The Bretton Woods System
as a Gold Exchange Standard

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Contents

1.Introduction

The Bretton Woods System collapsed in August 1971 when President Nixon declared to close the gold windows of the dollar. The pegging of exchange rates under this system was twofold; 1) the parity of each member country was in fact determined in terms of the dollar, and 2) the dollar price of gold was also fixed, the prerequisite of which was the convertibility into gold. Its suspension was therefore a substantial blow to the international monetary system of the post-war years. Another characteristic of this system; the free convertibility between each currency came into force for the most part in 1958, when the west european countries terminated their exchange controls. Thereafter until 1971, the Bretton Woods System worked in accordance with its initial idea, only for a little longer than a decade. In view of the fact that the floating exchange rate system has survived for nearly two decades, the Bretton Woods System seemed to be destined to collapse.

Strictly speaking, the Bretton Woods System consisted in two components; one determined by the Agreement itself and another which existed initially outside of the system, but in fact functioned as an indispensable factor. The gold convertibility of the dollar, for example, was based on the American Gold Reserve Act of 1934 and served as a prerequisite for the Bretton Woods Agreement[1]. The " Gold-Dollar Standard " was thus founded on both the IMF Agreement and the American domestic law. Besides, during the reconstruction 1period after the last World War, the IMF and the IBRD (International Bank for Reconstruction and Development) could not afford to supply enough fund , the major part of which was financed by the Marshall Aid Program (Gardner,1956, P.293ff). In this paper, we define the Bretton Woods System, in a broader sense, as the international monetary and financial framework sustained by the American leadership.

While there is a number of literature on the breakdown of the Bretton Woods System, the answer to the question, whether or not, and if yes in

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[1]When the Bretton Woods Agreement was drafted, all currencies were placed on an equal footing ("principle of uniformity"). The U.S. dollar was referred exceptionally in two ways; the Article III, section 3(b) (the requirement to pay to the Fund) and the Article IV, Section 1 (the definition of the parity).Dam(1982,P.86).Therefore it was impossible in the Agreement to oblige the gold convertibility of the dollar.

which way, this System contributed to the " Golden Age " of capitalism (Maddison, 1982), is not yet clear. In this sense, the well known argument by Robert Triffin (1960, in particular, pp.64-69) is very suggestive, because it seems to explain both the success and the breakdown of the international monetary system from the same reason. The " Triffin dilemma " stressed the contradiction that a national currency has to play the role of the international currency; and it constitutes a potential instability under the gold exchange standard. One of the most crucial problems at the end of the War was the shortage of the international liquidity. Its supply depends mainly on the balance of payment deficits of the key-currency country. Therefore, there exists a trade-off between the quantity and quality of the international liquidity. His dilemma implies that as the liquidity supply contributed to the good economic performances in the 1950s and 1960s, the core of the system, the confidence in the key-currency, declined. The " dollar crisis " was an inevitable cost of the " Golden Ages " of the capitalist development.

Although he was more concerned about the possibility that the shortage of liquidity might hinder world economic growth, his argument was interpreted as a prediction of the " dollar crisis " and had a great influence on the discussions of the international monetary reforms[2].

While the " Triffin dilemma " stressed the inevitable decline of the system, the other argument is that its breakdown would have been avoided if the U.S. had taken a disinflationary policy[3]. The expenditures for Vietnam War and the " Great Society " Program resulted in the inflation of the late 1960s. If this expansionary policy was politically as well as socially unavoidable, the argument of the policy failure turns to be another sort of the inevitability, in the sense that there could not have been any alternatives. Political economists emphasize that the dollar was destined to decline, because the American balance of payment deficits, like military expenditure overseas and development aid, were so to speak the

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[2] For example van der Wee,(1986,p.454ff).

[3] This kind of opinion is more popular among economists, for example, Johnson (1972, pp.412-13).

Pax-Americana costs[4]. However, it is to be questioned whether or not the American balance of payment could be corrected through the dollar devaluation, even under the inflationary tendency; whether or not the surplus on other accounts could be greater than the Pax-Americana costs. In short, the relevance of politico-social factors can be judged through the feasibility of the compensating economic policies. From the above considerations, the structure of this paper is as follows. In the following Section 2, it is reviewed in which sense the pegged exchange rate system brought about the success and failure of the Bretton Woods System. This is an indirect way to assess the importance of the liquidity problems. In Section 3, the demand and supply of the international liquidity is examined, first quantitatively and later qualitatively. Then Section 4 shows with historical examples that the stability of the Gold (-Exchange) Standard depends on the adjustment policy of the key-currency country. This aspect is not well considered by Triffin himself.Finally, the main conclusion of this paper is summarized.

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[4]This opinion is widely held by Japanese Marxist economists. Block(1977) is different from the cold-war historiography in arguing that the american diplomacy was guided by the desire for the global open economy system rather than the east-west conflict. However, he admits the U.S. could not reduce military expenditures and development aids, because the reduction would damage the american policy goal.

1) The Parity Change

If the fixed exchange rate system contributed to the economic growth of the "Golden Age ", the first possibility is that the stable exchange rate reduced uncertainty in the future and thus promoted the world trade. Historically, the growth rate of the real export is the highest during the Bretton Woods period; between the World Wars, on the other hand, the fixed exchange rate system was short-lived and the export growth rate was low. Before 1913, the world export grew relatively well under the international gold standard[5]. Indeed the stable exchange rate is, if other conditions unchanged, favorable to the foreign trade, and also to the overall economic growth. Nevertheless, it is questionable whether its influence is as great as the founders of the Bretton Woods System anticipated[6].

In spite of the favorable effect of the stable exchange rate, the pegged exchange rate system turned to be, in the long run, an instable factor to the world economy, as the successive currency crises proved from the late 1960s to the early 1970s. The reason for the downfall of the system is sometimes attributed to the inconsistency of the pegging of the exchange rate with the " uneven development of the capitalist countries"(Glyn,Hughes,Lipietz and Sigh, 1989, pp.99,102). But why the parities could not be well coordinated among countries, although the Bretton Woods Agreement allowed, if necessary, the parity change?

The theory of the $\underline{N}$-th currency implies that the parity change of the $\underline{N}$-th currency (key-currency) is in fact impossible[7]. According to this theory, the United States could not independently decide the dollar parity,

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[5]For the growth rate of real export, see Maddison,(1982, Table **). For the period after 1979, see OECD, Historical Statistics, 1960-1987.

[6]The influence of the exchange rate on trade is very difficult to distinguish from other factors. A certain exogenous shock , for example since the oil crisis, would bring about simultaneously the volatility of the exchange rate and the slower growth of the foreign trade. For the review of the econometric studies, see IMF(1984a, 1984b pp.42-46).

[7]McKinnon(1979, P.28ff). Besides, Kenen(1969), Johnson(1972) stressed the same reasoning without using this terminology.

but could only accept passively whatever exchange rate which is decided by other countries. Even if the dollar had been devalued to D-Mark, for example, in order to stabilize this new parity, the dollar exchange rate to other currencies would have had to be stabilized via D-Mark. This situation means that the D-Mark plays the role of the N-th currency, which is inconsistent with the above presupposition. As a corollary of this theory, the liquid liability of the United States was what the rest of the world demanded, because the American balance of payment deficits depended on the exchange rate other countries preferred. If they had not wanted " dollar overhang ", they would have had options to revalue their currencies[8].

However, the U.S. could have raised the dollar price of gold (devalue dollar in terms of gold)[9]. If other countries had not followed her devaluation, American balance of payments would have recovered. In this case, the dollar value of the American gold reserve would have increased and her industries become more competitive. Then there could have been no more instability in the Bretton Woods System ? On the contrary, new problems arise. Firstly, the devaluation of dollar reduces the gold price of dollar assets held by the rest of the world. Other countries would have naturally resisted and might have compensated declining competitiveness with protective measures. Secondly, more serious problem is that the devaluation itself may damage the credibility in dollar and accelerate the shift from the dollar into gold. In order to devalue dollar with preserving its key-currency status, the demonetization of gold is indispensable. The sooner action without consulting other countries, would be better. From these reasons, the announcement of President Nixon was so startling. The dollar devaluation did not serve to save the Bretton Woods System, but commence its breakdown.

Since the initial Agreement admits the parity change in case of the " fundamental disequilibrium ", the parity of other currencies was more

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[8]Johnson(1972),Despres, Kindleberger, and Salant(1973).

[9] In the second administration of the President Eisenhower, the U.S. Treasury sought advice from the IMF how to devalue the dollar. But learning that such a devaluation would be effective only through breaking the link between the dollar and gold, they refrained from considering it. See de Vries(1987, pp.78-79).

flexible. Even under the classical gold standard, the devaluation was theoretically feasible, but no advanced countries did change their parities until the World War I. With the parities as given, they resorted solely to monetary policies for the external adjustments. The employment of exchange rates as a tool of the macro-economic policy was introduced gradually after experiences of the inter-war period; "overvaluation " of the pound-sterling, the "undervaluation " of french Franc, and later competitive devaluations of the 1930s. Those experiences were supposed to teach that the devaluations is one of the most powerful weapons for the " beggar-thy-neighbor " policy and the cause of the deflationary tendency[10]. Needles to say, this lesson composed the background of the fact that the parity change was in fact very difficult under the Bretton Woods System.

As the "fundamental disequilibrium" was not clearly defined, the past experiences hindered the parity change. More precisely to say, it was not necessary to define the "fundamental disequilibrium ", because lessons from the past experiences were supposed to teach that the parity changes should be exceptional. Besides, the parity changes encounter political resistance more often than other macro-economic policy measures. Devaluations seem, like the pound sterling in the 1960s, to damage the dignity of the government. Revaluations provoke strong objections on the part of exporters. Even in West Germany, where the government preferred to price stability more eagerly than any other countries, revaluations of the D-Mark was only possible after a long hesitations. In Japan from the late 1960s to the early 1970s, discussions of the Yen revaluation was a sort of taboo within the government[11].

The parity change is unavoidable in the middle-term, not only because there exists a gap in productivity growth among capitalist countries, but also because each government undertakes a discretionary macro-economic

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[10]However, if pursued multilaterally, devaluations could have counteracted against the world depression. See Eichengreen and Sachs(1985). Gardner argues that at the Bretton Woods Conference, both Keynes and White initially favored the pegging of exchange rates, but in the course of negotiations, both sides became more tolerant of the parity change.(1956, PP.89-90,114-115).

[11]Emminger(1977), Nakamura(1986,p.292).

policy. But the multilateral agreement on the " appropriate exchange rate " is not easy to come about, because the domestic resistance against the parity change and incentives toward the " beggar-thy-neighbor " are usually very strong. The multilateral parity alignment tend to become feasible barely in front of the systemic risk, like the Smithonian Agreement. In this sense, the fixed exchange rate system is potentially instable. Under the international gold standard before 1913, when the macro-economic adjustment did not encounter serious resistance, this instability did not appear explicitly.

2) The " Overvaluation" of the Dollar

The next question is whether or not the American balance of payment deficits were to decrease through the dollar devaluation. In the 1960s, the government items (grants, public capital flows and military transactions) and private long-term capital accounts are the main causes of the overall deficits, while the balance of trade as well as the balance on goods and services continued to be positive (See Table 1). The governmental expenditures were decided in accordance with the political, military strategies and therefore inelastic to the exchange rate variation. If the necessary level of the real expenditures were exogenously given, the deficits denominated in dollar would be greater with the dollar devaluation. The foreign direct investment, which constituted the largest private capital outflow, might have been reduced after the devaluation, because the "overvalued" dollar had made the foreign investment easier. On the other hand, those factors such as the high level of federal tax and the high tariff walls of the EEC and EFTA countries, which were considered to be the main causes of the foreign direct investment[12], had nothing to do with exchange rate levels. On other factors, such as wages, capital and transport costs, the exchange rate could influence, but not strongly enough to change the direction of the foreign investments. Thus the dollar devaluation could not have dramatically reduced the main components of American

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[12]Block(1977,pp.146-47).

balance of payments deficit.

Next to be answered is whether or not the surplus on goods and services could have increased through devaluation. While the american balance on goods and services kept surplus until 1970, its amount had been declining from the peak in 1964. If the inflation in the late 1960s deteriorated the balance on goods and services, this must have been reflected in the rising real exchange rate of the dollar. The fact is that the real effective exchange rate of the dollar rose somewhat in the years of 1968 and 1969, but not so much as to change the level from the early 1961. In short, contrary to the above expectation, the real effective exchange rate of the dollar was rather stable in the course of the 1960s[13]. The nominal effective exchange rate, on the other hand, showed nearly the same tendency, which suggests a synchronization of price changes among the United States and her trade partners.

The international synchronization of prices took place also under the gold standard before 1913. One of the reasons was that the active arbitrage transactions reduced the price differentials in a short period. The "law of one price " holds better in interest rates than in goods prices[14]. Since the costs in transportation and communication declined enormously thereafter, the synchronization of prices in the 1960s is not a matter of surprise. Another reason is that monetary authorities of other countries had to intervene in the foreign exchange markets to support the dollar exchange rates. The money supply thus augmented caused the "imported " inflation, which spilt over simultaneously with the American inflation.

The fact that the american balance on goods and services deteriorated until 1969 in spite of the relatively stable real exchange rate of the dollar, suggests that the deficits were not mainly results of the price differentials. The dollar devaluation, accordingly, would not have dramatically recovered American balance of payments. In 1970, the decline of the real exchange rate coincided with the recovery of the balance on goods and services indeed, but in the following years of 1971 and 1972, this balance

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[13]IMF(1984a,Chart7,8). The same is referred in Branson(1980,p.204).

[14]McClosky, Zechner(1976).

turned suddenly worse even with the further decline of the real exchange rate. The greater surplus in 1970 was the reflection of the American recession, the deficits in 1971 and 1972 were caused by the economic recovery[15]. In order to reduce American deficits in the balance of payments, the tight macro-economic policy would have been far more effective than the dollar devaluation.

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[15]Gordon(1980,pp.130-40) argues that the dollar devaluation had such a effect that the balance of trade in the first quarter of 1973, the peak of the economic boom, turned better than the forth quarter of 1970, the trough of the recession. But he does not take into account of the enormous deficits in 1971 and 1972.

3. Supply and Demand of the International Reserves

1) Gold and the Foreign Exchanges

Triffin regarded international liquidity as a means of payment or considered it from the precautionary motive for money. The critical index is the ratio of reserves to imports (See for example, pp.45-46). The precondition for this argument is that the " velocity " of international reserves is stable, otherwise the liquidity does not need to grow in accordance with the world trade and hence the dilemma does not exist.

Historically, gold played the role of international reserves, but its supply is limited by the natural resources. Some economists argued that the international monetary system, which depended on gold, had potentially a problem of the liquidity shortage. From the same reason, the Genoa Resolution of 1922 recommended the adoption of the Gold Exchange Standard (Dam, 1982, pp.55-56).

Table 2 reviews the long-term trend in the shares of gold and foreign exchanges, respectively. In the inter-war years, especially in the 1930s, the share of gold increased, because the currency depreciations reduced the gold price of the foreign exchange reserves, on the one hand, and the loss of credibility in foreign exchanges accelerated the shift toward gold, on the other hand. After the World War II, the share of gold decreased from the 1960s, but its decline got momentum later in the early 1970s. Compared with the later years, the previous decrease was rather small. Since the foreign exchange rates began to float, the gold share has been declining closer to zero[16]. This long- term tendency tells that the Bretton Woods System was situated in the transition period from the metal currency (gold) to the credit currency (foreign exchanges).

Did the shift from the metal to the credit currency promote the world economic growth ? In the interwar years, the rise of the gold share coincided with the economic stagnation. On the other hand, the economic

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[16]Calculated from the market price, the share of gold was 45.1% in 1978, and 36.9% in 1988, which reveals the growing tendency again since 1973. However, this share should not be overestimated, because the amended IMF Agreement of 1976 demonetized gold.

growth rate in the post war period was the highest, especially the growth of the real export remarkable [17]. In short, Triffin's pessimistic fore-cast did not come true. Considering the inelastic supply of gold, the growing share of foreign exchanges was at least a prerequisite for the economic growth.

However, we should take into account of the fact that the international reserves did not increase proportionally with the world trade growth. In other words, the velocity of the international reserves was not stable in the long-run. The reserves to import ratio of the total world was 22% (39% with gold in circulation) in 1913, 43% (with gold in circulation 46%) in 1928, and 118% in 1938 (Triffin, 1960, Table 3). Several factors could have operated in the background of this great change.

Firstly, the "saving" of reserves is possible, as the international financial market enables countries to borrow liquidity. Secondly, the stable growth of the world trade may decrease precautionary demand for reserves. The smaller ratio before 1913 is consistent with the fact that the growth of world trade was relatively rapid with less fluctuations[18] and the free movement of international capital made it easier to finance current account deficits. The greater ratio of 1938 than 1928 seems to reflect the slow recovery of the world trade from the Great Depression, but the stagnation of trade and the malfunction of the international capital market should have increased the precautionary demand for reserves. How the international finance possibility and the fluctuations in the world trade influence the demand for reserves, is to be empirically answered below with time-series data.

How did the relationship between world trade and reserves change in the post-world war years ? The Figure 1 shows that the world official reserves increased moderately up to the late 1960s, and expanded enormously in the early 1970s. Since the amount of gold reserves remained almost constant, the share of gold in international reserves decreased continuously from 74%

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[17]For the long-term statistics of economic growth, see Maddison (1982, Table 4.9).

[18] For the export fluctuations, see Maddison (1982, Table 3.8).

in 1949 to 50% in 1968, and 29% in 1971. The major increasing component was the foreign exchanges, in particular dollars. But the dollar reserves exceeded gold only in 1971, until then the larger part of the world reserves consisted in gold (See Figure 2). It is noteworthy that through the 1960s, the "gold-dollar standard" was based rather on gold than on dollar, and the growth in total reserves remained rather moderate.

One might object to regarding the official reserves as the total world liquidity. Since most of the international payment is settled through the private dollar assets, Figure 3 shows the official reserves with the liquid liabilities of American banks to non-residents, and eurodeposits as well. The liquid liabilities of American banks are far smaller than the official reserves, while the eurodeposits expanded from the late 1960s. But the eurodeposit is not an actual substitute to the official reserves, because some part of the latter is employed in the former. Whether or not the eurodollar market takes the place of the American balance of payment deficits, is discussed later in the Section (3).

The ratio of world reserve to imports had been declining since the late 1940s through the 1960s (Fig.4). In 1971 and 1972, this ratio rose enormously with the growth of dollar reserves, but its level remained nearly the same as in the mid-1960s. The velocity of international reserves was, therefore, on the increasing trend in the two decades up to the end of the 1960s, which seemingly contradicts the presupposition by Triffin. However, under closer observations, the fact turns to be in the opposite; the total reserves to imports ratio consists of the gold/import, foreign exchange/import, and other (IMF positions etc.)/import ratios. The dollar reserves to world imports ratio remained almost constant through the late 1960s, suggesting that the main reason of declining reserves/import ratio was the relative decrease of gold to the world import. This fact is rather consistent with Triffin's argument that the international liquidity should be supplemented through other sources than gold, which did not increase as fast as the world trade.

Despite the recognition of the "dollar overhang" from the late 1960s, the dollar reserves does not seem to be excessive, at least relative to the world trade. The excessive dollar became apparent only after 1971, when the

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United States terminated the gold convertibility of the dollar. The ratio of the total liquidity to workd import is also on the declining trend, until the late 1960s, since the liquid liabilities of American banks to non-residents is far smaller than the official reserves of the world. The velocity of the official reserves plus private liquid dollar-assets (excluding eurodiposits) was also constant.

The examination of the world reserves to import ratio so far does not reveal other factors which affect the amount of reserves held. According to the literature on the demand for international reserves (See the literature cited in the Footnote 30), the amount of reserves actually held correlated positively to import and to the degree of disturbances in the balance of payments. Besides, as the previous discussion suggests, we suppose that there may have been elements to save reserves, such as the " economy of scale ", or an innovation in international payment system.

Table 4 shows the regressions of the world reserves (r), gold reserves (g), and dollar reserves (d) on world import (im), variability of world import (Vim) as an index of disturbance, and international finance possibilities (f) as an innovation of payment facilities, respectively. As the previous literature suggests, signs for both im and Vim are supposed to be positive. On the other hand, the sign for f is to be minus, because the growth of the euro-finance market reduces the precautionary demand for reserves. The data for f corresponds to the sum of eurobonds issued and euro-deposits (net), because the international finance denominated in dollar shifted from the United States to the euro-finance market from the mid-1960s. The time-trend is included as a variable in equations (3),(5), and (8). Of the coefficients for lim in equations from (1) to (9), those in (2), (3), (7), (8) and (9) are statistically significant at 95% level. Besides, the signs are the same as expected. As the Figure 3 shows, the correlations between dollar reserves and imports are particularly good. The t-statistics of Vim in (8) and (2) are high, but signs are opposite to the above expectation. Since the world import equals the world export, it is difficult to interpret this result. The relationship between trade disturbance and reserves is further discussed in the Section (4), with individual country's data.

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More important is the result that the coefficient of $\underline{lf}$ is minus in equations (3) and (9). The t-statistics shows this variable is significant at 90% level. This is consistent with the argument that the growth of the euro-finance market reduced the need to hold reserves and hence contributed to solve the liquidity dilemma (See the Section (3)).

2) The Dollar as a Key Currency

How the liquidity shortage after the World War II was solved, why the key-currency country supplied the liquidity to the rest of the world; these supply side problems are indeed influenced by the political economy factors after the World War II. Another question concerning Triffin's argument is why the international liquidity should be a certain country's currency.

It is not because the country with enormous political and economic power force other countries to accept the currency of that country, however. The main reason is simply that transactions in that currency are most economical , most advantageous for the rest of the world. Prerequisites for a key-currency are conventionally attributed to 1) the size of the national economy concerned, 2) the existence of the international financial market and 3) the stability of that currency (For example McKinnon, 1979, p.35). The best example is the pound - sterling before the World War I, when Britain was the largest trading country and the " world's banker"[19].

Firstly, Britain was the largest trader,and shipper as well. Therefore she had the bargaining power in selecting with which currency to trade, other countries merely followed to transact in sterling as a means of payment. Britain was the center of the entrepôt trade, having exchanges of major primary trade goods, such as cotton, wheat, gold etc. Secondly, greater part of the world trade was financed by British financial institutions and its payments were settled through sterling balances held in London. Thirdly, the sterling asset was the most liquid and least risky in the sense that London financial market provided large amount of liquid assets and its gold convertibility was never in danger.

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[19] For the following paragraph, see Brown, 1940, pp.774-778, for example.

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After the turn of the century, Franc and Mark began to command equal status to the pound, at least on the Continent, and the confidence in the pound seemed to commence waning[20]. Compared with the 1920s, however, the pound was on the far more solid basis.

Table 2 shows that the share of pound-sterling is greater than the dollar in the early post-war years. The relative position of the pound declined in the 1920s, but rose again in the 1930s. his larger share continued up to the 1950s. Its share in world trade finance was around 50% before and after the war, and one-third in the early 1950s (Williams, 1968, p.268, 294). During the first decade of its operation at least, the Bretton Woods System was composed of the two key - currencies. In explaining this phenomena, we cannot rely on the same reasons as applied to the pre-World War I years .

Firstly, the United States was by far the largest exporter. In 1948 its export share in the world was 22%, twice as large as Britain. Especially, those countries in needs of food and reconstruction materials had to pay in dollars for their imports. Secondly, the United States was the main supplier of capital to the rest of the world. In a decade of 1945-1955, foreign bond issues amounted to 1.8 billion dollars, while 1.1 billion dollars in Britain (Aubrey, 1964 Table 2). Thirdly, dollar was the sole currency convertible to any other currencies and to gold as well, in other words, it maintained fixed price in terms of gold. These characteristics are the reflections of the American competitiveness and huge accumulation of gold reserves. Despite these advantages, dollar could not attain better positions than sterling until the mid-1950s.

The world trade depended still on short-term finance supplied by London through the 1950s. Trade finance facilities are the outgrowth of accumulated information and know-hows, which is not a direct outcome of the surplus in the current account (capital export). More important is the fact that the sterling-area countries held major part of the sterling balances, which is a legacy of British borrowing during the World War. Since this balance had only limited convertibility up to 1958, it served as a means of payment

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[20] de Cecco(1974,p.125), Eichengreen (1990,pp.309-310). As an evidence of the declining confidence, they referred to the fact that the Bank of England could not stop the large scale outflow of gold to the United States, with a conventional means; the rise of the Bank Rate.

mainly within the sterling-area. This is one example of the political economy aspect of the international currency. Nevertheless, as the trade with Britain and within the sterling area declined its share, these countries became independent from the pound and the devaluation of the pound in 1967 finally broke its key-currency status[21]. In short, the conditions for a key-currency hold in the long-run.

On the other hand, the rise of the dollar is sometimes attributed to the American hegemony in the world politics and military domain. One argument is that the liquidity shortage in the post-war period was solved through American military expenditures (Korean War) and government aid (Marshall Plan). But given the American potential as a supplier of the capital goods and food, which Japan and European countries seriously needed, the most demanded currency was nothing but dollars. The liquidity supply through political channels was merely one side of the history. On the basis of this American competitiveness has grown the international financial and foreign exchange market, with the dollar as a main transaction currency.

Since the late 1950s, the basis of the dollar competitiveness transformed in two ways. Firstly, the American share in the world export declined, while her share in the world import rose. The recovery of manufacturing industries in the developed countries reduced the abnormally high level of the American export, and the main components of her exports shifted to the traditionary competitive items, such as capital goods, chemical products, and agricultural products (Branson, 1980, p. 207). In transactions of these items particularly, the dollar had the great advantage. While the increasing share of the American import constituted another bargaining power for the dollar, more important is probably the foreign direct investment and the technology transfers by American multinationals.

Secondly, whereas the position of the United States as a " World Banker " promoted transactions in dollar, the analogy of a " bank " deserves following remarks. 1) Up to the mid-1950s, as stated above, the United States supplied funds to the rest of the world, mainly through public channels. Indeed the United States was already the greatest private

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[21]. Cohen(1971, Table 4-3, p.73 ff).

capital-exporter, but American private capital consisted largely of Canadian bonds from 1945 to 1955. Other issues than Canadian bonds in the United States surpassed those in Britain from the late 1950s, around which time short-term finance in New York is supposed to overwhelm those in London[22].

2) Thereafter the center of the international finance located within the United States for nearly a decade until the mid-1960s, when the international finance denominated in dollar started shifting to the euro-finance market (euro-bond and euro-dollar markets). Of the liquid dollar assets held by non-residents, those invested in the United States was more than twice of euro-dollar deposits in 1966, but in 1970 the latter was almost as much as the former (Mikesell, Furth 1974, Table **).

The euro-finance market developed on the basis of the dollar, because the world economy had been based on the United States so far; another reason is that the demand and supply of funds in the euro-markets largely depended on American multinationals[23]. American firms naturally prefer to transactions in the dollar, because of business relationships with the home country and accounting customs. From the mid-1950s, foreign direct investments became the main stream of the capital outflows from the United States, American multinationals contributed to close the technology gap between the States and Europe (Maddison, 1982,p.128, van der Wee, 1986, pp.211-213). The growth of FDI promoted patent-service payment and intra-firm trade, denominated in dollar.

As the American multinationals became the largest customers in the euro-markets, the share of American banks simultaneously expanded. The motives for American banks to extend their bank networks abroad was to respond to foreign business services demanded by their domestic customers. The multinationalization for banks to follow the customer was deduced from

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[22]Statistics of foreign bond issues is from Aubrey (1964, Appendix Table 2). Aubrey (p. 175) also reports that in the early 1960s, trade finance in dollar was greater than in pound-sterling, while bank acceptance bills in the United States far greater than in Britain.

[23] See Morris,Little (1970, pp.61-61), Mendelsohn (1980, p.34). The share of American multinationals in the eurodollar market is not reported, but American firms took about two-thirds of the total eurobonds issued from 1965 to 1974 (Mendelsohn, 1980, p.136).

these experiences in the 1960s (Fielke, 1977, pp. 27-28).

3) The Influence of the Eurodollar Market

It is worth reconsidering whether or not the American balance of payment deficit is the sole source of the dollar liquidity for the rest of the world. According to the standard textbook on international finance[24], the growth of the eurodollar market is not related to the American balance of payment. If this argument is correct, and the eurodollar market functioned as a new liquidity source, then the Triffin dilemma does not hold any more, as Marglin, Schor (eds),(1989, pp.9,102) stressed. Transactions in the euro-market have still something to do with the American balance of payments, however.

The development of euro-finance market is, as well known, promoted by a series of American capital export regulations; Interest Equalization Tax (IET) of 1963, the first and second Voluntary Capital Control Programs (VCCP) of 1965 and 1968, respectively[25]. These measures were introduced in order to reduce American balance of payment deficit, and in this sense, the euro-finance market is a by-product of the balance of payment problems. Other regulations which promoted euro-finance, namely Regulation Q and Reserve-Deposit Ratio, have origins in the Financial Reforms of the New Deal. Despite their early origins, these measures had no influence on the development of the euro-finance before the mid-1960s, because American banks had so far no difficulties in fund-raising. The high interest rates, caused by the accelerated inflation in the late 1960s, made banks to turn to the eurodollar market for deposits. The higher the interest rate, the more competitive became the eurodollar market than American domestic market.

As a rule of thumb, the balance of American capital in Table 4 is suggestive to the question, how much influence the capital controls had on

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[24]For example, Dufey and Giddy (1978), McKinnon (1979, Chap. 9).

[25]For capital control measures, Hawley (1987, Chap. 3-5) provides the most detailed information, including political backgrounds.

the balance of payments. Generally speaking, the amount of capital outflow was reduced, at least in the short-run, after the introduction of each control. In 1964, the next year after the IET, the total outflow reached its peak, which was not surpassed until 1970. FDI decreased from 1966 to 1968, as the regulation on this item became tightened. Portfolio capital decreased dramatically in 1964, and stagnated until 1966. More impressive is that long-term lending by banks reduced to less than a quarter in 1965, and turned to net inflow thereafter.

It is, nevertheless, almost impossible to assess exactly the direct, and as well as indirect[26] effect of the capital controls. Another factor which influences capital flow is a differential in interest rates, but the interest rates are also affected by these controls. The more effective the capital control was, the lower American interest rate became ,if other things equal, because domestic loanable funds increased. Besides, such a policy as the " Operation Twist " complicated the relationships between capital controls, interest rates, and the actual amount of capital flows.

It is a well-known fact that the short-term capital moved quite sensitively to the interest rate differentials between the eurodollar and the American domestic markets (For example, Bell, 1973, p.54ff, Hawley, 1987, pp.114-116). Because of the domestic high interest rate in the late 1960s, American banks aggressively sought to raise funds in the eurodollar market, and the introduction of the " Operation Twist " itself tells that the American government was well aware of the interest rate elasticity of capital movements. That the short-term capital account reports surplus in the late 1960s, in particular in 1966, 1968 and 1969 (See Table 1,4) is the result of the high interest rates in the United States, which naturally contributed to reduce the overall deficits of the American balance of payments.

The other side of the eurodollar flow to the United States was transactions by foreign residents to convert their domestic assets into eurodollar deposits. The foreign central banks, on their parts, had to intervene in

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[26]Hewson and Sakakibara (1975, pp. 47, 55-56) reports that the decrease of bank lending from the United States induced potential borrowers to shift their deposits to the eurodollar market, thus reducing the favorable effects of controls on capital account.

the foreign exchange market by selling dollar reserves for domestic currencies. As a result, American liabilities to foreign monetary authorities transformed into those to eurobanks, and hence a favorable effect on the American public settlement accounts[27].

On the other hand, euro-transactions between American non-residents can be settled without any effect on the American balance of payment. For example, a foreigner shifts his dollar deposit from the United States to a eurobank. And then the latter bank lends this fund to a foreign non-bank who will pay the dollar for imported goods. Since international payment for goods and services is not possible between the eurodeposit accounts, foreigners have always to transfer funds between their current-deposit accounts held at American domestic banks.(See, Dufey, Giddy, 1978, pp.121-122, McKinnon, 1979, pp. 207-209). Even if the means of payment is financed by eurobanks, the mechanism is the same as the case of a trade finance supplied by an American domestic bank.

In this way, the development of the eurodollar market could have solved the liquidity dilemma stressed by Triffin. Besides, as the eurodollar inflow to the States reduced the American balance of payment deficits, the capital controls in the late 1960s had indirectly favorable effects. Nevertheless, the eurodollar market had naturally no power to save the dollar from deepening crisis. Since the euro-market is free from regulations, it is very practical for currency speculators to transact in this market. Foreign non-banks increased their eurodollar deposits rapidly in 1969 and 1970, in anticipation of a shift to undervalued currencies like Swiss Franc and D-Mark. Their eurodollar deposits decreased later in 1971, while those held by foreign monetary authorities expanded in 1970 and 1971, because the latter had to intervene in the foreign exchange market with buying dollar, part of which was employed in the eurodollar market, because

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[27]See Bell (1973, p. 65). According to Morris, Little (1970, p. 51), the United States had net 8.6 billion dollar of euro-liabilities in total at the end of 1968, to Britain, European Continent, and Canada. This amount was naturally changeable, depending on the interest rate differentials etc.

of the higher interest rate[28].

4) The Demand for International Reserves by Developed Countries

The adjustment policy and the parity change are substitutes for each other. Since the IMF agreement regarded the latter as exceptional, the Bretton Woods System generally supposed member countries to adjust their money supply to the balance of payments. On the analogy of the gold standard, the international reserves should have been barometers to guide the macro-economic policy. However, how it worked actually, is a matter to be tested empirically.

From the viewpoint that the Keynsian discretionary policy stood opposite to the gold standard mechanism[29], the obligation to adjust was a mere appearance. In fact, however, the balance of payment worked as a constraint for the continuous expansionary policy, for example in Japan and Britain, where "the balance of payment ceiling" and the "stop-go", respectively, were the guide to macro-economic policies in the post-war years. Seen from the global perspective, on the other hand, the fact that the United States was reluctant to adjustments, should have enabled other countries to accumulate dollar reserves and thus to avoid otherwise necessary defla-tionary policies. Such questions as how serious the international con-straints were, how far the adjustments were actually pursued, are to be examined below.

These questions can be divided into two parts. Firstly, what factors affect the necessary amount of international reserves; which is to estimate

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[28]Mikesell, Furth (1974, pp. 92, 97-98). For statistics of the dollar liquid assets held by private non-residents as well as foreign monetary authorities, see Mikesell, Furth, (1974, Table 2-9, Appendix Table 2-4).

[29]Keynes called the gold standard, in his early writing of _A Tract on Monetary Reform_, "a barbarous relic" and pointed out that the "managed" currency system, or the "regulated non-metallic standard" are indispens-able, in order to preserve the stability of a national economy (1923, pp. 136, 138, 152-154). The concept of the state-monopolistic capitalism by Ohuchi (1973) is based on the same recognition of the historical develop-ment, although he followed the marxist tradition using such a terminology as "the general crisis of capitalism."

the so-called demand for international reserves function[30]. Secondly, the relationships between international reserves and money supply. Since past experiences and customs may influence on both motives to hold international reserves and monetary policy, cross-sectional regressions are questionable. Table 5 shows the results of the time-series regressions for the seven developed countries. These countries as a whole held 42%, 53% of the world export in 1950 and 1970 respectively[31]. Their aggregate share in GDP should have been larger. When their economies were on the expansionary trend, they surely pulled the world economy to economic growth.

Although there is a number of literature for the first part of the question, Table 5A includes Import (im), variability in export (Vex) as well as nominal GNP for independent variables. The greater the GNP, the more would be the demand for international reserves. Besides, as Table 3, the sign of the im would be plus. Still problematical is how to estimate the variability in export, but the sign of Vex is expected to be plus[32].

Among the variables in Table 5A, those with high statistical significance and right signs are lgnp for Britain, France, Italy and Japan; lim for United States and Germany; Vex for Britain and Japan. Compared with Table 3, the results of lim are generally not so good, probably because the growth of lr has closer correlation with that of lgnp. That the rise in reserves corresponded more closely to GNP, and partly to import, suggests at least that the growing amount of reserves reduced restrains to economic growth.

To examine more directly whether or not the amount of reserves contributed to economic growth, more interesting is the correlation of reserves with money supply, which leads to the second question; how obediently each

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[30] See Gruebel (1971), Frenkel (1974) for the demand function of international reserves.

[31] Calculated from IMF, IFS 1987.

[32] It is clear that the greater variability in trade or in the balance of payment increases the demand for reserves, but modelling the variability is not self-evident. Deviations from the averages are usually shown in absolute values as in Table 3 and 5. The greater Vex implies also that the export of the corresponding year is above the average, and therefore the increase in reserves could be an automatic result of the surplus in the balance of trade.

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country followed the "rules of the game." If any country could expand money supply without considering the amount of reserves, the latter would not be a restrain to economic growth.

Nevertheless, it is very important to take note of the possible endogenous relationship between the r and M. When the r is large enough, the money supply would grow; in this case, the sign for r in relation to M is plus. On the other hand, if the money supply grows, it influences the balance of payments negatively, hence reduces international reserves; in this case, the sign for r would be minus. Table 5B reports the results of the second-stage least-square with lr, estimated from equations in Table 5A. In order to see exact correlation, the values for both lr and lm are detrended.

From equations (8) to (14), the most interesting is the result that the coefficients of lr are all plus, with the very exception of the United States. In other words, the United States solely did not adjust her money supply to the amount of international reserves, rather expanded money supply with declining reserves, whereas other countries obeyed the "rules of the game." Nevertheless, it is better to exclude France from the remaining six countries, because her t-statistics is exceptionally small. Above all, the finding that the monetary response to the change in reserves is asymmetrical between the United States and other countries, is very suggestive to understand the real function of Bretton Woods System.

One of the successful balance of payments adjustments was the Japanese experience from 1954 to 1962 (de Vries, 1987, pp. 39ff). The same policy was applied in Britain, where the currency crisis took place successively, with a final devaluation of 1967[33]. Of the coefficients for lr, the Japanese is the greatest, and the British follows as the second, which corresponds to the above facts. That the French lr is statistically insignificant, reminds us that this country often resorted to currency devaluations.

Although Japan, on the one hand, and France, on the other, are two

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[33]Surrey attributes the slow growth of British labor productivity to the discouraged investment under this stop-go policy (1982, p. 529, 536). But the growth performance depends on many other factors than macro-economic policy, the best example is Japan which, even with a similar preference to adjustments, experienced a rapid growth.

extremes, what factor determines the policy choice whether to adjust or to devalue ? Generally speaking, the adjustment policy was more feasible, from the initial implication of the IMF Agreement, and because the devaluation was politically unpopular at home. The United States could not pursue deflationary policy from the political considerations, but the domestic pressure not to deflate was high in other countries as well. McKinnon stressed that the American balance of payment deficit was automatically sterilized, because surplus countries employed their dollar liquid assets in the United States (1979, p. 266). However, his argument should not be generalized in the sense that the gold exchange standard has a inflationary bias, because the key-currency country has an option to contract money supply with an open-market operation, if she actually prefers to stopping inflation. The critical point is the policy stance of the key-currency country. Reviewing the historical experiences in this respect is the main issue of the next section.

4. The Adjustment Policy of the Key-Currency Country

The "dollar crisis" took place as the foreign monetary authorities began to convert their liquid dollar assets into gold. In 1965, President de Gaulle proposed to convert the international monetary system to the gold standard. The American gold coverage ratio (gold reserve over liabilities to the foreign monetary authorities) went below the unity in the mid 1960s (Figure 1), which symbolized the beginning of the "dollar crisis". Triffin generalized this instability as inherent in the " gold exchange standard ". From the historical experiences reviewed, the American gold coverage ratio, 100--90% in the mid-1960s, was rather high. Even at the end of 1970, it was 47%, and 22% in 1971, when the gold-window was closed. In 1913 for example, British ratio of gold over liabilities to foreign authorities was only 38%[34]. Since private sterling holders could convert their liquid assets into gold , the actual gold coverage ratio would have been much lower. In May 1931, the Macmillan Committee estimated the British external gross liabilities at 407 million pounds , and 254 million pounds for net liabilities. With 25 million pounds of gold available for abroad [35], the gold coverage ratio was 6.1% at gross basis and 9.8% at net basis. The American gold coverage ratio in 1971 was much higher than the British in 1931, and until the end of 1970, higher than the British in 1913. Despite the higher gold coverage than the above historical records, why did the confidence in dollars decline almost continuously in the late 1960s ?

The gold coverage is undoubtedly one of the factors affecting the credibility of a currency, but other factors seemed to be more important. Among them, under the " gold exchange standard ", the most important is the commitment of the key-currency country to stabilize its currency; to maintain an adequate macro-economic policy toward the external balance. In this respect, the policy stance of the key-currency country has changed in

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[34]. Calculated from Lindert (1969, Table 1, 2)

[35] The above figures are from Dam (1982, p.67).

the course of history. Even if we accept some of the Triffin's presupposi-
tion as valid, the credibility of a currency depends undoubtedly on the
macro-economic performance of that country. This is the point which
explains the success and breakdown of the Bretton Woods system, and which
separates us from Triffin.

1) The " Rules of the Game " under the Gold Standard

The reason why the credibility in the pound-sterling did not fade away
despite the low level of gold coverage, is simply that Britain followed the
" rules of the game ", in particular that this country took the deflation-
ary measures when the gold flowed out. The policy authority, the Bank of
England concerned, for the most part, about the convertibility of the
pound.

There has been debate whether or not the conventional interpretation of
the monetary policy under the gold standard actually holds. Recently, the
two papers by Dutton and by Pippenger (1984) examined, with the sophisti-
cated econometric models, if the behavior of the Bank was influenced by
other factors than gold onvertibility, such as consideration of the
domestic economic situation, or the duty to the stock-holders to maintain
enough income. Their discussions are still inconclusive, however[36].

In Table 6A, the money supply (bank deposits + currencies in circulation
) is simply regressed on lagged-money supply, species held by the Bank of
England (gold and silver before the World War I and only gold thereafter),
and the nominal GNP. These variables are, as in Table 5A, detrended. If the
Bank of England obeyed the " Rule ", that is, the Bank of England did not
sterilize specie movements, the signs of the ls are positive. Although ls
changed not only with external but also internal drains, it is not so much
necessary to distinguish one type of drain from another. Indeed the signs
of the coefficients for ls are right in terms of the " rules of the game "
in equations (1) and (3),(4), but the t-statistics show that only the
equation (1) is statistically significant and its coefficient of determi-

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[36]See the discussion on both papers, Bordo, Schwartz (eds, 1984, pp.
227-232).

nation is large enough as well. The equation (2) for the interwar period reports that the sign for ls is minus with a very small t-statistics. Even these relatively simple regression models suggest that the Bank of England responded to the gold outflow more automatically in the pre-World War I years than the interwar period. Although the number of data are not large enough, the comparison of the equations (3) and (4) suggests no difference between the 1920s, when Britain aimed at the gold standard, and the 1930s without it.

However, since there could be a simultaneousness between s and m, Table 6B shows the results of the two-stage least square methods with import and nominal GNP as instruments for the pre-World War I; import and market rate of interest for the post-War years, respectively. Even with these estimates, the sign of the ls is plus in the equation (5) with a high t-statistics, whereas in equation (6), the sign of the ls is also positive, but its t-statistics is smaller. The coefficients of determinants for both equations tell that the relationship between ls and lm turned to be weak in the interwar years.

The above econometric analyses have demerits in treating the long- and mid-term data in an equal way, and therefore unable to distinguish the critical points, when the gold reserves flowed out abnormally, from other normal time. In 1890 and 1907, for example, the Bank of England raised the Bank Rate frequently and tried to resist the gold drain, even with the help of the Banque de France[37]. In these instances, the relationship of the gold reserve with the monetary policy is quite clear.

Despite a number of answers to the question, how the British balance of payments was stabilized under the classical gold-standard, it is undeniable that the rise of the Bank Rate finally restored the balance of payments, and hence terminated large scale gold drain; because, firstly the market rate in London had a great impact on the international capital movements; secondly, the change in interest rates had a influence on the British inventory investments, in particular, of import goods, which affected

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[37] Takumi(1976, p.174-205) reports the relationship between the gold movements and the Bank Rate during the crisis of 1907, and for the Baring Crisis, see Pressnell(1968, p.192ff).

naturally the balance of trade deficits[38].

So long as Britain had the power to recover the gold reserve with the Bank Rate, the credibility in her gold standard was never questioned. Even after the World-War I, the common view was that the best way of stabilizing a national economy was to restore the gold standard as soon as possible. The Cunliffe Report of 1918, which formalized the automatic adjustment mechanism of the balance of payment, proposed an early return to the gold standard.

Nevertheless, the British monetary policy deviated farther from the "automatic" responses. To reduce interest-costs of the national debts accumulated during the War, and in consideration of the political pressures from trade unions and industries of declining competitiveness, the Bank became reluctant to raise the Bank Rate. This change is endorsed by the less clear correlation for the interwar years in Table 6. This result is consistent with Eichengreen, Watson, and Grossman (1985), which tells also that the Bank responded more promptly to the gold outflow than to inflow, suggesting that the gold convertibility was still regarded as a primary importance.

The rise of the Bank rate, however, did not attract short-term capital, and hence gold as effectively as the pre-War years. While the decline in the current-account surplus necessitated " borrowing short, lending long ", the " deposit-compelling power " of London waned, as a part of the long-term capital issues shifted to the New York market. The greater share of the Treasury Bill (TB) in the London discount market weakened the interest rate effect on the foreign exchange rates (Brown, 1940, pp.554-555, 652-654). A volatile movement of the Franc exchange rate before its stabilization, and the active speculation in the New York stock exchange constituted other instabilities to induce gold flow out of Britain.

2) The External and Internal Balances under the " Managed Currency " System

From the lessons of the Great Depression, governments of the developed countries shifted their policy objects to the stable aggregate demand, in

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[38] Triffin (1964, pp.5-6) also stressed these points.

other words, higher level of employment with discretional macroeconomic policies as major instruments. How successful the New Deal as a Keynsian policy was, is still problematic, but the Employment Act of 1946 at least was a turning point, in the sense that the government proclaimed it as an obligation to intervene in the private economy, if necessary, for fear of the depression after the War. On the other hand, the United States still kept gold-convertibility to foreign monetary authorities, while the gold-standard terminated domestically. In this respect, the American government had a similar dilemma, to pursue both a discretionary macroeconomic policy and the gold-convertibility, as the British in the interwar years[39]. But the Employment Act of 1946 suggests that the American economic policy after the World War II preferred the internal balance to external one.

Gordon (1980, pp.132-33) mentioned that in the post-war years discussions on the macroeconomy tend to assume as if the American economy were closed. This tendency seems to be a reflection of the actual policy employed. So long as the rest of the world was suffering from the " dollar shortage ", the United States need not to have taken care of the external balance. From 1958 on, however, when european countries recovered convertibility of their currencies

and American gold reserves decreased to a great extent, the government began to pay attention to the gold outflow caused by the balance of payments deficits. Although gold had flowed out for a couple of years so far, the amount was smaller and the outflow did not continue so long. From 1958 until the gold window was closed, gold flowed out continuously, with a sole exception of the year 1969 (Table 2).

To be questioned is whether or not American macroeconomic policies responded properly to the gold outflow, and in this sense , whether or not there was any change after 1958. I made regression models for the post - World War II period with $\underline{h}$ (monetary base) and $\underline{m}$ (M1) as dependent variables. Besides gold reserve($\underline{g}$) and nominal GNP, as well as lagged $\underline{h}$ and $\underline{m}$, the unemployment rate ($\underline{U}$) is included as another independent vari-

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[39]The British Gold Standard Act of 1925 permitted not only foreign monetary authorities, but also private non-residents to export gold from Britain. Therefore, the external balance was a greater problem to Britain than to the United States after the World War II.

able, in order to consider policy preference to employment. The results are reported separately for the entire time range and those before and after 1958. The meaning of the plus and minus signs is the same as in Table 6. As for the unemployment rate, if the government tries to keep high employment level, the policy stance should be expansionary (the rise in $\underline{h}$ and $\underline{m}$) with the large $\underline{U}$. The coefficient sign of $\underline{U}$ ought to be therefore plus for both of $\underline{h}$ and $\underline{m}$.

The results of the ordinary least square method for the period 1950 - 1971 (equation (1),(3) in Table 7) show that the coefficients of $\underline{g}$ and $\underline{U}$ are contrary to the above suppositions in both cases. Looking at equations (5),(7),(9) and (11), the same signs are found for the period 1950 - 1957, but the coefficients of $\underline{g}$ and $\underline{U}$ for $\underline{h}$, and $\underline{U}$ for $\underline{m}$ turned to be plus signs after 1958, which implies that American policy stance could have changed. But the t-statistics are not large enough. Therefore Table 7 reports at least that; 1) the American monetary policy was not generally influenced by the external gold drains; 2) the violation of the " rule of the game " does not necessarily mean that the primary policy object was to restrain the unemployment rate.

However, it is to be reconsidered that $\underline{h}$, $\underline{m}$ and $\underline{g}$ are interrelated with each other. While the amount of gold reserve would affect the money supply, the rise of $\underline{h}$ and $\underline{m}$ generally reduce balance of payment surplus (or increase balance of payment deficits), and induce gold movements. In the latter case, the correlation of $\underline{h}$, $\underline{m}$ and $\underline{g}$ is negative. Thus I applied two-stage least square regressions with estimated $\underline{g}$ ("$\underline{g}$") from such instruments as $\underline{rwg}$ (gold of the rest of the world) and $\underline{rwim}$ (import of the rest of the world). The results are reported in equations (2),(4),(6),(8),(10), and (12). Of these equations, the (2) only has the positive sign for " $\underline{g}$ ", but the small t-statistics implies statistical insignificance. In short, even the two-stage least square regressions do not alter the above conclusions.

On the other hand, the $\underline{U}$ could have been influenced by the monetary policy; the rise of $\underline{h}$ and $\underline{m}$ increase employment, and thus reduce unemployment rate. But it is not easy to find a proper instruments for $\underline{U}$, and since the object of this paper is not to prove that the unemployment rate would

have been the major policy target, the results of Table 7 are for the present satisfactory.

Above all, very important is the finding that the monetary policy does not seem to respond in the right way to keep the external balance. In particular, it was critical to the breakdown of the Bretton Woods System that the American money supply kept on growing even after 1958, despite the continuous gold outflow. This policy stance deteriorated the confidence in dollar. According to Solomon (1982, p. 27), the large scale gold outflow in 1958 forced a deflationary policy next year. In fact, in the year after next, 1960, M1 decreased and the federal fiscal balance turned to surplus. Nevertheless, it was only in 1960 that the M1 decreased after 1958, and the federal fiscal surplus was reported only in 1960, and 1969[40].

Most of the economists agree that the Vietnam War expenditures, along with the " Great Society Program ", brought about an inflationary tendency in the American economy. Recent argument is that the inflation of the late 1960s was caused by setting the unemployment rate target at too low a level (For example, Mishkin, 1989, pp. 586-587). Even before this well known policy failure, Table 7 implies that there existed an expansionary bias in the American macro-economic policy through the mid-1960s[41], which was the potential instability to the international monetary system. So long as the United States held enough gold reserves and the rest of the world was suffering from "dollar shortage," this policy stance did not bring about any problem. But the moment when european currencies recovered convertibility was a turning-point for the American government to change the policy, because it symbolized the end of the "dollar shortage" and enabled currency dealers to speculate against the dollar.

Reviewing the difference in the key-countries policy stance, especially between those before and after the World War II, we are skeptical about the statement that the " dollar crisis " is a symptom inherent in the gold ex-

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[40]   The Johnson administration could finally introduce a tax-increase in June 1968. The political resistance to the tax-increase was powerful, because of the unpopular Vietnam War (Solomon, pp.101-103). For the statistics of the M1 and federal fiscal balance, see Historical Statistics of the United States, Federal Reserve Bulletin, Survey of Current Business.

[41]See also Darby (1983), which is of the similar opinion.

change standard[42]. An accommodating policy toward internal balance is sometimes inconsistent with the fixed exchange rate system. In particular, when the key-currency country prefers expansionary policy, the liquidity shortage will soon disappear, but the confidence in the key-currency declines. The classical gold standard could function relatively smoothly, because of less need for internal considerations, but the side-effect was greater fluctuations of a domestic economy.

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[42]. Dam (1982, pp.64-65) stresses the same point, from the different aspect.

The Bretton Woods System was based on the gold convertibility, and in this sense, it had common characteristics with the gold standards before and after the World War I. Despite this common features, it is worth investigating what differences existed among them. The argument by Triffin is very suggestive to this question.

The conclusions of this paper are as follows. Firstly, stressing the so-called " Triffin Dilemma " has a shortcoming in neglecting the fact that the credibility of a key-currency largely depends on the macro-economic policy stance of the country concerned. The liquidity dilemma did not exist under the international monetary system before 1914, on the one hand, and the dollar crisis gained momentum under the Bretton Woods System, on the other hand, because Britain aimed primarily at the maintenance of gold convertibility in the former case, while the United States did not pursue an appropriate deflationary policy, when necessary, in the latter case. This difference is the outcome of the historical change that government has had to pay more attention to the domestic economic situations, such as the employment. To emphasize an instability inherent in a gold exchange standard, is to neglect this historical background.

Secondly, the Triffin Dilemma presupposes a stable velocity of the international liquidity in the mid- and long-term, and that the balance of payments deficits of the key-currency country is the sole source of the international liquidity. The ratio of world official reserves to imports declined almost continuously up to the end of the 1960s. This decline is, however, the result of the almost constant amount of the reserve gold, while the dollar reserve kept its velocity in terms of the world trade remarkably stable. The supply of dollar reserves contributed to the growth of the world trade, and the argument by Triffin holds in this sense.

The other presupposition, that the American balance of payment deficit is the sole source of the world liquidity, lost ground as the international financial transactions developed in the eurodollar market. Nonetheless, the eurodollar market could not solve the American balance of payment problems, and, as usually stated, the credibility in dollar depends primarily on the

American macro-economic policy.

Thirdly, as for the question, in which sense the Bretton Woods System promoted the post-war economic growth, this paper gives some important answers. It is doubtful that the devaluation of the dollar would have reduced the American deficits. The fixed exchange rate system itself turns to be, in the long-run, the unstable factor to the international monetary system. Under the post-war system, where the resistance to the parity change was formidable both internationally and domestically, the developed countries generally obeyed the "rules of the game" in adjusting internal money supply to the amount of international reserves. The post-war monetary system had, in this sense, common characteristics with the gold standard. But the United States was the exception, and her neglect of the "rule of the game" enabled other countries to enhance their " balance of payment ceiling " and to pursue expansionary macro-economic policies. This interpretation of the global growth framework is not necessarily unique, the merit of this paper, if any, is to examine it with the econometric models.

Lastly, what role did the gold play under the Bretton Woods System ? The key-currency position of the dollar has not undermined since the close of the gold-window[43]. Then it is questionable what function the gold did perform, what factor did guarantee the confidence in dollar so far under the old system. However, at least until the late 1960s, the gold convertibility was important in maintaining the credibility of the key-currency. The credibility is, as a psychological element, based on tradition, experiences and so forth. The argument that the earlier the demonetization of gold took place, the more stable basis the Bretton Woods System could have stood on (Floyd, 1985, p.131) is not correct, because it neglected the psychological aspect of the credibility. The quality of the credibility has transformed itself gradually through experiences of the two oil crises and the long period of floating exchange rates.

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[43] Kawai(1989, Table 9) shows that dollar share in world official reserves rose from 66% in 1965 to 80% in 1985, and 67% in 1987. Since the official reserves are the source of the intervention currency, the large dollar share reflects the fact that the dollar continues to be the main vehicle currency in the foreign exchange markets. See also Krugman(1984, p.273).

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Table 1. American Balance of Payments (1958-1973, billion $)

Year	trade bal.	goods and serv.	Government Account				Private long-term Capital (net)		
			mili-tary aids	pub. aids	pub. capital	total	FDI	Port-folio	Others
1958	3.46	2.36	-3.14	-1.62	-0.97	-5.73	-1.08	-1.25	-0.06
1959	1.15	0.31	-2.81	-1.63	-0.35	-4.79	-1.13	-0.22	-0.05
1960	4.89	4.07	-1.70	-1.67	-1.10	-4.47	-1.53	-0.38	-0.19
1961	5.57	5.56	-1.47	-1.8	-0.91	-4.24	-1.53	-0.44	-0.22
1962	4.52	5.07	-1.54	-1.92	-1.09	-4.55	-1.52	-0.84	-0.25
1963	5.22	5.93	-1.56	-1.92	-1.66	-5.14	-1.98	-0.82	-0.57
1964	6.80	8.53	-1.34	-1.89	-1.68	-4.91	-2.33	-0.76	-1.42
1965	4.95	7.14	-1.64	-1.81	-1.61	-5.06	-3.41	-1.11	-0.05
1966	3.82	4.55	-1.89	-1.91	-1.54	-5.34	-3.54	0.19	0.57
1967	3.80	4.38	-2.04	-1.81	-2.42	-6.27	-2.81	-0.29	1.97
1968	0.64	1.62	-2.55	-1.71	-2.27	-6.53	-2.56	2.85	0.91
1969	0.61	1.02	-2.61	-1.65	-2.20	-6.46	-2.36	1.58	0.73
1970	2.60	2.97	-2.71	-1.74	-1.59	-6.04	-3.25	1.11	0.70
1971	2.26	-0.21	-3.55	-2.04	-1.88	-7.47	-4.91	1.18	-0.65
1972	6.42	-5.93	-4.49	-2.17	-1.57	-8.23	-3.15	3.89	-0.81
1973	0.96	4.18	-2.81	-1.94	-2.64	-7.39	-2.31	3.30	-0.81

Year	sub total	private short-term capital(net)	changes in gold reserve
1958	-2.39	-0.22	2.28
1959	-1.40	1.12	1.08
1960	-2.10	-1.13	1.70
1961	-2.19	-0.30	0.86
1962	-2.61	-0.44	0.89
1963	-3.37	-0.19	0.46
1964	-4.51	-0.48	0.13
1965	-4.57	1.03	1.67
1966	-2.78	2.27	0.57
1967	-1.13	0.14	1.17
1968	1.20	3.47	1.17
1969	-0.05	8.12	-0.97
1970	-1.44	-6.97	0.79
1971	-4.38	-10.14	0.87
1972	-0.07	1.93	0.55
1973	0.78	-1.90	----

Source: Survey of Current Business, Oct. 1972, June 1975
Note: For gold reserves, minus means net inflow, plus means net outflow.

Table 2. the composition of world reserves (billion dollars)

year	gold	of which US	of which UK	foreign exchange	of which dollar	of which pound	total	of which (%) dollar	pound	gold
1913	4.85	1.29	0.16	1.13	na	0.46	7.11	na	6.5	6 .2
1928	9.76	3.75	0.75	3.25	1.0*	1.5*	13.01	na	na	75.0
1938	25.95	14.59	2.88	1.80	0.5	1.3	27.75	1.8	4.1	93.5
1948	32.75	24.4	1.60	13.9	2.90	10.77	46.65	6.2	23.1	70.2
1958	38.07	20.58	2.85	16.55	8.48	6.77	54.62	15.5	12.4	69.7
1968	38.94	10.89	1.47	32.00	17.34	9.68	77.42	22.4	12.5	50.3
1973	43.13	11.65	0.89	122.65	66.81	7.83	183.85	36.3	4.3	23.5
1978	45.31	12.11	0.96	278.46	156.84	3.53	352.53	44.5	1.0	12.9
1988	44.40	12.32	0.89	662.89	296.02	24.1	772.40	38.3	3.1	5.7

Note: Gold coin in circulation not included. In 1913, the total includes silver (1.13 billion dollars). From 1978 on, gold is calculated as 1 o.z.= 35 SDR.
* 1927. Hirata (1988, Table 2-5).
Source: 1913, Lindert, Table 1. From 1928 to 1958, Triffin, Table 14. Thereafter, IMF, International Financial Statistics. (IFS)

Table 3. World Trade and International Reserves (Annual Data)

Dependent Variables

Indep. Vari-ables	lr			lg		
	(1)	(2)	(3)	(4)	(5)	(6)
	1950--1973 N=24	1950--1973 N=24	1958--1973 N=16	1950--1973 N=24	1950--1973 N=24	1958--1973 N=16
C	-0.552 (-1.778)	-2.281 (-3.218)	-4.086 (-1.892)	0.636 (1.417)	0.017 (-0.013)	0.831 (0.620)
lr(-1)	1.096 (7.130)	0.775 (4.266)	0.618 (1.987)			
lg(-1)				0.801 (5.565)	0.907 (3.454)	0.672 (2.679)
lim	0.042 (0.542)	0.813 (2.714)	1.282 (1.779)	0.018 (0.832)	0.083 (0.613)	0.085 (0.527)
Vim	-0.042 (-0.140)	-1.087 (-2.293)	-1.601 (-1.578)	0.098 (0.673)	0.003 (0.014)	0.448 (1.196)
lf			-0.283 (-1.545)			-0.040 (-0.826)
t		-0.046 (-2.643)			-0.006 (0.489)	
Adj.R²	0.965	0.973	0.959	0.826	0.819	0.444
SER	0.067	0.066	0.073	0.029	0.030	0.029
h	2.551	1.726	2.398	-0.189	-0.377	-1.482

Dependent Variable ld

Indep. Variables	(7)	(8)	(9)
	1950-1973	1950-1973	1958-1973
	N=24	N=24	N=16
C	-1.725 (-2.420)	-6.078 (-3.366)	-11.189 (-2.121)
lr(-1)			
lg(-1)			
ld(-1)	0.594 (3.219)	0.603 (3.697)	0.413 (1.371)
lim	0.595 (2.576)	1.758 (3.544)	2.863 (2.163)
Vim	-1.237 (-1.612)	-3.447 (-3.150)	-4.275 (-1.837)
lf			-0.611 (-1.752)
t		-0.087 (-2.572)	
Adj.R²	0.942	0.949	0.914
SER	0.174	0.154	0.181
h	2.296	1.426	2.207

Note: t-statistics in parentheses. All variables measured in billion U.S. dollars. lr; log of world total reserves. lg; log of world gold reserves. ld; log of world dollar reserves. lim; log of world imports. Vim;variability of world imports defined as follows.Vim = |lim(t) - { lim(-2) + lim(-1) + lim } / 3|. lf; log of international finance, which corresponds to euro-bond issues plus eurocurrency deposits. Figures for eurocurrency are available only from 1964 onwards. Those figures from 1958 through 1963 are estimated from the average growth rate between 1964-1972. t; time-trend.

Source: world reserves and imports, IMF, <u>International Financial Statistics</u>, 1972 Supplement. Euro-bond issues, Mendelsohn(1980, Table 31.). Eurocurrency deposits, Pecchioli(1983, Table IV).

Table 4 American Private Capital-Account
(1960-1973, million dollar)

Year	American Capital						
	FDI	Portfolio	Banks		Non-banks		total
			long-term	short-term	long-term	short-term	
1960	-1679	-663	-153	-995	-40	-354	-3878
1961	-1598	-762	-136	-1125	-127	-431	-4180
1962	-1654	-969	-126	-324	-132	-222	-3426
1963	-1976	-1105	-775	-781	162	-5	-4479
1964	-2328	-677	-981	-1524	-485	-623	-6618
1965	-3468	-759	-232	325	-88	429	-3793
1966	-3625	-720	317	-84	-112	-330	-4554
1967	-3072	-1308	235	-730	-281	-498	-5653
1968	-2880	-1569	338	-105	-220	-982	-5418
1969	-3190	-1549	297	-927	-424	298	-5436
1970	-4281	-1076	155	-1122	-586	-10	-6920
1971	-4738	-1113	-612	-2368	-168	-1061	-10060
1972	-3530	-618	-1307	-2199	-243	-811	-8708
1973	-4968	-759	-933	-5047	-433	-1975	-14113

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| Year | Foreign Capital | | | | | | Grand |
	FDI	Portfolio*	U.S. Govern. Debt	Other long-term	short-term	total	Total
1960	141	282	215	7	217	862	-3016
1961	73	324	25	45	1259	1726	-2454
1962	132	134	203	8	103	580	-2846
1963	-5	282	511	40	597	1425	-3054
1964	-5	-84	328	50	1667	1956	-4662
1965	57	-357	66	270	280	317	-3476
1966	86	909	65	368	2680	4108	-446
1967	258	1016	86	243	1971	3574	-2080
1968	319	4414	110	787	4525	10199	4781
1969	832	3130	251	861	8749	13823	8387
1970	1030	2190	-456	1135	-5338	-1439	-8359
1971	-175	2289	-492	134	-6706	4950	-15010
1972	380	4507	234	734	4943	10807	2079
1973	2656	4055	1154	529	5125	13549	-564

Source: Survey of Current Business, June, 1975.

Note: * U.S. Bonds excluded.

Table 5A Demand for international Reserves by Developed Countries
(1950(51)-1970, Annual Data)

Dependent Variable lr

| Country | Independent Variables | | | | Adj.R² | SER | DW | N |
	C	lim	Vex	lgnp				
(1)U S	9.979 (12.18)	0.993 (76.47)	0.019 (0.84)	-1.567 (-12.06)	0.999	0.01	0.791	21
(2)Britain	-3.665 (-3.13)	-0.219 (-0.33)	0.104 (1.87)	1.134 (1.78)	0.995	0.24	0.774	21
(3)France	-29.485 (-4.72)	-5.515 (-2.16)	3.018 (1.45)	8.664 (3.35)	0.845	0.834	0.688	21
(4)Germany	4.964 (2.43)	2.458 (3.37)	-3.492 (-7.47)	-1.854 (-2.26)	0.939	0.200	2.367	20
(5)Italy	-7.376 (-3.42)	-0.574 (-0.92)	1.079 (1.09)	1.902 (2.75)	0.889	0.764	0.364	21
(6)Swit- zerland	-11.704 (-1.01)	2.117 (0.35)	2.212 (0.15)	3.277 (0.49)	0.733	1.591	0.664	21
(7)Japan	0.817 (1.71)	-0.389 (-1.01)	0.682 (1.76)	0.855 (2.93)	0.881	0.167	1.296	20

Note: t-statistics in parentheses. lr; log of international reserves.
lim; log of import. lgnp; log of nominal GNP. Vex; variability of export
defined as follow . Vex = |lex-{lex(-2)+lex(-1)+lex}/3|.

Source: IMF, IFS. 1972 Supplement.

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Table 5B International Reserves and Money Supply of Developed Countries, (1950(51)-1970, Annual Data)

Dependent Variable lm

Independent Variables

Country	C	lr	R2	SER	DW	N
(8)US	0.004	-0.015	0.396	0.034	0.621	21
	(0.55)	(-3.53)				
(9)Britain	-0.009	1.040	0.996	0.120	0.651	21
	(-0.35)	(66.58)				
(10)France	-0.004	0.014	0.006	0.075	0.389	21
	(-0.25)	(0.33)				
(11)Germany	-0.003	0.489	0.643	0.223	0.520	20
	(-0.05)	(5.69)				
(12)Italy	-0.002	0.984	0.957	0.110	1.186	21
	(-1.10)	(20.59)				
(13)Switzerland	-0.002	0.136	0.976	0.043	1.588	21
	(-1.10)	(27.72)				
(14)Japan	0.007	1.745	0.913	0.203	0.885	20
	(0.15)	(13.75)				

Note: t-statistics in parentheses. Independent variables are detrended lr estimated from the equations in Table 5A. lm; detrended log of money supply (currency in circulation plus demand deposits).

Source: the same as Table 5A.

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Table 6A British money supply before and after the World War I
(Calculated from annual Data)

Dependent Variable lm

Independent Variables	(1) 1890–1913 N=25	(2) 1920–1939 N=22	(3) 1920–1930 N=13	(4) 1931–1939 N=9
C	0.004 (0.833)	−0.006 (0.754)	−0.011 (−1.54)	−0.003 (−0.17)
ls	0.102 (2.69)	−0.016 (−0.36)	0.148 (1.18)	0.059 (0.81)
lm(−1)	0.594 (6.41)	0.446 (2.58)	0.542 (4.567)	−0.723 (−1.00)
lgnp	0.267 (2.44)	0.310 (3.00)	0.268 (3.46)	0.807 (2.35)
Adj.R²	0.825	0.753	0.902	0.641
SER	0.019	0.036	0.023	0.042
DW	1.524	2.003	2.705	1.910
h	1.721	−0.070	−2.353	−1.053

Note: t-statistics in parentheses. lm; detrended log of money supply (bank deposits plus currency in circulation), ls; detrended log of species held by the Bank of England, lgnp; detrended log of nominal GNP.
Source: m,s from Sheppard(1971), GNP from Feinstein(1972).

Table 6B British Money Supply (Two Stage Least Square)

Dependent Variable lm

Independent Variables	(5) 1890-1913 N=25	(6) 1920-1939 N=22	(7) 1920-1930 N=13	(8) 1931-1939 N=9
C	-0.015 (-2.093)	0.004 (0.173)	0.025 (0.558)	0.019 (0.520)
ls	0.273 (3.205)	0.404 (1.464)	1.766 (1.322)	0.337 (1.683)
R²	0.422	0.057	0.067	0.120
SER	0.035	0.093	0.109	0.106
DW	0.718	1.226	0.816	1.854

Note: t-statistics in parentheses. mr; market rate on high-class bills. lim; detrended log of import. ls; detrended log of estimated s with lim, lgnp as instruments for 1890-1913, and with lim, mr as instruments for 1920-1913. The correlation coefficients between ls and lim, ls and lgnp are 0.531, 0.638 respectively for 1890-1913. Those between ls and lim, ls and mr are -0.425, -0.691 for 1920-1939.
Source: mr from Sheppard(1971), im from Feinstein(1972).

Table 7 American Money Supply after the World War II

Dependent Variables	lh		lm	
	(1950-1971, N=22)		(1950-1971, N=22)	
Independent Variables	(1)	(2)	(3)	(4)
C	-0.111 (-2.762)	-0.081 (-1.422)	-0.069 (-2.512)	-0.070 (-2.398)
lh(-1)	0.380 (2.421)	0.461 (2.164)		
lm(-1)			0.569 (3.383)	0.550 (2.296)
lg	-0.249 (-3.492)		-0.188 (-3.260)	
"lg"		-0.010 (-0.048)		-0.174 (-1.257)
lgnp	1.606 (4.084)	1.498 (2.912)	0.735 (2.718)	0.766 (1.991)
U	0.022 (2.813)	0.016 (1.409)	0.014 (2.644)	0.014 (2.580)
Adj.R²	0.938	0.897	0.909	0.908
SER	0.021	0.027	0.015	0.015
DW	0.861	0.478	2.122	0.595
h	2.660		-0.234	

	lh				lm	
	(1950-1957, N=8)		(1958-1971, N=14)		(1950-1957, N=8)	
	(5)	(6)	(7)	(8)	(9)	(10)
C	0.021 (0.417)	0.015 (0.285)	-0.036 (-0.368)	-0.288 (-0.507)	-0.117 (-1.713)	-0.124 (-1.778)
lh(-1)	0.238 (2.154)	0.252 (2.110)	0.764 (1.406)	0.789 (0.454)		
lm(-1)					0.688 (3.244)	0.668 (3.097)
lg	-0.277 (-6.174)		-0.228 (-1.360)		-0.152 (-2.675)	
"lg"		-0.264 (-4.582)		-1.753 (-0.603)		-0.138 (-2.285)
lgnp	0.728 (2.212)	0.758 (2.201)	0.865 (0.688)	0.241 (0.058)	0.960 (2.115)	1.013 (2.186)
U	-0.003 (-0.335)	-0.002 (-0.223)	0.010 (0.547)	0.059 (0.544)	0.023 (1.732)	0.025 (1.798)
Adj.R²	0.964	0.964	0.93	0.562	0.810	0.806
SER	0.008	0.009	0.024	0.077	0.011	0.012
DW	2.151	1.849	0.936	2.039	3.289	3.227
h	-1.025		2.192		-59.338	

Dependent

Variable	lm	
	(1958-1971, N=14)	
Independent Variables	(11)	(12)
C	-0.093 (-1.654)	-0.082 (-1.306)
lh(-1)		
lm(-1)	0.378 (0.769)	0.734 (0.964)
lg	-0.214 (-1.257)	
"lg"		-0.406 (-1.163)
lgnp	0.985 (1.346)	0.429 (0.368)
U	0.018 (1.822)	0.017 (1.577)
Adj.R²	0.882	0.867
SER	0.019	0.020
DW	1.813	1.690
h	-0.003	

Note: t statistics in parentheses. lh; detrended log of monetary base.
lm; detrended log of M1. g; detrended log of gold reserve. Additional
instruments to estimate lg: lrwg; detrended log of world gold reserves
other than U.S., lrwim; detrended log of world import other t an U.S. The
correlation coefficients between lg and lrwg, lg and lrwim are -0.923, -
0.962 respectively for 1949-1971. U; unemployment rate in %.

Source: <u>Survey of Current Business, Federal Reserve Bulletin, Historical
Statistics of the U.S., IFS</u>.

Fig.1 Growth of World Reserves

200
180
160
140
120
100
80
60
40
20
0

b
i
l
l
i
o
n

d
o
l
l
a
r
s

1948 1950 1952 1954 1956 1958 1960 1962 1964 1966 1968 1970 1972
    1949 1951 1953 1955 1957 1959 1961 1963 1965 1967 1969 1971 1973

— total reserves ·gold reserves ·· forex reserves -- dollar reserves -- U.S. gold

Source: IMA, IAS.

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Fig.2 Composition of World Reserves
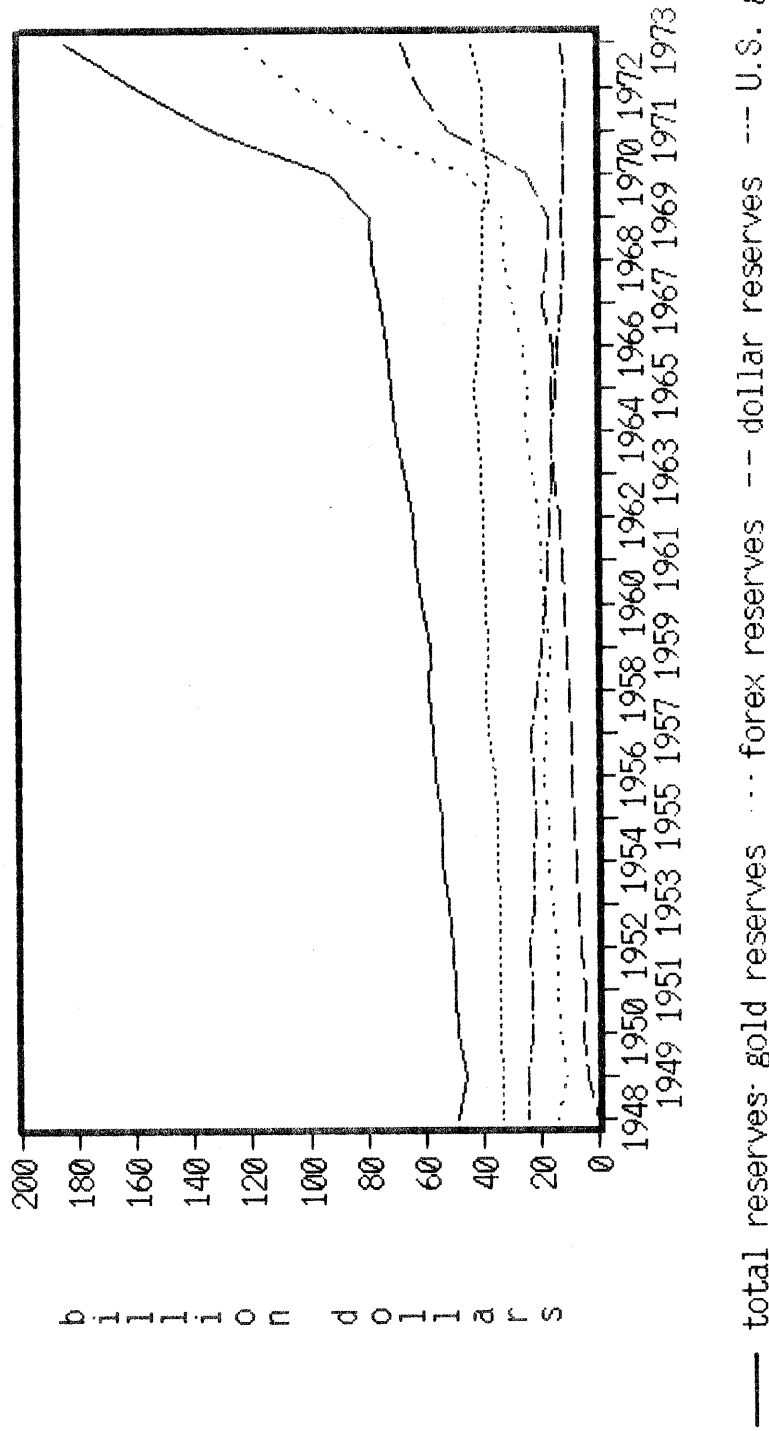
— gold   ---- foreign exchange   ··· dollar reserves
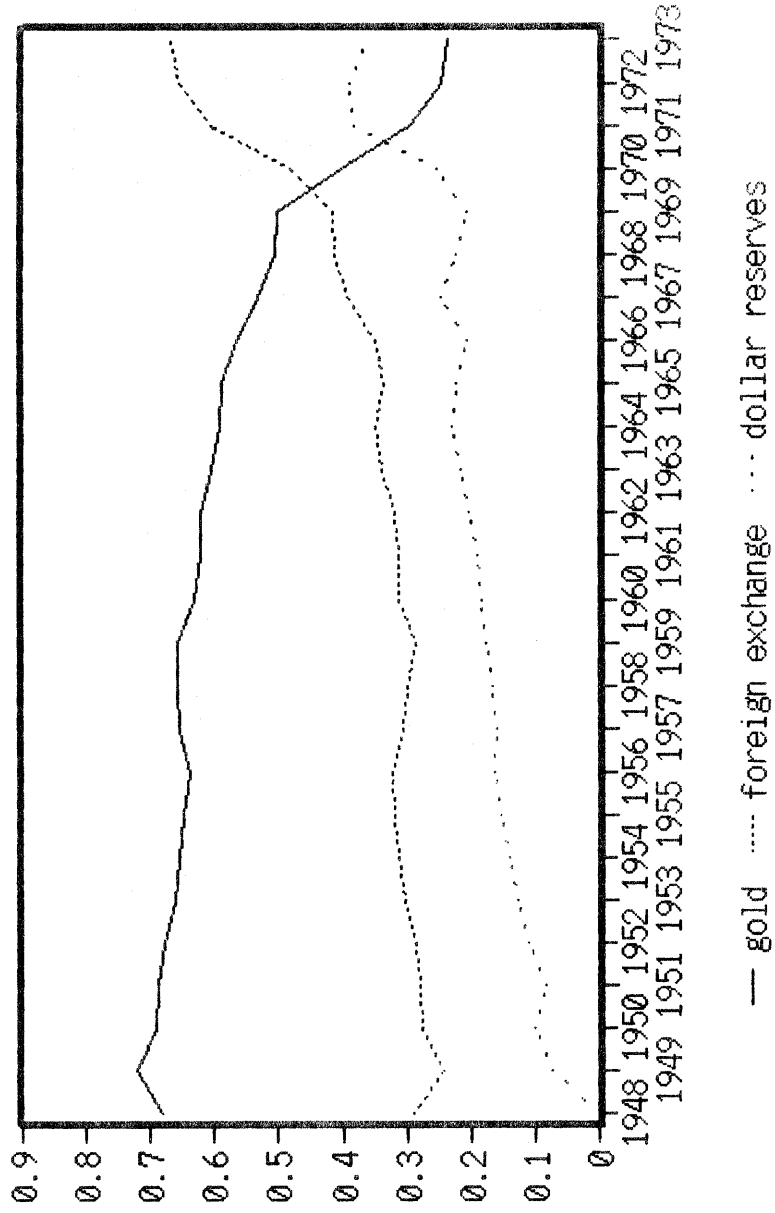
Fig.3 World Liquidity
(billion dollars, year end)

1948 1950 1952 1954 1956 1958 1960 1962 1964 1966 1968 1970 1972
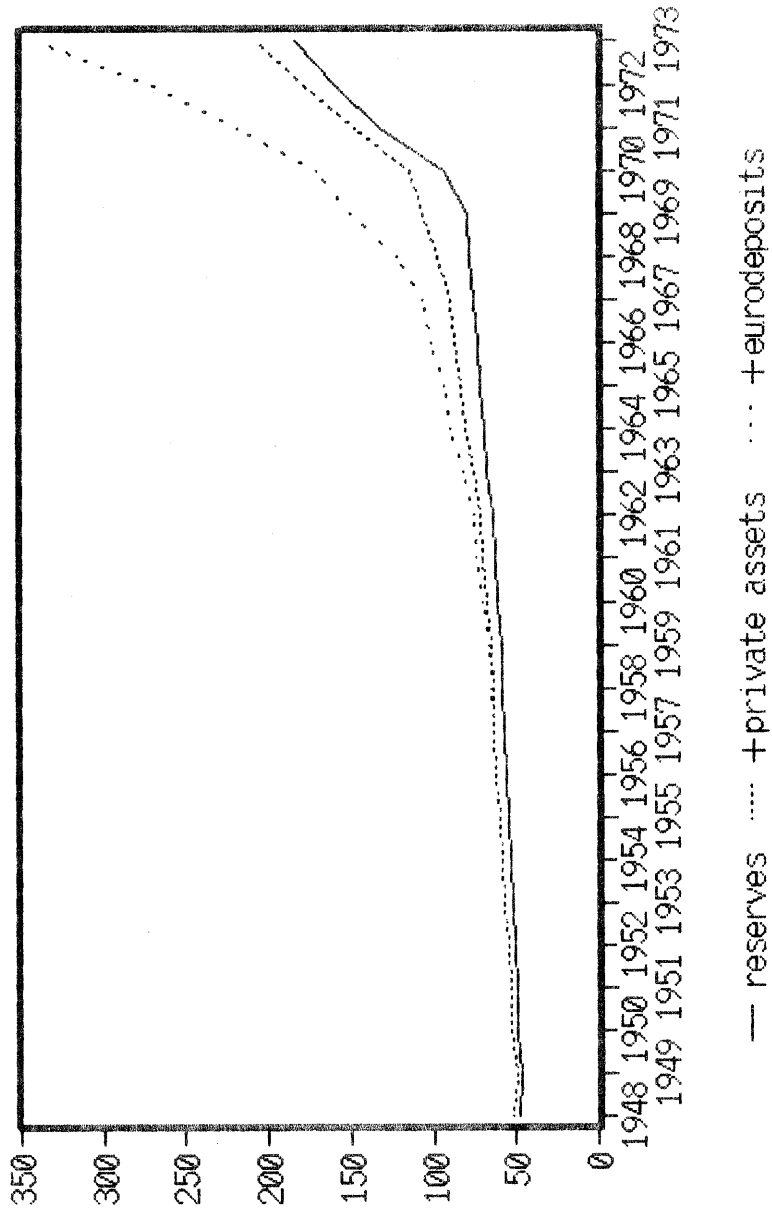1949 1951 1953 1955 1957 1959 1961 1963 1965 1967 1969 1971 1973

— reserves ····· +private assets ··· +eurodeposits

Fig.4 World Reserve-Import Ratio

— reserves/import ···· forex/import ·· dollar/import ‑‑ gold/import