregate trade figures may wash out the impact of revaluation on certain products whose competitiveness has suffered relatively more than others; second, administrative measures were exerted in 1972 and most of 1973 to restrain export growth, for balance of payments reasons; third, the relatively higher domestic prices in relation to export prices may have induced to increase domestic sales to total sales.

The liquidity balance was in deficit throughout the 1973-75 period, after it recorded a continued surplus from 1967 to 1972. The huge deficit in 1973 was mainly financed by reserve losses and partly assisted by the inflow of funds through banks. In 1974, however, the deficit was largely financed by borrowing through the banking system, whose net liabilities increased by almost \$8 billion, compared with \$2.72 billion a year earlier. The increase in banks'

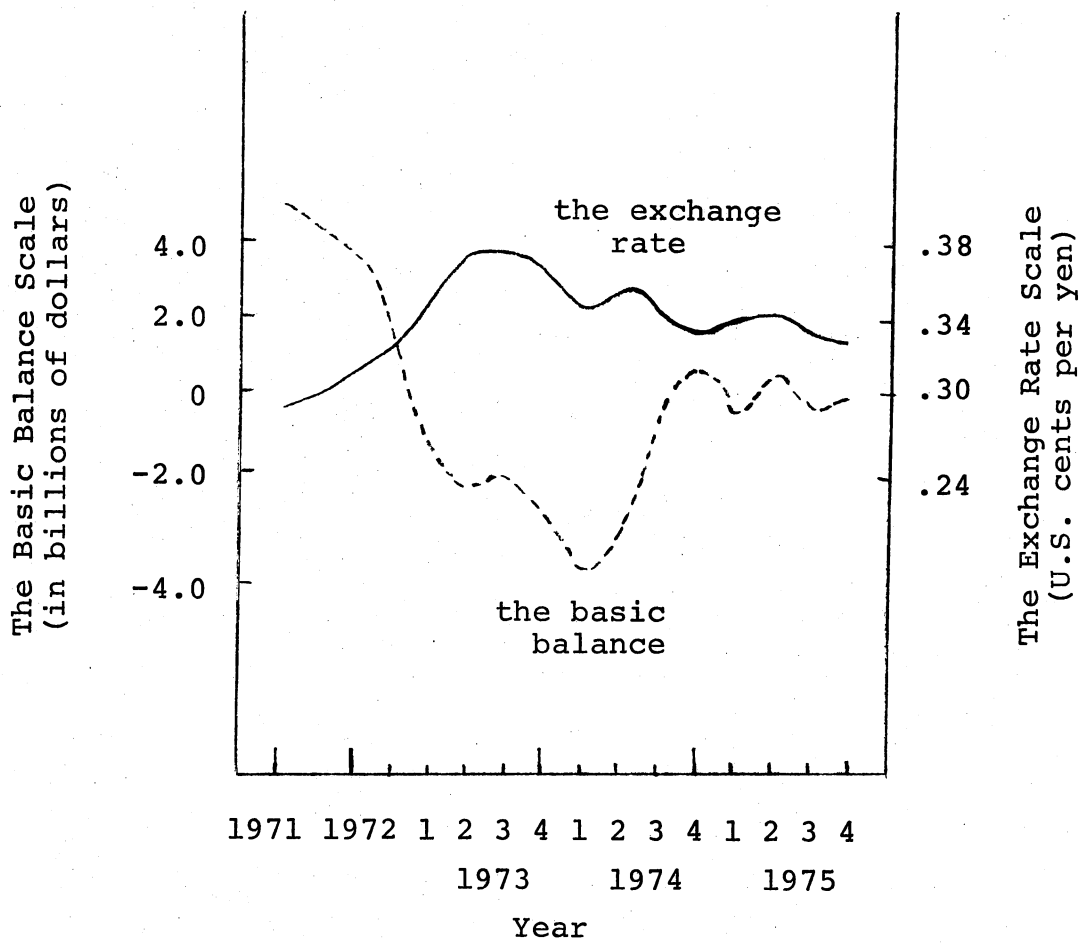


Figure 6. Japan: The Market Rate of the Japanese Yen and the Change in the Basic Balance

liabilities partly explained by the withdrawals of foreign exchange by the monetary authorities (5, 1974, pp. 140-41). The deficit in the first six months of 1975 was again financed through the banking system. The reserve assets, on the other hand, rose during this period owing to the sale of Treasury bills to non-residents (5, 1976, p. 72). The loss of reserves that occurred in the second half was brought about by market interventions in the foreign exchange markets.

The percent changes in the reserve level as presented in Table XXIII show that reserve use during the floating has been less in extent than during the period under the fixed exchange rates. The wide fluctuations of reserves in 1971 were the result of speculative flows of funds into Japan as expectations of the yen revaluation developed. The lesser use of reserves during 1974-75 came about as the exchange rate was allowed to absorb some of the pressure which developed during the period.

The Netherlands

With exports of goods and services amounting to over one-half the GDP, the highest ratio among the industrialized countries, the Dutch economy depends very much on developments in countries that are her main trading partners. Imports, too, represent nearly 50% of GDP. Like other Western European countries, the Dutch trade chiefly with countries in the OECD, and particularly EEC. In 1965, 83 percent of

TABLE XXIII

JAPAN: QUARTER-TO-QUARTER CHANGE IN RESERVES,
EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	10.70	2.77	5.43	10.76	7.43
1970	11.08	.62	2.13	21.09	8.73
1971	21.88	32.24	71.57	14.76	35.11
1972	8.49	4.92	4.07	11.38	7.22
1973	1.31	16.14	2.66	17.23	9.34
1974	1.46	8.07	1.93	2.66	3.53
1975	4.69	3.19	9.15	3.42	5.11
1976	10.67	8.56			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

exports were for OECD nations, of which 67 percent went to EEC. Since the Common Market was founded in 1958, trade with the member countries has increased at the expense of countries outside the EEC. Exports to North America, which in 1965 accounted for 5 percent of the total, represented practically the same percentage in 1974. Food, manufactured goods, and machinery represent the most important export products. Since 1974 exports of natural gas resources, lubricants, and chemicals have increased rapidly in revenues as a result of worldwide increase in prices of oil and raw materials. During the 1960s the bulk of imports came mainly from OECD nations (80 percent of the total), of which 67 percent were from the EEC. This trend of imports continued in the Seventies, with a relatively larger percent of imports coming from the EEC. Main import items are machinery, manufactured goods, and fuels.

The Netherlands trade account was in a deficit throughout the 1960s (some \$550 million annually). The offsetting force usually comes from the service account. Earnings from transportation and insurance have been the main positive contributions to the account, despite a growing deficit on the travel account. The trend of receipts from services remained rather stable, with a slight decline in the late Sixties as foreign travel was increasing. In total, the current account showed a small deficit during the Sixties.

Capital movements, to some extent, played a counterbalancing role to movements in the current accounts. In the

early 1960s, capital inflows particularly through the banking system were more than offsetting a small deficit in the current account, except in 1968, when a reserve loss was recorded due mainly to the reduction in liabilities of the banks' external position.

The Netherlands' balance of payments and the movements of the guilder exchange rate during the 1971-75 period are presented in Table XXIV. A surplus on the trade account has been recorded since 1972. In 1974 the trade account registered a \$670 million surplus while most countries experienced a deficit due mainly to higher oil payments. The strong trade account was explained by a rapid expansion in oil product industries and higher earnings from natural gas exports. Earnings from services rendered have been on the rise, particularly during the period of 1973-74, but they fell slightly in 1975. On balance, the service account tends to help strengthen the trade account. Thus, the current account has swung to a surplus since 1972.

The outflow of capital tends to reduce the surplus in the current account. However, the amount has normally been less than the gain from exports of goods and services. Therefore, the basic balance as well as the liquidity balance generally shows an annual surplus.

The movements of the guilder exchange rate are in line with other currencies in the "joint float." The guilder exchange rate against the dollar floated upward in the first three quarters of 1973 and then depreciated for two quarters

TABLE XXIV.

THE NETHERLANDS: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars; a minus sign indicates an outflow)

	1971	1972	1973				1974				1975			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	-.61	.44	.09	.38	-.17	.65	.19	.19	.22	.07	.01	.42	.21	.24
Exports, f.o.b.	12.46	15.46	4.75	5.36	5.37	6.32	6.85	8.08	7.75	8.17	8.06	8.39	7.09	8.31
Imports, f.o.b.	-13.06	-15.02	-4.66	-4.98	-5.54	-5.67	-6.65	-7.89	-7.54	-8.09	-8.05	-7.96	-6.88	-8.07
2. Services and Transfer	.45	.85	.36	.30	.20	.48	.29	.33	.34	.40	.14	.17	-.01	.39
3. Long-term Capital	.57	-.88	-.28	-.48	-.40	-.54	-.30	-.33	-.07	-.45	-.27		-.17	-.70
Basic Balance	.41	.41	.17	.20	-.37	.59	.18	.19	.49	.02	-.12	.01	.03	-.07
4. Short-term Capital														
Incl. Errors and														
Omissions	.16	.28	.28	-.27	.12	-.41	00	-.16	-.11	.09	.34	.60	-.01	-.38
Liquidity Balance	.57	.69	.45	-.07	-.25	.18	.18	.03	.38	.11	.22	.47	.02	-.45
5. Balance of Payments														
(or Financing):														
Reserves	.24	.95	.91	-1.04	.02	.82	.06	-.46	1.15	.24	.19	-.39	.24	.27
Banks' External														
Position	.41	-.18	-.46	.97	-.26	-.64	.12	.49	-.77	-.12	.02	.87	-.22	-.73
Non-balance Items Affecting														
Payments:														
Effective Exchange Rate														
(May, 1970 = 100)	101.0	102.4	103.3	103.8	106.4	109.1	109.0	112.0	112.5	113.3	115.2	114.6	111.9	112.1
Dollar Exchange Rate*	28.62	31.16	32.81	34.98	38.29	35.56	35.22	37.87	37.43	38.42	41.44	41.47	38.09	37.50
Quarterly Percentage														
Change	-	8.88	5.29	6.61	9.46	-1.90	6.23	7.55	-1.19	2.65	7.88	.06	-8.15	-1.53

*Quarterly figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

before it strengthened in 1974:II. The rate in the third quarter of 1974 fell slightly from the preceding quarter and then it became strong enough through the first six months of 1975 and started to decline in the second half. In the course of the floating, the guilder exchange rate reached its peak in 1975:II. At that level (U.S. 41.468 cents per one guilder), it has increased by some 50 percent over the 1970 average rate, whereas the trade-weighted exchange rate increased by 14.6 percent (May, 1970 = 100).

By regressing the change in the basic balance (B) on the lagged level of the exchange rates (X), corrected for autocorrelation, the following relationship is obtained for the 1973:I-1975:IV period:

$$B_t = -331.2 - 105.5 X_{t-1} + 117.5 X_{t-2}$$

(0.24) (2.77)* (3.23)**

$$R^2 = .61, D-W = 2.67, L = .1, n = 8.$$

The figures in parentheses are the t ratios. The coefficient of X_{t-1} is statistically significant at the .05 level, and the coefficient of X_{t-2} is significant at the .01 level. The variables accounted for 61 percent of the total variations. The value of D-W statistic indicates the absence of autocorrelation. The sign of X_{t-1} is theoretically correct, but the sign of the coefficient X_{t-2} is wrong. Perhaps the reduction in the basic balance in response to the guilder appreciation occurred in the short run, followed by a perverse result as the guilder exchange rate appreciated further. Figure 7 depicts the movements of the guilder exchange rate

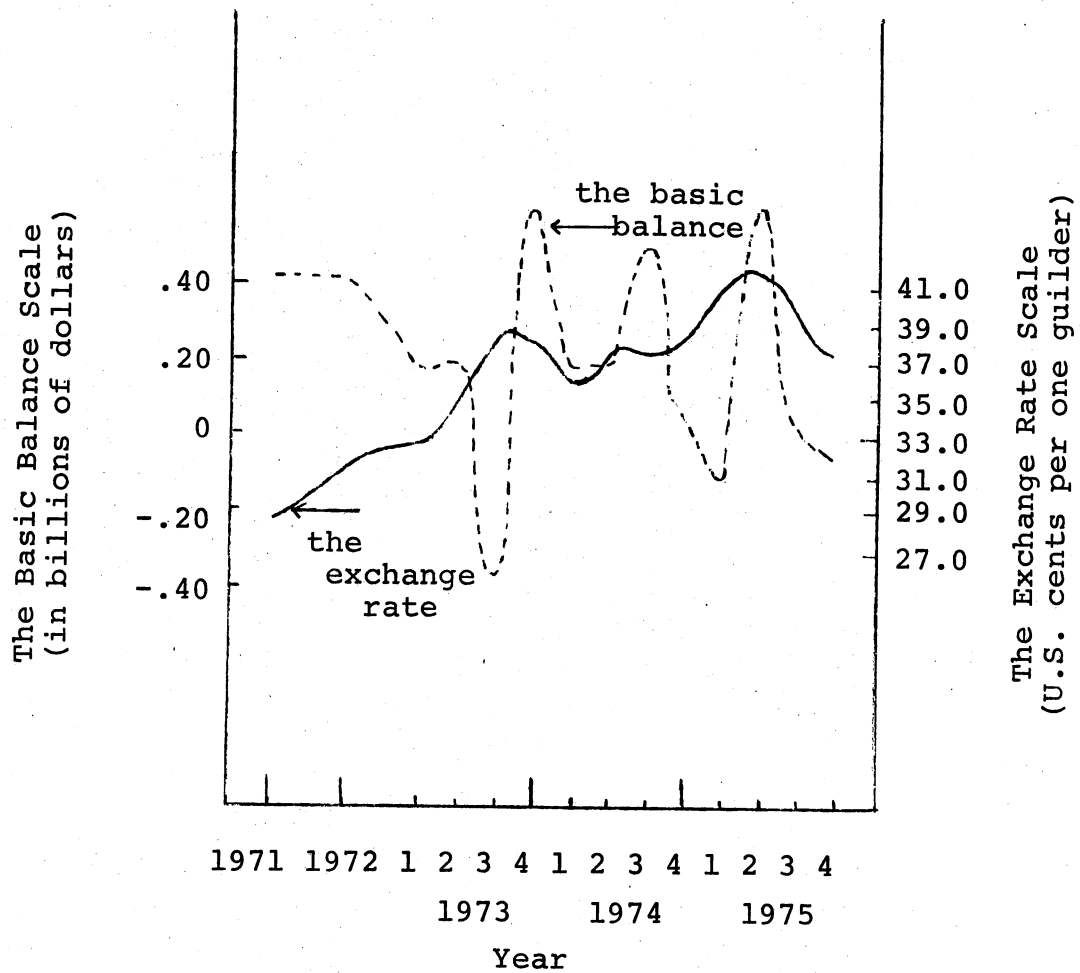


Figure 7. The Netherlands: The Market Rate of the Dutch Guilder and the Change in the Basic Balance

and the change in the basic balance. It clearly shows that, without lagging the level of exchange rate, it does not give a close relationship with the change in the basic balance.

Turning to examine reserve movements since 1969, as presented in Table XXV, the percentage changes in reserves were large during the foreign exchange crisis in the 1972-74 period. However, if the quarter average figure in 1975 is taken as an indicator of the tendency in the use of reserves, then the managed floating has partly absorbed the market pressure as reflected in the relatively lesser use of reserves.

Sweden

The dependence of the Swedish economy on foreign trade is considerable. Imports as well as exports represented some 25 percent each of GDP throughout the 1960s. In the Seventies, the ratio of external trade to GDP increased further as prices of international traded goods rose faster than the domestic prices (53). Imports of food, fuels, and machinery accounted for the bulk of purchases abroad, while exports of raw materials and machinery including transport equipment represent over one-half of the total exports. During the Sixties and Seventies Sweden conducted the bulk of its foreign trade with the OECD nations. The volume of trade flows with these countries amounted to 80 percent of the total. Even though Sweden is not a member of the Common Market, her trade with EEC countries accounted for over one-half of total exports and imports. With respect to geographical

TABLE XXV

THE NETHERLANDS: QUARTER-TO-QUARTER CHANGE IN
RESERVES, EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	2.23	.17	.04	6.93	2.34
1970	5.54	.52	11.41	8.20	6.42
1971	9.77	1.52	3.18	5.24	4.93
1972	14.88	.62	11.80	2.47	7.44
1973	27.19	3.47	7.03	19.86	14.39
1974	8.31	7.96	19.46	5.41	10.29
1975	3.44	6.06	.86	4.27	3.66
1976	2.41	16.24			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

distribution of trade, a modest trade surplus with the OECD countries has been maintained throughout; her trade with the developing countries, on the other hand, shows a consistent deficit owing to the heavy dependence on fuels and food supply. On balance, the balance showed a small surplus during the 1960s, then a substantial surplus began to emerge from the late Sixties through 1973 before it was drastically reduced in 1974 and 1975 as a result of higher prices of imported oil.

Like the Netherlands, the main contribution to the service account is revenues from freight and insurance. Prior to the mid-1960s, the service accounts more than compensated for the deficit in the trade balance, giving rise to a surplus in the current balance. Commencing in 1965 the surplus from the service earnings began to shrink as the counterbalancing force of foreign travel was rising rapidly. In addition, the traditional deficit on transfer payments notably to developing countries also rose substantially in the late Sixties.

In all, the current account was in a surplus prior to the mid-1960s as service earnings more than offset the trade deficit, then the turnaround began in 1965 as net service revenues were down combined with increasing transfer payments. The deficit in the current account continued until 1970 before the position was reversed again in 1971.

Capital movements, to a great extent, were sufficient to offset the deficit in the current account. Within the

capital account, net long-term direct investment showed a continuous outflow, which was counterbalanced by the inflow of borrowing abroad and other long-term capital inflows. The private short-term capital account including errors and omissions showed a small net inflow in the early 1960s and reached a maximum of \$90 million in 1966, then was in balance in 1967, followed by a net outflow of \$17 million and \$86 million in 1968 and 1969, respectively. A reversal began in the following year, which recorded a huge inflow of \$450 million. On balance, the basic balance recorded a small surplus during the 1960s separated by a deficit in 1969 and 1970.

Table XXVI presents the balance of payments and the movements of the Swedish krona for the 1971-1975 period. The strong position of the merchandise account continued from the late 1960s through 1973, then it was sharply reduced in 1974-75 arising mainly from the oil price increases. The service balance including transfer payments turned from a surplus during the Sixties to a deficit throughout the 1970s. In all, the current balance was in a surplus during the 1971-1973 period, then it turned to a deficit in the following two years.

Capital movements between 1971 and 1973 showed a net inflow, thus giving rise to a surplus in both the basic and the liquidity balances. In 1974 and 1975, the basic balance showed a deficit despite the increase in net inflow of long-term capital. The deficit occurred as a result of further

TABLE XXVI

SWEDEN: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars; a minus sign indicates an outflow)

	1971	1972	1973				1974				1975			
			I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	.90	1.25	.44	.65	.43	.63	.11	.40	-.02	.12	.19	.18	-.05	.42
Exports, f.o.b.	7.42	8.58	2.63	2.84	2.63	3.36	3.40	3.88	3.91	4.60	4.55	4.66	3.62	4.47
Imports, f.o.b.	-6.52	-7.33	-2.19	-2.19	-2.20	-2.73	-3.30	-3.48	-3.93	-4.48	-4.36	-4.48	-3.67	-4.05
2. Services and Transfer	-.73	-1.00	-.25	-.25	-.31	-.18	-.36	-.36	-.38	-.45	-.61	-.65	-.49	-.60
3. Long-term Capital	-.01	.12	.15	-.07	-.08	.18	-.05	.07	-.02	.27	.24	.49	.23	.18
Basic Balance	.16	.37	.34	.33	.04	.63	-.30	.11	-.42	-.06	-.18	.02	-.31	.00
4. Short-term Capital														
Incl. Errors and Omissions	.06	.19	.08	.03	.04	-.29	.30	-.37	.17	.14	.36	.56	.48	.12
Liquidity Balance	.22	.56	.42	.36	.08	.34	.00	-.26	-.25	.08	.18	.58	.17	.12
5. Balance of Payments (or Financing):														
Reserves	.28	.47	.40	.27	-.03	.16	-.35	-.39	-.13	.06	.09	.59	.29	.28
Banks' External Position	.01	.14	.02	.08	.11	.17	.35	.13	-.11	.02	-.09	.00	-.12	-.16
Non-balance Items Affecting Payments:														
Effective Exchange Rate (May, 1970 = 100)	99.7	101.8	102.7	103.0	105.7	103.0	99.8	104.1	103.7	106.2	110.6	111.5	106.9	106.0
Dollar Exchange Rate* Quarterly Percentage Change	19.58	21.00	21.74	22.79	24.21	22.99	21.36	23.00	22.60	23.25	25.11	25.38	23.30	22.75
	-	7.26	3.52	4.83	6.25	-5.07	-7.08	7.67	-1.74	2.87	8.04	1.04	-8.16	-2.36

*Quarterly figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

deterioration in the service account. The liquidity balance, on the other hand, showed an improvement in 1975 after it deteriorated in 1974 owing to the shift of the short-term capital account including errors and omissions from a net outflow to a net inflow. Thus the strong trade and the net inflow of capital during the 1971-1973 period was reflected in reserve gain. Reserve losses appeared in 1974 before they started to show an increase in the following year.

The exchange rate of the Swedish krona remained pegged to the currencies in the "joint float." The reason is obvious. Trade and capital transactions between Sweden and the EEC, particularly Germany, have played an important role in the Swedish economy. In addition, joining the "snake" would discourage speculative capital movements. Thus the Swedish krona experienced the same erratic movements of the exchange rate as those currencies in the "snake." The changes in the exchange rate from quarter to quarter were relatively large. In six out of twelve quarters the changes were greater than five percent, whereas only in four quarters the changes were less than three percent. The highest exchange rate against the dollar was reached in the second quarter of 1975 (U.S. 25.38 cents per krona) which showed an increase of 31 percent over the 1970 rate. The trade-weighted exchange rate, however, rose by only 11.5 percent over the same period.

A regression to determine the relationship between the quarterly change in the basic balance (B) and the lagged

level of the exchange rates (X), adjusted for autocorrelation, produced the following result:

$$B_t = 2889.3 - 126.5 X_{t-1} - 8.2 X_{t-2}$$

(1.15) (1.10) (.09)

$$R^2 = .155, D-W = 2.553, L = .1, n = 8.$$

The t ratios are in parentheses. All the coefficients are not statistically significant at the .05 level. The lagged independent variables explain only 16 percent of total variations. The value of D-W indicates the absence of autocorrelation. Figure 8 illustrates the movements of the Swedish krona exchange rate against the dollar and the change in the basic balance. It becomes apparent that the two variables are not strongly correlated. The reasons are that the krona exchange rate, on the one hand, has been managed to remain in line with the currencies in the "joint float" against the dollar in order to halt speculative flows. The changes in the basic balance, on the other hand, were subject to random shocks, such as the oil price increases in 1974 and the shift in policy measures regarding capital movements from strict controls on capital inflows to encourage borrowing abroad as the trade balance deteriorated (5, 1975, p. 100).

A comparison of reserve movements in response to the exchange rate fluctuations is presented in Table XXVII showing the percentage changes in reserves on a quarterly basis. It can be seen that during the period in which the krona was pegged to the currencies in the "snake," erratic changes in reserves have been substantial as a result of intervention by

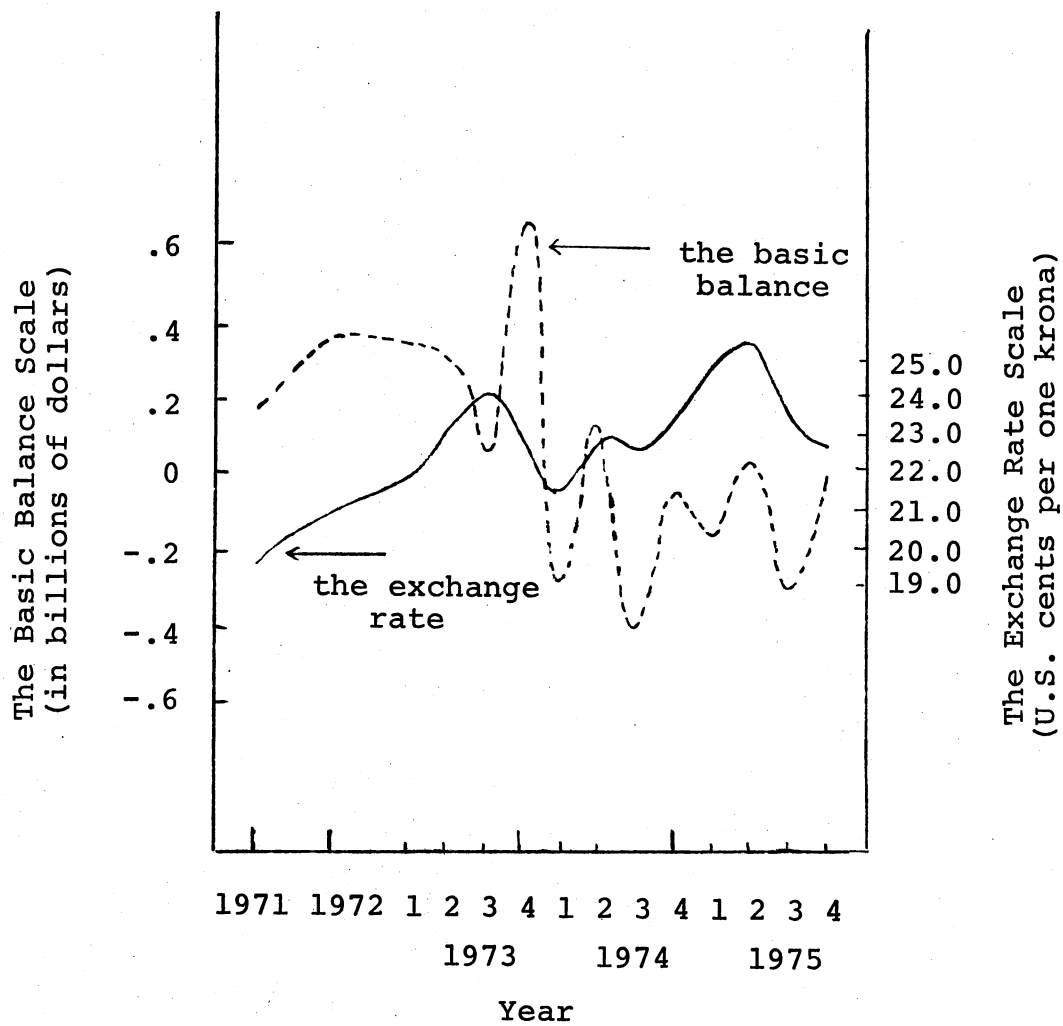


Figure 8. Sweden: The Market Rate of the Swedish Krona and the Change in the Basic Balance

TABLE XXVII

SWEDEN: QUARTER-TO-QUARTER CHANGE IN RESERVES,
EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	7.41	21.73	6.98	27.47	15.90
1970	6.03	1.22	3.87	13.41	6.13
1971	13.93	11.30	3.42	11.22	9.97
1972	20.27	4.42	.57	12.34	9.40
1973	34.35	12.48	.59	6.89	13.58
1974	9.53	21.85	7.38	4.83	10.90
1975	5.30	30.31	16.75	10.64	15.75
1976	5.72	1.35			

Source: IMF, International Financial Statistics,
July, 1976 and earlier issues.

the monetary authorities in the foreign exchange market. Reserve accumulations occurred from the second half of 1970 through the end of 1973, followed by losses throughout 1974 before a gain re-emerged afterwards. Thus it can be concluded that in the case of Sweden the exchange rate fluctuations have not adequately absorbed market pressures and, consequently, the use of reserves has been extensive.

Switzerland

A small country like Switzerland with relatively high per capita income depends considerably on foreign trade. The average of exports and imports share expressed as a percent of GDP was 32 percent each in 1965, then the share increased to 36 percent in 1970, and it has been maintained rather stable since then (54, 1976). Imports of machinery, manufactured goods, and food accounted for the bulk of total purchases abroad. The main export categories are machinery, manufactured goods, and chemicals. Exports of timepieces accounted for some 14 percent of the total during the 1960s. Between 1966 and 1974 exports to the EEC represented some 46 percent of the total, and the share has been remarkably steady, while the market share in the United States has been gradually decreased from 10.8 percent of total exports in 1966 to 7.2 percent in 1974.

Throughout the 1960s and 1970s the trade account was in a deficit. The deficit averaged \$400 million annually during the 1960s, then it rose to \$1.2 billion annually during the

Seventies. The increasing trade deficit, however, was sufficiently offset by sizable net invisible earnings beginning in 1966, owing to higher investment income, while tourism showed a net inflow of approximately \$350 million annually. Thus, the current account turned from a small deficit during the first half of the 1960s to a modest surplus in the second half.

Examination of the Swiss capital balance is made extremely difficult by lack of data; the following information is obtained from (11). In the first half of the 1960s Switzerland was a net capital importer as a result of its economic boom, combined with the removal of exchange controls in Europe at the beginning of the Sixties (11, pp. 33-50). The second half showed a net outflow in response to higher yields in the eurodollar market. At the same time the strong current account from the mid-1960s onwards may have contributed to the capital outflow. In total, the liquidity balance recorded a surplus throughout the Sixties, which was reflected in reserve accumulations.

Table XXVIII presents annual data of the Swiss balance of payments and the movements of the Swiss franc exchange rate from 1970 through 1975. The growth of the deficit in the trade balance reached its peak in 1974 (at \$2.1 billion), then the balance swung to a surplus of \$73 million in 1975, which is largely explained by a domestic recession (5, 1976, p. 66). The rise in both exports and imports between 1972 and 1974 despite the continuous upward movements of the

TABLE XXVIII

SWITZERLAND: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1970-1975

(in millions of dollars; a minus sign indicates an outflow)

	1970	1971	1972	1973	1974	1975
1. Merchandise Trade:	-1,021	-1,186	-1,269	-1,685	-2,109	73
Exports, f.o.b.	5,408	6,017	7,223	9,936	12,392	12,951
Imports, f.o.b.	-6,429	-7,203	-8,492	-11,624	-14,501	-12,878
2. Services and Transfer	1,091	1,266	1,489	1,965	2,280	2,910
Current Balance	70	80	220	280	171	2,983
3. Capital Account (net)	1,013	3,552	-83	1,098	2,436	2,202
Liquidity Balance	1,083	3,632	137	1,378	3,607	5,185
4. Balance of Payments (or Financing)						
Reserves	689	1,460	67	972	447	1,535
Banks' External Position	394	2,172	70	406	3,160	3,650
<hr/>						
Non-balance Items Affecting Payments:						
Effective Exchange Rate (May, 1970 = 100)	-	104.4	106.1	118.3	128.6	145.0
Dollar Exchange Rate*	23.17	25.54	26.50	30.83	39.37	38.17
Annual Percentage Change	-	10.23	3.76	16.34	27.70	-3.05

*Annual figures are obtained from monthly average rates.

Source: IMF, International Financial Statistics, July, 1976 and earlier issues.

Swiss franc seems to suggest that, on the whole, price elasticities are inelastic (54, 1973, p. 14). Thus the impact of the exchange rate revaluation is limited. The high degree of specialization of many export goods, the excellence of aftersale services, the cost of changing suppliers, and the success of exporters in adapting the changing pattern of world demand are considered to have an influence on the inelastic demand for Swiss products in relation to prices (54, 1975, p. 25).

The higher earnings in the service account during the 1970s were a result of the rise in interest rates in the eurocurrency markets. On the whole, the current balance was near equilibrium during the 1970-74 period, then the huge surplus appeared in 1975 owing almost entirely to a sharp reduction in imports.

The annual changes in the Swiss franc exchange rate were large. The rate showed an upward trend, while the current balance was approaching equilibrium level over the period as a whole. It is assumed, therefore, that the inflow of funds was the driving force behind the appreciation of the franc exchange rate (54). The trade-weighted exchange rate in 1976:I recorded at 150.7 (May, 1970 = 100), compared with the rate against the dollar which has increased by 67 percent over the same period. Figure 9 depicts the changes in the trade balance (f.o.b. - c.i.f.) and the level of the Swiss franc exchange rate from 1971 through 1976:I. Although

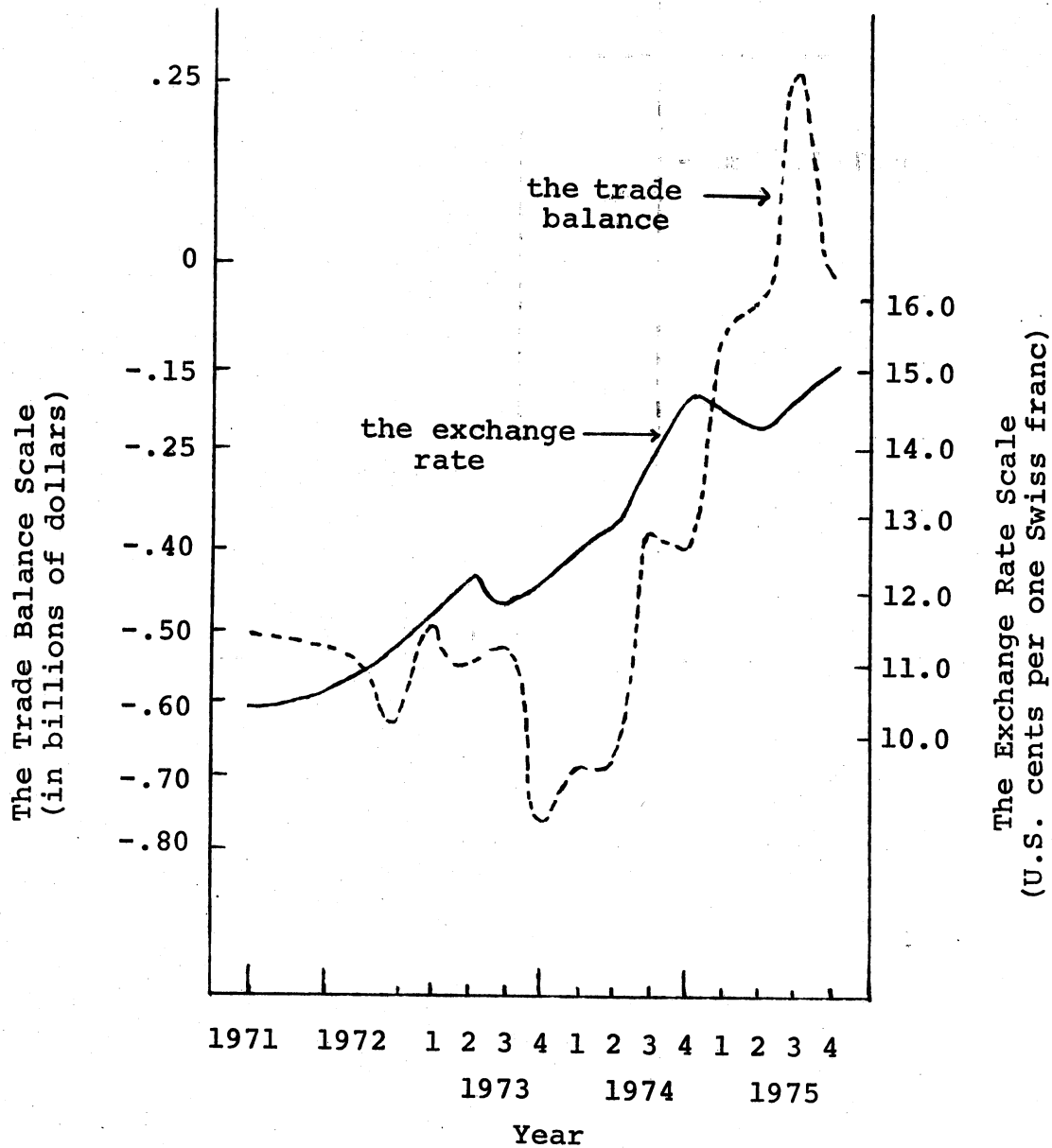


Figure 9. Switzerland: The Market Rate of the Swiss Franc and the Change in the Trade Balance

the changes from quarter to quarter were erratic, the trade balance exhibited the tendency of moving towards equilibrium.

Capital movements, as shown in Table XXVIII, are presented on a net annual basis. With limited data information, the capital account showed a net inflow from 1970 through 1975 except in 1972 when the balance was close to equilibrium. The large inflow of funds occurred in the 1970s despite various policy measures adopted to discourage such flows.⁹ The failure to stop capital inflows has induced the Swiss authorities to consider seriously joining the "snake."

Since Switzerland is not a member of the IMF it has not been in a position to draw on a stock of conditional liquidity or at present obtain SDRs. Prior to 1971, gold was the largest component of total reserve assets; since 1972 the changes in assets have been in the form of foreign exchange, essentially U.S. dollars. Table XXIX presents the changes in reserve level, expressed as a percent from the previous quarter. The erratic movements of reserves during 1969-1971:III were on several occasions the results of swap transactions between the Swiss National Bank and the commercial banks. The 21.27 percent increase in 1969:IV was a result of swap transfer of dollars from the banks to the National Bank (5,

⁹Such policy measures are, for instance, the upward adjustments in reserve requirements on liabilities to non-residents in order to limit banks' liquidity, interest was also discontinued on all bank deposits by non-residents, instead a commission of 3 percent per quarter must be paid on them, and on several occasions banks were required to balance their foreign currency position at the close of each day's business [see (54)].

TABLE XXIX

SWITZERLAND: QUARTER-TO-QUARTER CHANGE IN RESERVES,
EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	18.45	3.43	.77	21.27	10.98
1970	9.22	7.02	4.93	13.77	8.13
1971	9.99	9.95	28.84	6.37	13.77
1972	3.19	4.06	5.51	1.12	3.47
1973	7.57	7.23	.78	1.49	4.27
1974	5.86	4.89	1.46	8.70	5.23
1975	.39	2.94	4.95	25.93	8.55
1976	4.29	10.34			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

1970, p. 128). Another substantial increase in reserves occurred in 1971:III, particularly in the first two weeks of August, which recorded an increase of \$2.1 billion as a result of currency speculation (5, 1972). After the tremendous inflow in August, 1971, the Swiss authorities did not intervene in the exchange market from September, 1971 through December, 1974, as a result relatively small changes in reserves were recorded. The improvement in the external position during this period was reflected in the increase in banks' net foreign assets, in spite of tight controls on the inflow through the banking system. The exchange market intervention resumed in 1975 and as a result, the changes in reserves were becoming relatively large, particularly in the second half of 1975. It can be concluded that reserve changes were relatively large under the fixed exchange rate regime, as happened prior to the third quarter of 1971 and in 1975. If the exchange rate was allowed to fluctuate freely as it occurred during the 1971:IV-1974:IV period, reserve changes were relatively smaller as the exchange rate absorbed most of the market pressures.

The United Kingdom

Britain has traditionally been a large net importer of basic foodstuffs, raw materials, and fuels, the resulting deficit being covered by net exports of manufactured products and by earnings from services rendered. The average of exports and imports of goods and services as a percent of GDP

was 17 percent each in 1963, then it rose to 20 percent in 1970. The recent increases in prices of commodities and fuels contributed to higher payments for imports, while export prices of manufactures have been lagging behind; therefore, the ratios of exports and imports of goods and services to GDP were 21 and 25 percent, respectively, in 1974. During the 1960s British exports of manufactures increased at a relatively slower pace than the world's rate of export growth, while imports of manufactured goods increased rapidly. In relative terms, the share of manufactured exports as a percent of total exports fell from 16 percent in 1960 to 11 percent in 1970. Between 1963 and 1972 almost three quarters of the rise in imports was attributable to manufactured goods (15). Britain's bilateral trade with her main trading partners also showed some significant changes during the Sixties. In the first half of the decade the merchandise trade account showed a surplus with major Western European countries, with an exception of the Netherlands, which showed more imports than exports. A trade deficit was recorded with the United States and the developing countries, and the trend continued throughout the Sixties as well as in the Seventies. The shift from a strong surplus to a deficit on the trade account vis-a-vis her Western trading countries occurred in the mid-1960s and the deficit continued into the 1970s despite the 1967 devaluation. The decline in exports, particularly in manufactured goods, can be explained by

non-price factors other than rising export prices. One possible explanation of the fall in Britain's exports is that:

...the income elasticity of demand for U.K. exports is lower than that for, say German or Japanese goods. In the aggregate this could happen for structural reasons, because the U.K. specialised in products which were unresponsive to income growth abroad, or in trading partners whose incomes grew more slowly than those of our competitors. Alternatively, in a world when the impetus to trade is increasingly technological, a low income elasticity of demand can emerge as a result of technological backwardness. Countries which introduce new goods or continuously differentiate their products by means of quality improvements face a higher income elasticity than do countries which export goods with well established production technologies which are already available within the customer's own economy (44, p. 90).

The net surplus on the invisible balance has helped the British to meet the deficit on the trade account. Some developments occurred, however, in the components of the invisibles during the 1960s. Investment income and "other" services recorded a substantial surplus, while government's net payments and transfers showed a fair amount of deficits. A small deficit also appeared in foreign travel, whereas earnings from transportation were approximately in balance. In all, the surplus was rather steady in the early part of the Sixties, but after 1966 it started to increase at a fast rate (42).

The current account from 1961 through 1970 recorded four deficits, which occurred in 1962-63, 1967, and in 1968. For the average of the whole period, outpayments were greater than inpayments.

The capital account also recorded a deficit in the 1960s period taken as a whole. Long-term capital accounts showed a consistent deficit resulting from more investment abroad than at home, in addition to the new outflow of government payments on loans received. Export trade credits increased more than credits received; combined with the net outflow in the miscellaneous item they contributed to a deterioration in the capital balance.

Table XXX presents the developments of the U.K. balance of payments and the movements of the pound sterling exchange rate from 1971 through 1975. On the trade account, a small surplus was recorded in 1971, but from 1972 onwards the deficit was steadily widening until it reached \$12.3 billion for 1974 as a whole, followed by a reduction to \$7 billion in 1975. The slow growth on invisible accounts occurred between 1970 and 1972, but in the following three years a significant inflow of funds from foreign investments contributed to a marked increase in the service account. On balance, the current account remained in a surplus between 1971 and 1972, then the deficit began to emerge beginning in 1973, the first time since 1968, and it continued to 1975.

Long-term investments in the U.K. showed uneven inflows. They grew rapidly in 1970 and in 1971, but fell back in 1972, then rose significantly in the following two years before they fell back again in 1975. Direct investment abroad, on the other hand, rose at a very high rate between 1971 and 1973, then it was cut back in 1974. However, as world

TABLE XXX

THE UNITED KINGDOM: EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars; a minus sign indicates an outflow)

	1971	1972				1973			
		I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	.68	-.55	-.01	-.07	-.26	-1.28	-.99	-1.44	-1.98
Exports, f.o.b.	21.44	5.66	6.22	4.66	6.34	6.48	7.33	7.18	7.85
Imports, f.o.b.	-20.76	-6.21	-6.30	-5.47	-6.60	-7.76	-8.32	-8.62	-9.83
2. Services and Transfer	1.89	.51	.49	.44	.41	.46	.95	.98	1.25
Current Balance	2.56	-.04	.48	-.37	-.15	-.82	-.04	-.46	-.73
3. Long-term Capital	-.37	-.53	-.63	-.25	-.88	-.23	-.01	.24	-.41
Basic Balance	2.19	-.57	-.15	-.62	-1.03	-1.05	-.05	-.70	-1.14
4. Short-term Capital Including Errors and Omissions	-3.85	.12	-1.43	.16	-.64	.31	-1.88	-.51	-1.34
Liquidity Balance	-1.66	-.45	-1.58	-.46	-1.67	-.74	1.93	-1.21	-2.48
5. Balance of Payments (or Financing)									
Reserves	3.75	.50	-.12	-1.56	-.47	.17	.95	-.64	.05
Change in Sterling Holding Banks' External Liabilities	1.74	-.54	-.07	.21	-.32	-.49	-.22	.85	-.51
[Increase (-)]	-2.91	-.06	1.21	-.48	-.88	-.31	-1.00	-.52	-1.29
Government Borrowing [Increase (-)]	-4.24	-.35	-2.60	1.37	.00	-.11	-.71	-.90	-.73
Non-balance Items Affecting Payments:									
Effective Exchange Rate (December, 1971 = 100)	-	99.8	98.0	93.0	89.7	89.1	88.1	81.8	82.0
Dollar Exchange Rate*	2.444	2.599	2.599	2.445	2.364	2.420	2.530	2.480	2.379
Quarterly Percentage Change	-	6.34	.01	-5.94	-3.29	2.34	4.56	-1.98	-4.07

TABLE XXX (Continued)

	1974				1975			
	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:								
Exports, f.o.b.	7.89	9.78	9.47	10.07	10.40	10.84	9.59	10.73
Imports, f.o.b.	-11.12	-13.12	-12.43	-12.95	-12.89	-12.42	-11.62	-11.80
2. Services and Transfer	.98	1.09	.92	.79	.93	.72	.83	.83
Current Balance	-2.25	-2.15	-2.04	-2.09	-1.56	-.86	-1.20	-.24
3. Long-term Capital	1.05	.99	.93	-.35	-.68	-1.43	.31	-.29
Basic Balance	-1.20	-1.16	-1.11	-2.44	-2.24	-2.29	-.89	-.53
4. Short-term Capital Including								
Errors and Omissions	-.44	1.29	.55	-.74	1.11	-.34	1.16	.29
Liquidity Balance	-1.64	-2.45	-.56	-3.18	-1.13	-2.63	.27	-.24
5. Balance of Payments (or Financing)								
Reserves	-.09	.27	.43	-.41	.32	-.97	-.35	-.45
Change in Sterling Holding	-.53	-.55	-1.30	-.91	-.54	.70	.81	.33
Banks' External Liabilities								
[Increase (-)]	-.32	-1.13	.75	.12	.21	-1.98	-.10	.16
Government Borrowing								
[Increase (-)]	-.70	-1.04	-.44	-1.91	-1.12	-.38	-.09	-.28
Non-balance Items Affecting Payments:								
Effective Exchange Rate								
(December, 1971 = 100)	82.6	83.1	82.5	79.9	78.5	74.6	72.6	70.3
Dollar Exchange Rate*	2.279	2.397	2.350	2.329	2.391	2.325	2.128	2.043
Quarterly Percentage Change	-4.19	5.18	-1.97	-.96	2.65	-2.77	-8.49	-3.99

*Quarterly Figures are the monthly average rates.

Source: Bank of England, Quarterly Bulletin, June, 1976 and earlier issues;
IMF, International Financial Statistics, August, 1976 and earlier issues.

economic recovery was underway in 1975, the outflow for investment abroad resumed. On balance, investment overseas by the U.K. was more than the inflow from abroad during the period of 1971 through 1973 and in 1975, while the position was reversed in 1974. Thus the changes in the basic balance followed the same general pattern as the current account. After a substantial surplus between 1969 and 1971, the basic balance has been deteriorating since 1972 despite the continued depreciation of the pound.

On the foreign exchange market, after the sterling was allowed to float in June, 1972, it depreciated through the first quarter of 1974, interrupted by an improvement in the first half of 1973. The pound recovered in 1974:II but it weakened for the remainder of the year. The level of the exchange rate, however, at the fourth quarter of 1974 was higher than the level at the beginning of the year. During the first quarter of 1975 the pound showed slight improvement over the preceding quarter, then it depreciated further throughout the rest of the year. At the fourth quarter of 1975, the exchange rate of the pound against the dollar had dropped by 19 percent from the December, 1971 level, compared with a fall of almost 30 percent against the average of major currencies for the same period.

To further examine whether the depreciation of the pound has improved the basic balance, a simple regression was run by regressing the quarterly change in the basic balance (B)

on the lagged level of the pound exchange rates (X), corrected for autocorrelation, the estimated result is:

$$B_t = 3097.1 - 1023 X_{t-1} - 2507 X_{t-2}$$

(1.13) (0.48) (1.24)

$$R^2 = .155, D-W = 2.275, L = .6, n = .10.$$

The t ratios are in parentheses. All the coefficients are not statistically significant at the .05 level, although the signs are correct. The lagged independent variables explain only 15 percent of the total variations. The value of the D-W statistic indicates the absence of autocorrelation.

Figure 10 illustrates the movements of the pound sterling exchange rate and the change in the basic balance. It can be seen that the depreciation of the pound has not fully corrected the imbalance.

To finance the deficit in the current as well as long-term capital accounts, private and public sectors are urged to borrow from the international money markets, particularly in the eurocurrency market. As listed in Table XXX, in addition to reserve changes, the major sources of funds to finance the deficit are the increase in sterling liabilities to oil exporting countries and other monetary authorities, changes in banks' short-term external position, and central government borrowing, including the U.K. public sector borrowing under the exchange cover schemes.¹⁰

¹⁰Under this plan, foreign currencies borrowed by the U.K. public sector are exchange guaranteed, that is, the losses as a result of the sterling depreciation will be compensated by the government.

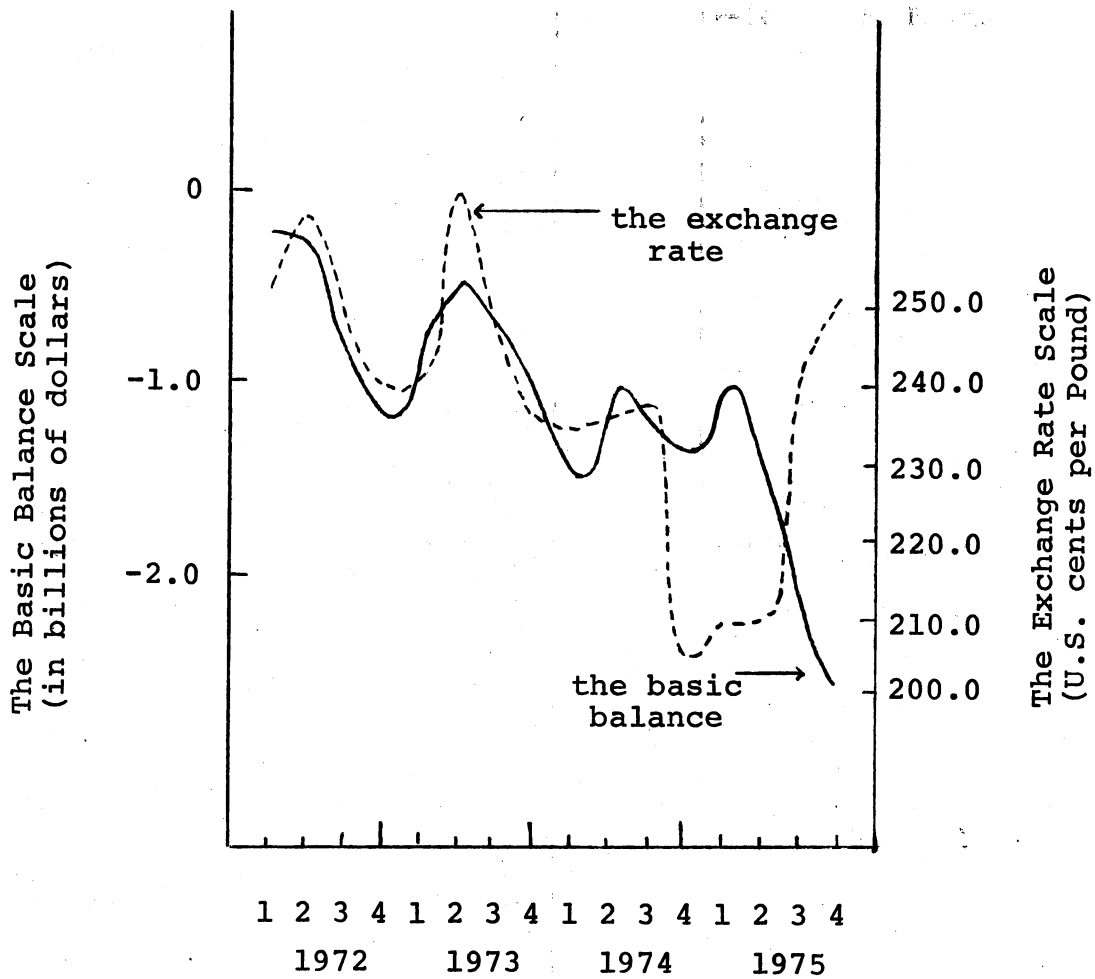


Figure 10. The United Kingdom: The Market Rate of the Pound Sterling and the Change in the Basic Balance

Throughout the 1970s reserves were added to the official balance more than they were used to finance the deficit. In 1971 alone, the enormous gain in reserves was more than sufficient to pay for the reserves loss that occurred in 1972 and 1975. The sterling balances held by oil exporting countries and other monetary authorities excluding the IMF recorded a fair amount of the increase. However, whenever the sterling was considered to be uncertain, the switch from the sterling holding to other foreign currencies occurred during the period of 1971 prior to the floating of the pound in mid-1972; another reduction occurred in 1973:III resulting partly from the uncertainties of the future of the pound (9, December, 1973, p. 414). The reduction in the sterling holdings during the second half of 1975 was partly explained by a high rate of expenditure by some oil-exporting countries (9, December, 1975), p. 328). In other quarters, the sterling liabilities showed a net increase.

Another avenue of obtaining foreign currencies is through the banking system. Between 1971 and 1973 commercial banks' short-term liabilities were relatively high, then they declined in the second half of 1974. The net liabilities rose again by an unusually large \$1.98 billion in 1975:II probably because

...a large payment of oil revenues was delayed from the first quarter, the banks apparently switched heavily into sterling, and U.K. residents resumed borrowing in foreign currencies to finance investment abroad (9, September, 1975, p. 214).

The reduction of banks' liabilities in the remainder of 1975 partly reflected an increase in deposits of U.K. residents, mainly oil companies (9, March, 1976, p. 12).

Additional sources of funds consist of government borrowing from monetary institutions in the form of foreign currency deposits and assistance with a sterling counterpart, and other official swaps. In June, 1976, the Bank of England received a standby credit in excess of \$5 billion from the Group of Ten countries and Switzerland, arranged by the Bank for International Settlements (9, June, 1976, p. 163). Furthermore, the U.K. public sector also borrows from financial markets under the exchange cover schemes. On balance, the loans received through financial markets together with the increase in sterling liabilities to non-residents and international institutions have helped to finance the deficit. On several occasions the borrowed funds more than offset the deficit, so that on the whole between the 1971 and 1975 period reserves actually rose.

Table XXXI presents the percentage changes in reserve level during the period of 1969 through 1976:II. Prior to the pound floating in late June, 1972, an enormous inflow of reserves was recorded, particularly during 1971 as a result of the surplus on current account. After the pound was allowed to float freely, the changes in reserves in 1973 and 1974 were relatively small in comparison with those in 1971. The small changes in reserves were reflected in the increase in liabilities incurred by the government and the public

TABLE XXXI

THE UNITED KINGDOM: QUARTER-TO-QUARTER CHANGE IN
RESERVES, EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	1.98	1.05	.45	3.86	1.84
1970	7.24	2.99	4.48	6.04	5.19
1971	17.30	9.17	38.53	31.25	24.06
1972	7.47	9.20	21.16	7.27	11.28
1973	6.89	16.18	9.00	1.47	8.39
1974	.49	4.14	7.11	3.46	3.80
1975	5.55	12.82	8.27	6.79	8.36
1976	8.39	10.39			

Source: IMF, International Financial Statistics,
August, 1976 and earlier issues.

sector. In 1975 reserves changes were beginning to exceed the preceding year. Thus it can be stated that the evidence is inconclusive concerning the use of reserves under the flexible exchange rate system in this instance.

The United States

As the world's largest economy the average of the total value of exports and imports surpasses that of any other country. However, as a percent of GDP, the share of foreign trade sector was approximately four percent during the 1960s, then it rose to seven percent in 1975. The trends of exports and imports in the past decade can be summarized as follows: The United States has a comparative trade advantage in capital goods and chemicals and is a net importer of many consumer goods and other non-agricultural industrial supplies and materials, with automotive products remaining on the margin (14). The loss of competitive advantage in consumer goods and textiles began in the late 1950s. In some industrial supplies and materials--fuels and lubricants, basic materials for iron and steel, and their products--the United States was a net exporter before World War II and became a net importer thereafter. With respect to her bilateral trade, the United States has a close economic relation with Canada. A small surplus on the trade account was recorded before 1967 and a deficit of some \$2 billion annually thereafter. Trade with Japan also exhibited a pattern similar to the Canadian case except the turning point from a surplus

position to a deficit occurred in 1965, three years sooner. Trade with countries in the Economic Community taken as a whole and with the developing countries excluding oil-exporting countries, the United States has been a net exporter to these countries. In all, during the first half of the 1960s the total value of exports exceeded imports by a wide margin; the gap gradually narrowed in the second half.

On account of service earnings, net receipts on payments for royalties and fees as well as investment incomes are the major sources of inflow, while the offsetting outflows are expenditures on foreign travel and others including private remittances and government transfers. On the whole, the service accounts have been sources of net income throughout. The sum of the trade and service accounts recorded a large surplus in the first half of the 1960s. The surplus then was drastically reduced in 1966 and 1967 as the trade account was deteriorating, combined with a rising outflow on unilateral transfers and a reduction of service earnings. From 1968 onwards a deficit on the current account emerged.

The basic balance adds the net movements of direct investments and government capital transactions to the balance on current account. Portfolio investment is consolidated under the short-term capital account since recent empirical work on long-term portfolio investment--purchases and sales of long-term financial instruments--suggests that the transactions are sensitive to changes in interest differentials, which are the nature of short-term capital flows (13).

During the 1960s, movement in the direct investment balance was due mainly to changes in U.S. investment. Foreign direct investment in the United States was small, averaging about \$140 million annually, and steadily fluctuating between zero in 1963-64 and \$300 million in 1968. However, in 1969 and 1970 foreign investment in the United States rose to \$800 million and \$1 billion, respectively. This jump improved the net direct investment balance in 1969 and held it in 1970 at about the 1964-65 level as U.S. outflows rose from \$3.2 billion in 1969 to \$4.3 billion.

After reaching a peak surplus of \$2 billion in 1964, the basic balance fell to a deficit of \$5.5 billion and \$6.2 billion in 1968 and 1969, respectively. The decline was interrupted only by the recession of 1967. In 1970 the current account improved by \$1.7 billion.

Table XXXII presents the United States balance of payments and the dollar exchange rate against the average of major currencies in world trade. The presentation of the U.S. balance of payments follows the recommendation given by the Advisory Committee on the Presentation of Balance of Payments Statistics in response to the recent changes in the international monetary environment (69, June, 1976). The new format is now being incorporated in the quarterly publication of the balance of payments by the U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business.

TABLE XXXII

THE UNITED STATES: EFFECTIVE EXCHANGE RATES AND THE BALANCE OF PAYMENTS, 1971-1975

(in billions of dollars, seasonally adjusted)

	1971				1972				1973	
	I	II	III	IV	I	II	III	IV	I	II
1. Merchandise Trade:	.23	-.76	-.30	-1.42	-1.70	-1.60	-1.54	-1.58	-.94	-.25
Exports, f.o.b.	10.99	10.96	11.65	9.75	11.79	11.70	12.49	13.40	15.42	16.96
Imports, f.o.b.	-10.76	-11.72	-11.95	-11.14	-13.49	-13.30	-14.03	-14.98	-16.36	-17.21
2. Services and Transfer	-.40	-.20	-.71	-.38	-1.10	-1.04	-.68	-.56	-.26	-.68
Current Balance	-.17	-.96	-1.01	-1.80	-2.80	-2.64	-2.22	-2.14	-1.20	-.93
3. Direct Investment (Net)	-1.08	-1.31	-1.84	-.67	-1.34	-.12	-1.16	-.53	-2.09	-.39
4. Government Capital Transactions	-.65	-.58	-.61	-.55	-.30	-.13	-.38	-.37	-.36	.02
Basic Balance	-1.90	-2.85	-3.46	-3.02	-4.44	-2.89	-3.76	-3.04	-3.65	-1.80
5. Non-banks' Net Position	-.41	-.16	-.26	-.03	-.26	.07	-.07	-.02	-.57	-.15
6. Change in U.S. Banks'										
Assets	-.24	-.36	-1.39	-.99	-1.08	.19	-1.06	-1.56	-2.99	-.76
Liabilities	-2.96	-2.64	-1.26	-.05	.70	1.67	.41	1.97	-1.67	2.26
7. Foreign Purchases of U.S.										
Treasury Securities	.18	1.86	-.79	-1.27	.00	-.08	-.01	.06	-.12	-.18
8. Securities Transactions (Net)	.15	-.17	.28	.92	.58	.64	.92	1.74	1.77	.40
9. Discrepancy	-.89	-2.08	-5.11	-1.53	.76	-.39	-1.34	-.82	-2.77	.50
Inflow (+) or Outflow (-) to be Financed	-6.07	-6.40	-11.99	-5.97	-3.74	-7.79	-4.91	-1.67	-10.00	.77
Balance of Payments (or Financing):										
Reserves	.86	.83	1.37	-.01	.61	-.05	.12	.07	.22	.02
Change in U.S. Liabilities	5.23	5.57	10.62	5.98	3.13	.86	4.74	1.60	9.77	-.79
Non-balance Item Affecting Payments:										
Effective Exchange Rate										
(May, 1970 = 100)	--	--	--	--	--	--	--	--	86.00	82.10

TABLE XXXII (Continued)

	1973		1974				1975			
	III	IV	I	II	III	IV	I	II	III	IV
1. Merchandise Trade:	.72	1.38	-.15	-1.49	-2.33	-1.40	1.44	3.25	2.10	2.19
Exports, f.o.b.	18.46	20.57	22.46	24.21	25.04	26.60	27.02	25.85	26.61	27.65
Imports, f.o.b.	-17.74	-19.19	-22.61	-25.70	-27.37	-28.00	-25.58	-22.60	-24.51	-25.46
2. Services and Transfer	-.14	.20	-.01	-.31	.86	1.23	-.02	.65	1.14	.88
Current Balance	.58	1.58	-.16	-1.80	-1.47	-.17	1.42	3.90	3.24	3.07
3. Direct Investment (Net)	.45	-.26	.17	.23	-1.87	-3.54	-1.03	-1.55	-.82	-.46
4. Government Capital Transactions	.41	-.74	1.45	.42	.06	-.86	-.46	-.42	-.40	-.45
Basic Balance	.62	.58	1.46	-1.15	-3.28	-4.57	-.07	1.93	2.02	2.16
5. Non-Bank's Net Position	-.05	-.58	-1.76	-.20	.51		.68	.12	-1.11	-.92
6. Change in U.S. Banks'										
Assets	.30	-2.53	-5.24	-7.58	-1.94	-4.73	-3.70	-3.82	-.43	-5.29
Liabilities	.98	3.13	4.47	4.17	3.76	3.61	-2.46	.78	1.63	.70
7. Foreign Purchases of U.S.										
Treasury Securities	-.20	.29	.14	-.24	.20	.60	.75	-.42	2.16	.16
8. Securities Transactions (Net)	.98	.22	.11	.09	.05	-1.62	-1.58	-.59	-.16	-1.14
9. Discrepancy	-1.71	1.87	2.17	.76	-.92	2.55	3.75	.13	-1.42	2.14
Inflow (+) or Outflow (-) to be Financed	.92	2.98	1.35	-4.15	-1.72	-4.32	-2.63	-1.87	2.69	-2.19
Balance of Payments (or Financing):										
Reserves	-.01	-.01	-.21	-.35	-1.00	.14	-.33	-.03	-.34	.09
Change in U.S. Liabilities	-.89	-2.95	-1.14	4.49	2.73	4.17	2.96	1.91	-2.35	2.09
Non-balance Item Affecting Payments:										
Effective Exchange Rate (May, 1970 = 100)	79.30	81.80	85.70	82.60	84.30	84.00	81.30	81.40	85.20	86.20

Source: U.S. Dept. of Commerce, Bureau of Economic Analysis, Survey of Current Business, June, 1976; IMF, International Financial Statistics, August, 1976 and earlier issues.

In Table XXXII, earnings from merchandise exports continued to grow from the 1960s but at a slower pace during 1971 and 1972, then the rate was accelerated in the following three years. The growth was interrupted only by the recession in continental Europe during the first three quarters of 1975. Imports too rose rapidly between 1971 and 1974. As a result, a trade deficit (seasonally adjusted) appeared for the first time in the second quarter of 1971. The deficit continued for nine consecutive quarters then it reverted to a small surplus in the second half of 1973. The consequence of oil price increases is reflected in the reappearing of the deficit on the U.S. trade account throughout 1974. However, in 1975 the tremendous increase in exports combined with the decline in imports yielded almost \$9 billion surplus for the year as a whole.

To further examine the impact of the dollar devaluation, Table XXXIII shows U.S. trade with her trading areas during the 1971-1975 period. After being a net exporter to the Economic Community during the 1960s, net trade was almost in balance in 1971. However, in 1972 the United States became a net importer from the EC for the first time. In the following three years, the United States regained her position as a net exporter. In fact, the surplus has been rising very rapidly since 1973. The United States has imported more than she exported to Japan since 1965, but the deficit was sharply reduced between 1973 and 1975, after a record trade deficit was reached in 1972. Trade with Canada also showed a reverse

TABLE XXXIII
U.S. TRADE BY AREA*

Economic Community						Japan					
	1971	1972	1973	1974	1975		1971	1972	1973	1974	1975
Exports	10.4	11.4	16.8	21.8	22.8	Exports	4.1	5.0	8.5	10.7	9.6
Imports	-10.0	-12.0	-15.8	-19.2	-16.5	Imports	-7.3	-9.1	-9.7	-12.4	-11.2
Net Trade	.4	-.6	1.0	2.6	6.3	Net Trade	-3.2	-4.1	-1.2	-1.7	-1.6
Canada						Other Developed Countries					
	1971	1972	1973	1974	1975		1971	1972	1973	1974	1975
Exports	10.5	12.7	15.6	21.8	23.5	Exports	4.9	5.5	6.8	10.2	10.5
Imports	-12.2	-14.5	-17.2	-22.4	-21.8	Imports	-3.9	-5.4	-5.7	-7.2	-6.5
Net Trade	-1.7	-1.8	-1.6	.6	1.7	Net Trade	1.0	.1	1.1	3.1	4.0
Developing Countries						Eastern Europe					
	1971	1972	1973	1974	1975		1971	1972	1973	1974	1975
Exports	12.5	13.4	20.1	32.1	37.4	Exports	.4	.9	2.6	1.7	3.3
Imports	-11.9	-14.4	-20.8	-41.5	-41.4	Imports	-.2	-.4	-.7	-1.0	-.7
Net Trade	.6	-.9	-.7	-9.4	-4.0	Net Trade	.2	.5	1.9	.7	2.6

*The values of trade are in billions of dollars.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, June, 1976.

position beginning in 1974, after an annual deficit of almost \$2 billion between 1968 and 1973. U.S. exports have been gaining strong positions in other developed countries (Australia, New Zealand, South Africa, and other Western Europe) and Eastern Europe. The United States is also a net exporter to the developing countries throughout the entire period but, as shown in Table XXXIII, a trade deficit has been recorded since 1972 due mainly to the higher payments for oil. Thus the dollar devaluation has helped the United States to strengthen her trade position, where it was previously weak, and to improve her trade position vis-a-vis Japan.

The fluctuations in the invisible account are mainly due to repatriation of earnings from abroad, while the outflows are government transfers which show a steady increase at a rate of some \$100 million annually. The small net surplus on the service account between 1971 and 1973 was more than offset by the outpayments of unilateral transfers. The invisible account thus was in a deficit during that period. But in 1974 a marked increase in the inflow of income from direct investments abroad contributed to a surplus of the invisibles. The repatriation of earnings in the following year fell back to the level attained in 1973. The further increase in the surplus on invisibles was due to higher receipts from tourists and a reduction in payments for transport services as a result of lower imports. In all, the current balance recorded a deficit between 1971

and 1972, and was in equilibrium in 1973. The current balance was in the red again in 1974 mainly because of higher oil payments, followed by a huge surplus as exports continued to rise, combined with a cutback in imports resulting from the slowdown in economic activity at home.

As stated earlier, the direct investment abroad and U.S. government capital transactions are relatively less sensitive to the interest rate differentials between home and abroad, therefore, the two balances are added to the current balance to obtain the basic balance. Government capital transactions are primarily government loans and repayments. This balance exhibits a stable net outflow of some \$400 million annually. Foreign direct investment in the U.S. was small from 1971 through the first half of 1973. It fluctuated from zero in 1971 to almost \$1 billion inflow during the first six months of 1973. In the following four quarters direct investment in the United States rose significantly to an average of some \$1 billion quarterly, then it fell sharply afterwards in response to the U.S. recession. It rebounded to a level of \$1.2 billion in the final quarter of 1975. The United States direct investments abroad, on the other hand, show a consistent outflow throughout. Between 1971 and 1973 the outflow on the average was a little over \$4 billion annually, followed by a further increase to a level of \$7.7 and \$6.3 billion in 1974 and 1975,

respectively. The tremendous outflow of capital in 1974 followed the termination of capital controls in January, 1974.¹¹

The movements of the basic balance showed a similar trend to that of the trade balance. The deficit in the basic balance continued from the late 1960s to the early part of the 1970s, reaching a recorded level of \$14 billion in 1972. But in 1973 the balance showed an improvement; the deficit was cut substantially in the first half as a result of the improvement in the trade account. As the trade account improved further, the basic balance moved to a surplus. In 1974:I the basic balance showed a surplus of \$1.5 billion, while the trade account was in balance, due mainly to repayment of loans (in rupee) previously extended to India (69, June, 1974, p. 27). The balance dropped back to a deficit from the second through the fourth quarter of 1974 resulting from the deterioration in the trade account. The basic balance was in equilibrium in the first quarter of 1975, followed by a surplus of \$2 billion quarterly through the last quarter.

¹¹Capital controls were instituted in the early 1960s. The controls consisted of three measures: the Interest Equalization Tax (IET) designed to discourage foreign portfolio investment by U.S. residents, the Voluntary Foreign Credit Restraint (VFCR) implemented to limit the value credit extended to foreigners by specifying absolute ceilings on the amounts domestic financial institutions may lend abroad, and the Foreign Direct Investment Program (FDIP) created to limit direct investment outflows by U.S. companies to market abroad.

In the foreign exchange market, the value of the dollar is reflected in the fluctuations of currencies of the major European countries. After the dollar was first devalued in 1971 and the subsequent realignments of the European currencies, the effective value of the dollar went down by three percent from the level of May, 1970. During the course of 1972 major European currencies were allowed to float on several short occasions except Britain, which has adopted managed floating since June, 1972. The effective exchange rate of the dollar dropped another seven percent in 1972. After the fixed exchange rate system was dismantled in the early 1973 the dollar depreciated further by about ten percent between 1972 and the third quarter of 1973, and then appreciated by about five percent from 1973:IV through 1974:I. During the last three quarters of 1974 the effective rate of the dollar changed very little; it stood at a level of 84 (May, 1970 = 100). After a drop of about three percent from 1974:IV to 1975:I the effective value of the dollar remained unchanged in the first six months of 1975, then it gradually appreciated from 1975:III through 1976:I as a result of general depreciation of major European currencies. The effective value of the dollar in the first quarter of 1976 depreciated by thirteen percent from the level in May, 1970.

Other accounts that being recorded "above the line" are non-banks' net change in transactions with foreigners, changes in U.S. banks' assets and liabilities, foreign

purchases of U.S. Treasury securities, net change in security transactions, and statistical discrepancy. The net outflows, mostly in short-term claims, to unaffiliated foreigners reported by U.S. nonbanks fluctuated widely and were on a rise. The net outflow recorded \$860 million for 1971, then it was reduced in 1972, followed by a further increase in the outflow to a level of \$1.4 billion and \$1.6 billion in 1973 and 1974, respectively. The swing from a net lender to a net borrower in the first six months of 1975 was due to net sales of U.S. bonds by the U.K. and international organizations (69, September, 1975, pp. 38-43). The reverse to a net lender position occurred in the second half.

U.S. liabilities reported by banks (increase in borrowing from abroad) and foreign purchases of U.S. Treasury securities, both formerly classified as liquid liabilities, recorded large outflows during 1971 in response to the expectations of a dollar devaluation. The swing from lending to borrowing abroad occurred in the following year and resulted from banks' transactions with Canada and Japan, and higher interest rates in the United States than in those two countries (5, 1973, p. 92). Foreign purchases of U.S. Treasury securities showed a small increase in 1972:IV offsetting sales in the earlier quarters. As the value of the dollar was uncertain during 1973 private foreign holders of U.S. Treasury securities disposed of their assets; U.S. banks also stepped up their lending abroad in February, before the

dollar devaluation, and in early March, before the currency adjustment (5, 1973, p. 92). The flight from the dollar took place despite a substantial improvement on current account. During 1974 banks' liabilities were at an extraordinary high level; most of the increase was to the Organization of Petroleum Exporting Countries (OPEC), followed by a sharp reduction due to rising U.S. short-term interest rates. Foreign purchases of U.S. Treasury securities started to increase from the second half of 1974 through 1975; most of the increase came from purchases by the OPEC members. On the asset side, little change in claims on foreigners occurred between 1971 and 1972; they stood at a level of some \$3 billion outflow annually. The outflow was accelerated in 1973 in response to expectations of exchange rate changes. The marked increase in claims or assets which occurred in 1974 was due to the role of U.S. banks as international financial intermediaries to help other oil-importing countries paying for higher oil prices (69, 1974, p. 27). In 1975 the outflow was reduced somewhat as oil-importing countries turned to borrow from international organizations.

The balance on security transactions other than Treasury issues showed net purchases of U.S. securities by foreigners from 1971 through 1974:III. The reverse trend occurred during the 1975 period as Canadian banks, the World Bank, and the Inter-American Development Bank floated new bonds in the U.S. market due to the relatively low cost

of borrowing in the United States compared with most other leading countries (69, June, 1975, pp. 19-23).

The financing of the huge outflow of funds was accomplished mainly by borrowing foreign official holdings, in addition to the reduction in reserves. Between 1971 and 1972 the United States increased its liabilities to foreign official accounts by \$27.4 and \$10.3 billion, respectively, as a result of the runs on the dollar. In the first quarter of 1973 the net official position of the United States deteriorated by a further \$10 billion, of which \$9.8 billion took the form of a continued rise in official liabilities; most of the deterioration occurred in the crisis month of February (5, 1973, pp. 125-127). The turnaround to a net lender during the 1973:II-1974:I period was a result of the net inflow of funds through the banking sector combined with the strengthening of the dollar in the latter period. In the remaining months of 1974 the U.S. liabilities to foreign official holdings increased to the total of \$11.4 billion, most of which was in the account of the OPEC members. Reserve assets, on the other hand, showed an increase of \$1.2 billion due mainly to other countries' drawings of dollars from the IMF (5, 1975, pp. 109-110). The U.S. reserve position at the IMF continued to improve during the course of 1975, but the major changes occurred on the liabilities side, when foreign official dollar holdings rose by \$4.6 billion, an increase of only one-third of the 1974 figure.

Table XXXIV presents quarter-to-quarter changes in U.S. liabilities to foreign official creditors from 1969 through 1976:I; the change is expressed as a percentage comparison with the preceding quarter. Reserve changes are not the only alternative to exchange rate changes because the United States intervenes in the foreign exchange markets by varying its liabilities to foreign official creditors. Reserve changes were insignificant and consisted mostly in foreign official drawings on U.S. reserve positions at the IMF, particularly SDRs. Furthermore, U.S. reserve assets are mostly composed of gold, which has ceased to be used for official settlements since the U.S. announcement in 1971 of abolishing gold convertibility.

After the runs on the dollar in February and March, 1973 the increase in U.S. liabilities to foreign official creditors was relatively small during the rest of the year, followed by another sharp increase in liabilities throughout 1974 mostly in the accounts of the OPEC members as a result of higher oil prices. The average of the changes in U.S. liabilities during the course of 1975 was low compared with the preceding years. If the reduction in liabilities in 1973 and 1975 as an indicator of a shift from official intervention to a greater role played by the market mechanism, then it can be concluded that the introduction of managed floating of the dollar has reduced the pressure on U.S. officials to intervene heavily in the foreign exchange markets.

TABLE XXXIV
 QUARTER-TO-QUARTER CHANGES IN U.S. LIABILITIES
 TO FOREIGN OFFICIAL CREDITORS,
 EXPRESSED IN PERCENT

Year	Quarter				Qtr. Avg.
	I	II	III	IV	
1969	3.56	9.51	7.10	1.75	4.59
1970	1.46	1.89	1.24	2.27	1.71
1971	4.34	11.77	16.74	6.05	9.72
1972	4.72	4.21	7.74	3.97	5.16
1973	9.62	1.43	.27	.57	2.97
1974	3.57	8.71	6.44	7.48	6.55
1975	.63	1.88	1.30	1.98	1.45
1976	2.87				

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, June, 1976.

CHAPTER VII

SUMMARY

In the early part of this study, four key variables were identified as potential factors that could have explained the fluctuation of the exchange rates of the Group of Ten countries plus Switzerland. Those variables are: the relative price inflation rates between the country in question and trade-weighted price inflation rates of its trading partners, the ratio of domestic short-term interest rate to the three-month eurodollar rate, the ratio of value of the country's exports to its imports, and the economic growth factor measured by the index of industrial production. Regression techniques were applied to test the statistical relationship between the changes in the rate and those key variables. The results were dominated by the existence of serial correlation, which leads to the biased estimates of the variances of the coefficients. After correction for serial correlation it turned out that these factors in general were not statistically significant to determine the rate changes. When the exchange rate with one period lag was added to the model as an explanatory variable, the outcome of the analysis was that expectations based on the past

rate are of crucial importance in the determination of the exchange rate.

The second part of the study was an analysis of the impact of exchange rate adjustments on the country's underlying international position, the basic balance. The regression results, corrected for serial correlation, of the linear relationship between the change in the basic balance and the one and two quarter lag level of exchange rates were not statistically significant for all countries except the Netherlands. The result is not surprising since the key factor was oil prices which caused a shift in the trade accounts uncorrelated to the changes in the exchange rate. There are several reasons for it. First, the worldwide economic boom combined with a jump in the prices of primary commodities in 1973 contributed to important shifts in the trade accounts. For instance, the U.S. trade balance swung to a surplus in the second half of 1973 from a deficit in the early 1970s as a result of a spectacular rise in the volume of agricultural exports, whereas the Japanese trade surplus was reduced sharply resulting from higher payments for primary products. Italy and the United Kingdom, on the other hand, experienced a huge deficit in spite of the fall in the sterling and the lira exchange rates. Another example is the case of West Germany, where the trade balance registered a record surplus of \$14 billion and the effective rate of the D-mark appreciated by about 12 percent from 1972. Second, the quadrupling of petroleum prices in 1974 has

sharply increased the cost of imports and most countries experienced a turnaround from a surplus to a deficit in their trade accounts; only the German trade surplus rose further despite an appreciation of the D-mark by some six percent from 1973. Third, the worldwide economic recession during 1974 and early 1975 caused a slowdown in exports, while the payments for imports remained about the same level or were somewhat lower than in 1975, due mainly to a high share of oil payments. An exception was the case of the United States and West Germany. For the United States, an improvement in the trade account came primarily because of a high income elasticity in the demand for imports, while the German trade surplus was as large as one year earlier.

This study then examined policy measures adopted by the monetary authorities to adjust to the imbalances (surplus or deficit) in the balance of payments. Two main developments occurred during the 1971-1975 period. One of these was the disequilibrium in payments prevailing until 1973, which was characterized by a recurring weakness in sterling and a deterioration in the United States balance of payments compared with the surpluses of Japan and Continental Europe. To control the influx of capital, Japan induced the commercial banks to increase lending abroad and liberalized foreign real estate investments, West Germany introduced limitations on capital imports, Switzerland tightened up the regulations on foreign deposits in the Swiss banks including interest charged on the deposits, the United

Kingdom controlled capital transactions outside the sterling area. The second cause of disequilibrium was the effect of higher oil prices in 1974. The period was characterized by dramatic shifts in the surplus of trade accounts from oil-importing countries to oil-exporting countries. The unexpected jump of payments for oil imports caused a reduction in reserves of all industrialized countries. The reversal of capital import controls began in 1974. The United States discontinued the controls on capital exports in January, 1974, France extended its controls on outward capital movements, West Germany terminated many of its controls on capital inflow programs, Italy tightened up the controls on exports of banknotes, Japan restricted the resident purchases of foreign bonds and stocks and withdraw the financing program of real estate investments abroad, the United Kingdom put strict controls on tourist expenditures abroad, Switzerland is the only country that experienced an inflow of capital, which contributed to the upward pressure on the Swiss franc.

The final section of this study was concerned with the question: Have the floating exchange rates contributed to a lesser use of reserves than under the fixed rate regime, as suggested by the advocates of the greater exchange rate flexibility? A criterion used to answer this question is the change in official reserves from one quarter to the next regardless of whether the change was an increase or a decrease, since from a theoretical point of view, the

reserve changes will approach zero. It is difficult to evaluate how extensive national monetary authorities intervened in the exchange market since some countries intervened for a period of time and then reversed their policy. For countries that have their exchange rate policy adhering to the "joint float," the experience of West Germany demonstrated a substantial reduction in the fluctuations of reserve assets. Although the quarterly changes in reserves were large for Belgium, the Netherlands, and Sweden, there was a tendency of moving towards a smaller use of reserves. As the French franc was floating independently, the average of quarterly percentage changes in reserves during 1974 was the lowest. When France was in the "joint float" during 1973 and from July, 1975 to March, 1976, quarterly changes in reserves became significantly larger. Italy and the United Kingdom, whose exchange rates were suffering downward pressure, were reluctant to use their limited reserves; they sought credits from central banks, apart from the credits drawn from the IMF, so that these two countries experienced wide fluctuations in their reserves. Switzerland reversed her policy of non-intervention during the 1973-74 period, and therefore witnessed wide reserve changes. Japan intervened heavily in the exchange market during 1973, then reversed her policy during 1974-75. The Canadian reserves have fluctuated between the range of 2 to 3 percent annually since the adoption of the floating in mid-1970. The United States authorities did not attach importance to the level of

reserves; her liabilities to foreign official accounts declined substantially in 1973 and 1975 separated by a moderate increase in liabilities to the OPEC members in 1974. The experience of major industrialized countries with floating exchange rates is well described by the Bank for International Settlements in its annual report in 1976 (5, 1976, p. 104):

In the situation as it was in March, 1973, as well as during the three years since then, it is hard to see what practical alternative there has been to floating exchange rates. And looking at the longer run trends of major industrial countries' exchange rates, they have, fairly clearly, been in the right directions. Moreover, some earlier payments imbalances have in the process been corrected; others, however, still remain troublesome, or have even assumed larger proportions. Floating, while it may be inevitable, therefore needs to be managed not only in the narrow sense of exchange-market intervention but, more importantly, through domestic financial and economic policies. Beyond that, however, much remains to be clarified about both the theory and practice of managed floating.

The study has shown that floating exchange rates alone cannot stabilize or keep a balance of payments in balance. Currency reserves are still badly needed because autonomous events continue to overshadow monetary adjustments. The doubling of wheat prices, the quadrupling of oil prices, the progressive inflation in some countries with governments that have only minority control have delayed the adjustments in the balance of payments, and the changes in the rates have helped to reduce the pressures on government officials to intervene heavily in the foreign exchange markets. Neither fixed nor floating rates are able to overcome the

powerful economic and political influences that have distorted the results in the past. If other, more potent economic devices can be adopted, only time will tell.

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