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"A NOTE ON INTERNATIONAL MONETARY REGIMES IN HISTORY"

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A Note on International Monetary Regimes in History.

Introduction.

An international monetary order supports payments related to trade and capital flows between nations. Foreign exchange markets are the arena where exchange rates are determined and a global capital market is the result. An international monetary order secures channels for international credit for trade and investments and makes it possible for nations to finance current account deficits. The economic effect is beneficial because a foreign exchange market makes it possible for nations to exploit gains from trade and specialization. In the absence of a foreign exchange market trade tends to become *balanced bilateral* trade, by which traded volumes are reduced. If, say, Denmark wants to import 10 billion *crones* worth of goods from Norway while Norway's demand for imports from Denmark is just 5 billion, then Denmark's imports from Norway will in fact be reduced to 5 billion *crones*, that is equivalent to its own exports. The other important aspect of global foreign exchange markets is that investments in a given nation need not be constrained by national savings since there is an opportunity for international lending, and as a consequence, savings are not constrained by investment demand. The expectation that an international monetary order stimulates both trade and foreign investments has solid historical support.

An international monetary regime can be more or less formalized by agreements and cooperation among nations. Paradoxically the most formalized regime, the so-called Bretton Woods system was built up around the International Monetary Fund (IMF) but was relatively short-lived, c. 1950(58) – 1970. The IMF survived, however. The most long- lived regime, the International Gold Standard, c.1875-1913, was almost devoid of international institutional structure, even though its stability relied on central bank co-operation at critical moments. In other words firm institutional order does not spell success.

Chronology

Fixed exchange rates on an international scale have not been long-lived except for the pre-1913 Gold Standard, which we need to explain. During WWI the normal operations of the Gold Standard were suspended and inflation rates differed widely across nations. Immediately after the war exchange rates were floating. The attempt to restore the Gold Standard failed after just a few years

in operation and the 1930s first experienced a new period of floating after which exchange rates were fixed in narrow bands but most national currencies cut off the link to gold. Exchange controls were practiced in many countries. The failure of the fixed exchange rate system in the Interwar period was see as a consequence of the fact that policy-makers wanted, but were not permitted any, macroeconomic autonomy in a fixed exchange rate system. The Bretton Woods system after WWII addressed that problem by introducing fixed but adjustable exchange rates and an element of currency control in what can be called a *fixed dollar exchange rate system*. Nations pegged their currencies to the US dollar and National banks could, in principle, exchange their dollar holdings for gold at a fixed rate. For reasons explained below, the Bretton Woods fixed dollar exchange rate was relatively short lived, c.1950 (58) – 1970. Since 1973 we have not had a fixed exchange rate system on an international scale and its return is unlikely. Immediately after 1973 European nations established regional systems of fixed and adjustable exchange rates before the advent of the Euro, European currencies have been floating relative to the US Dollar, the YEN and for most of the time, the British Pound. The restoration of a truly international fixed exchange rate system is not on the agenda.

The Open Economy Trilemma.

Success and failure of international monetary systems can be analysed in a framework suggested by Alan Taylor and Maurice Obstfeld, known as the Open Economy Trilemma.[1] The Chronology above suggested three basic varieties of international monetary systems: fixed, floating and the Bretton Woods fixed but adjustable as a sort of hybrid of the two first. It turns out that each of the three systems combine just two of three economic policy objectives. The three economic policy objectives are:

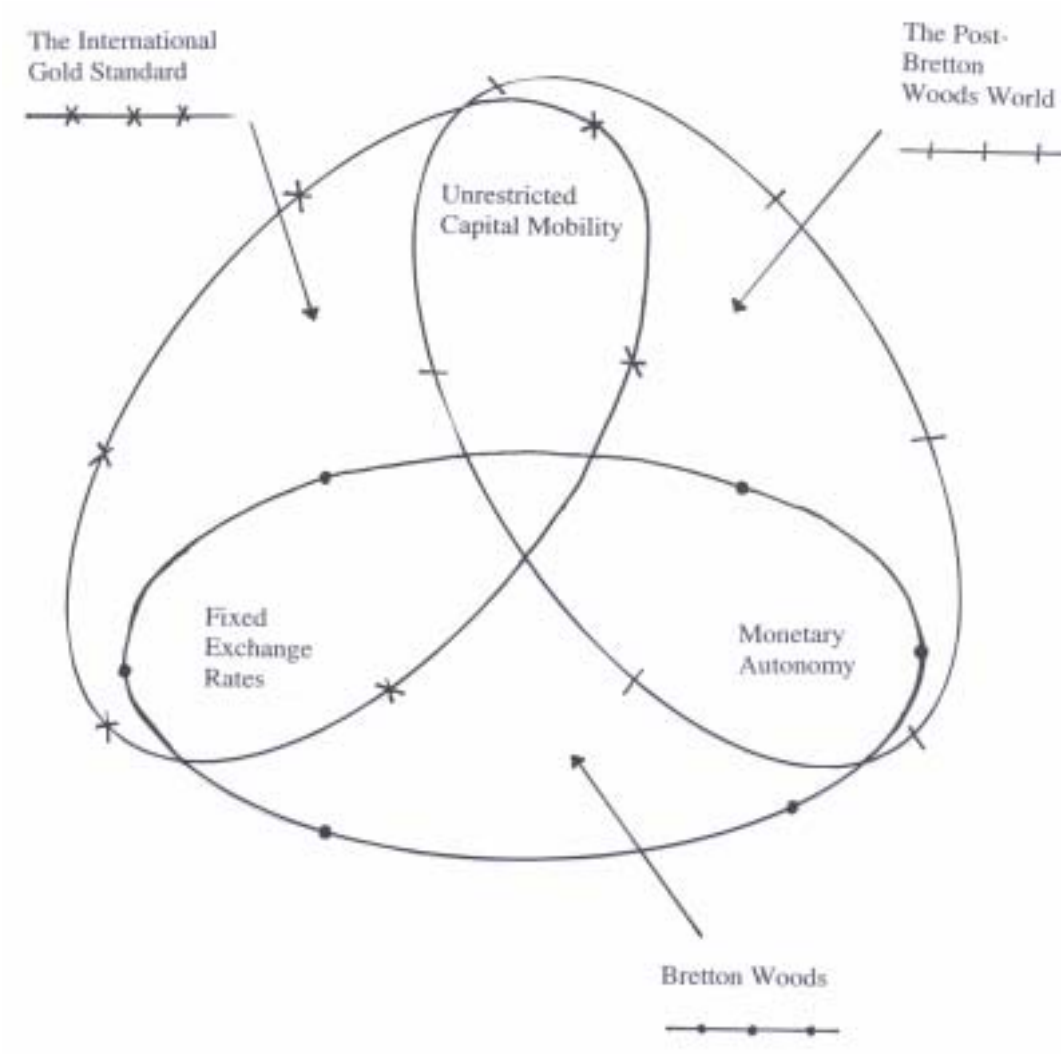
- Fixed exchange rates
- Unrestricted capital mobility
- Monetary autonomy

Figure 1 below describes three possible combinations. The international Gold Standard combines unrestricted capital mobility and fixed exchange rates but as a consequence does not permit any monetary autonomy. Interest rates (and inflation rates) were internationally well synchronized during the International Gold Standard and capital mobility was the mechanism. Pre-WWI

[1] 'The Great Depression as a Watershed: International capital mobility over the long run' in M. Bordo et al. (eds) *The Defining Moment: The Great Depression and the American Economy in the Twentieth Century,* Chicago: University of Chicago Press, 1998, pp. 353-402.

governments were under little political pressure and could largely ignore popular demands for an active macroeconomic policy. The advent of strong unions and full democracy changed all that.

Figure 1. The (Obstfeld-Taylor) open economy trilemma: pick two, any two.



Source: Adapted from M. Obstfeld and A. Taylor, see footnote 1.

The Bretton Woods system attempted to combine an element of monetary autonomy with fixed exchange rates by giving up unrestricted capital mobility. There were controls of capital account transactions, and of current account transactions until 1958, throughout the Bretton Woods era. As we will see below, however, the impact of US monetary policy on that of other members became too strong and monetary autonomy vanished and took the system with it. Finally the Post –Bretton Woods era restored full capital mobility and combined it with monetary autonomy by giving up fixed exchange rates. Giving up fixed exchange rates also means that inflation rates can differ

among nations unlike in a fixed exchange rates system. In a fixed exchange rate system a local inflationary shock is not allowed to have a persistent effect on the local price level and the *real* exchange rate. The real exchange rate is defined as

Real exchange rate = Nominal exchange rate* (Local price level/Foreign price level)

The nominal exchange rate is the number of foreign currency units it takes to buy one unit of the local currency. If local prices rise above the foreign price level, local industry will be over-priced in both home and foreign markets, which will lead to a current account deficit. The local price level will have to be adjusted by reducing nominal wages and other production costs, so that the real exchange rate falls back to its original equilibrium. In a floating exchange rate system a local inflationary shock does not lead to a real exchange rate appreciation because the nominal exchange rate will fall.

We will now turn to a detailed survey of the different phases in the development of the international monetary system, keeping the *open market trilemma* in mind.

The International Gold Standard. c. 1875-1913 and c. 1925-31 (34)

We are used to *fiat* money, that is, paper notes or coins with an intrinsic value much below the legal tender of the note or coin. (The paper value of a note with a legal tender of 100 crones is practically nil). Fiat or fiduciary money is a relatively modern invention, emerging about 200 years ago, which first partly and later fully replaced coins made of precious metals whose legal tender was equal or close to the value of the constituent metal.[2] Throughout history the widespread use of money with an intrinsic value reflected the lack of confidence that the public had in fragile financial institutions and the state. To be willing to accept a paper note (or a token coin) one must trust the issuer of that note (coin), a private bank or the central bank, that the note (coin) can be used in the future at its legal tender. For token coins, this was not very important because they were issued only in small denominations so potential losses were small. During the early development of paper money and note issuing banks, the confidence problem was partly solved by permitting private citizens to convert their paper notes to gold at a pre-determined legal rate. By that arrangement the note became ‘as good as gold’ but more practical to use, at least as long as the public trusted the financial institutions. However, from time to time central and private banks defaulted on their

[2] Token coins, i.e. coins whose legal tender exceeded the intrinsic value of the metal it was made of existed in small denominations for everyday use both long before and after the advent of the Gold Standard.

liabilities (bank notes in circulation), which usually meant that the public avoided fiat money for years, sometimes even for generations. The public also mistrusted governments that often resorted to inflationary financing of wars and other government expenditures. Since money with an intrinsic value was a store of value, it is easy to understand the preference for gold and silver coins, rather than notes.

Until the advent of the International Gold Standard most nations used one or two parallel metallic currencies, gold and silver, the latter for everyday transactions. The smallest feasible gold coin was too valuable for everyday transactions, while silver, valued at about 7 per cent of gold, was more practical. When two metallic standards were in use, we talk about a *bi-metallic* standard.

Once a number of nations accept that national currencies are linked or backed by gold and accept the free international circulation of gold, you have the essential elements of an international gold standard.

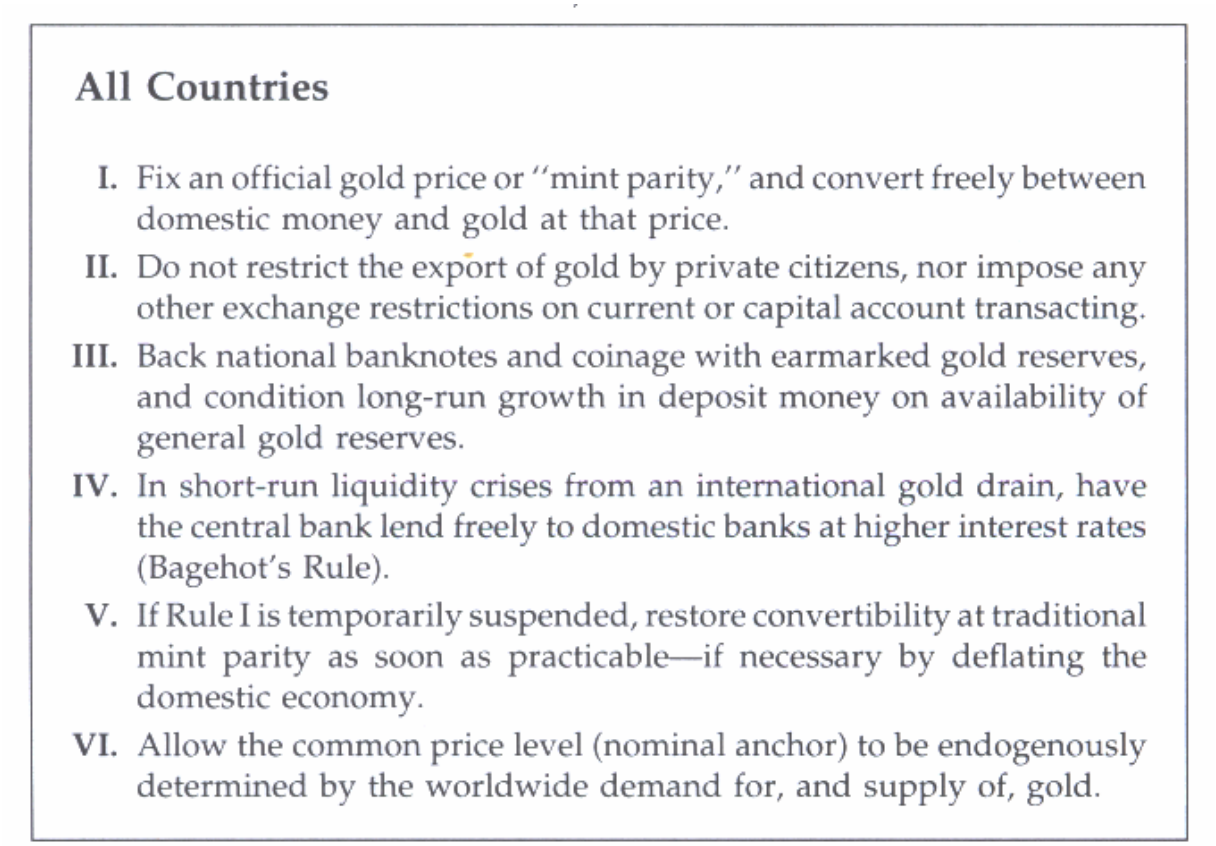
How did the International Gold Standard work?

The argument will start in a simplified model and then gradually introduce 'real world' conditions.

Let us start by simplifying and assuming that only gold coins were used in international transactions, as in David Hume's original (1752) formulation of the *price-specie flow mechanism*. The defining characteristic of a fixed exchange rate system is that price-levels between member nations converge in the long run. *The law of one price* rules. One kilo of gold minted to coins should buy the same basket of goods in all Gold Standard countries, indicating the purchasing power parity of gold. Assume that, say, Holland, had experienced an inflationary shock that increased its price-level. Exporters in Holland will then have difficulties selling their products abroad and producers for the home-market will have difficulties competing with imports. Simplify matters further by assuming that Great Britain is Holland's only trading partner. We can then conclude that Great Britain will have a trade surplus in relation to Holland, i.e. a surplus on its current account. Exporters in Great Britain receive gold coins from importers in Holland as payment. The money supply will increase in Great Britain and fall in Holland and as a consequence prices will increase in Great Britain and fall in Holland. Relative price levels will be restored to the initial equilibrium and current accounts will be balanced in both countries.

Let us now make the model more realistic and introduce paper money and central banks. Does it make a difference? Not really. The simplified narrative below can be read using simultaneous reference to Rules I-III in Box 1 below.

Box 1. (McKinnon's Handy) Rules of the International Gold Standard.



All Countries

I. Fix an official gold price or "mint parity," and convert freely between domestic money and gold at that price.

II. Do not restrict the export of gold by private citizens, nor impose any other exchange restrictions on current or capital account transacting.

III. Back national banknotes and coinage with earmarked gold reserves, and condition long-run growth in deposit money on availability of general gold reserves.

IV. In short-run liquidity crises from an international gold drain, have the central bank lend freely to domestic banks at higher interest rates (Bagehot's Rule).

V. If Rule I is temporarily suspended, restore convertibility at traditional mint parity as soon as practicable—if necessary by deflating the domestic economy.

VI. Allow the common price level (nominal anchor) to be endogenously determined by the worldwide demand for, and supply of, gold.

Source: R.I. McKinnon, *The Rules of the Game, International Money and Exchange Rates*, Cambridge: MIT Press, 1996, p.26.

British exporters do not get paid in gold but in Dutch banknotes or a transfer of Dutch currency to the exporter's bank account in, say, Amsterdam. Exporters can sell their Dutch currency to British importers of Dutch merchandise. But since there is a British trade surplus relative to Holland, there is not enough British demand for Dutch currency. The surplus Dutch currency (bank-notes) are therefore presented by British exporters, or more realistically, their banks, to the Central bank in Holland. Bank notes are exchanged for gold, see rules I and II above, which is shipped to Great Britain. Since the gold reserve falls in Holland, the money supply also falls, see rule III. The inflow of monetary gold to Great Britain increases the money supply in Britain, again by rule III. The implication for the restoration of price level equilibrium (law of one price) is essentially the same: prices fall in Holland and increase in Britain and balanced trade can be restored. Gold arbitrage is essential in this story as well, so let us look more closely into it.

Since domestic currencies (paper money) are traded at foreign exchange markets, current demand and supply of currencies will determine the *spot* exchange rate. The spot rate can differ from the rate prescribed by the relative gold content of domestic currencies. However, gold arbitrage, rule II in conjunction with rule III, which prescribes automatic money supply adjustments to changes in gold reserves, will restrict spot rate volatility. To understand the role of gold arbitrage, consider the USD (US dollar,$) to GBP (British pound,£) exchange rate. During the International Gold Standard the US Treasury charged USD 20.646 for one ounce (30 grams) of fine gold, which is called the *mint parity* of the dollar. The Bank of England charged GBP 4.252 for one ounce of fine gold. The ratio of mint parities (20.646/4.252) defines the long term or equilibrium exchange rate as USD 4.856 to one pound. Assume now that there is a strong supply and /or weak demand for pounds, the British currency. That will drive down the price of the British pound on international foreign exchanges. That implies that the USD becomes stronger, but how strong can it become? Gold arbitrage sets the limits. Foreign exchange speculators can either buy dollars on the spot market or by gold arbitrage, rules I and II. We want to know when it becomes advantageous to use gold arbitrage rather than pound notes on the exchange market in buying dollars. The condition is when SER:

$$\text{SER} \leq \frac{\$MP - T^{US}}{£MP} \qquad (1)$$

Where SER is the spot exchange rate of dollars to one pound, $MP is the dollar mint parity, T^{US} is the dollar transport and transaction costs in buying and shipping one ounce of gold from Great Britain to the US and £MP is the pound mint parity. The intuition is simple. In the absence of transport and transaction costs, i.e. when $T^{US} = 0$, the spot rate and the exchange rate defined by the mint parities, USD 4.856 to the pound, would be exactly the same. The larger the T^{US}, the more the spot rate can deviate from the ratio of the mint parities. (**Go back to equation (1) to verify that!**) When, given a value of T^{US}, the US dollar becomes sufficiently expensive on the foreign exchanges, British buyers will notice that it is profitable to convert pound notes in the Bank of England at mint parity for gold, £MP. The gold is shipped to the US where it is converted to dollars at the dollar mint parity, $MP. Consider the following case.

Assume that the spot rate, SER, is USD 4.826 for one pound and that the transport and transaction cost for one ounce of gold is T^{US} = USD 0.12. If so, it is profitable to ship gold to the US rather than

buy dollars on the spot exchange market. According to inequality (1), the spot rate that will trigger off gold arbitrage is 4.827, that is (20.646-0.12)/4.252. But as noted above we take SER to be 4.826 in this example. Apparently you get less dollars for a pound note on the foreign exchanges than in gold arbitrage. However, when SER approaches 4.827, gold arbitrage is no longer profitable, given T^{US}. It is called the British gold export point (which is the US gold import point) meaning that spot rates slightly lower than 4.827 will trigger off gold flows from Great Britain to the US. Transport and transaction costs varied a little over time and the particular example given here refers to conditions in 1879. Costs also differed a little depending on the direction of the flow.

Question: What would have happen if T^{US} increased to USD 0.14? Find that out by using (1).

The US gold export point seemed to be quite stable at around USD 4.89. At and above USD 4.89 buyers of pounds found the spot rate too high and bought pounds by shipping gold to Great Britain. The general condition US gold exports then becomes

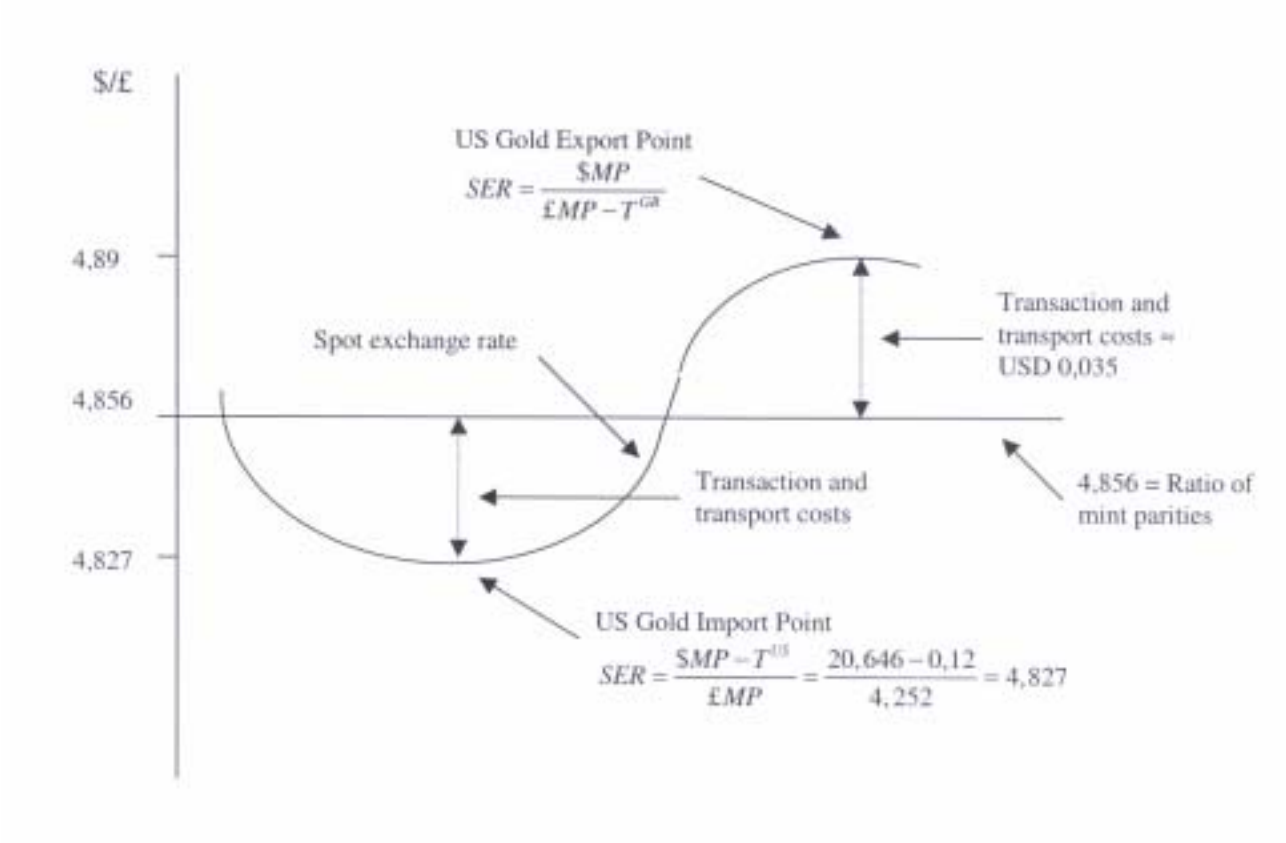
$$\text{SER} \geq \frac{\$MP}{£MP - T^{GB}} \qquad (2)$$

Where T^{GB} is shipping costs of one ounce of fine gold to Great Britain.

Exercise: Calculate T^{GB} if the US gold export point is 4.89

The mechanism is illustrated in Figure 2. Keep in mind that T^{GB} and T^{US} are expressed in pounds and dollars respectively per ounce of gold while *transport and transactions costs* in Figure 2 are expressed in dollars per one pound's value of gold. It takes GBP 4.252 to buy one ounce of gold at the mint parity. If T^{GB} is around USD 0.149, the cost of transporting one pound's worth of gold is 0.035 = 0.149/4.252.

Figure 2. Gold arbitrage in the International Gold Standard.



By rules I-III it seems as if the exchange rates are more or less self-equilibrating. When Great Britain loses gold, the money supply falls, rule III, and the pound is strengthened. But we have assumed up till now that central banks passively respond to losses in international assets, gold, by reducing domestic assets, i.e. selling, say, bonds and thereby reducing the central bank's liabilities (bank notes) and reducing the money supply. However, central banks often manipulated rules I and II by erecting economic and/or administrative barriers to gold arbitrage. Ragnar Nurkse[3] observed that Central banks often violated the rule of a positive relationship between movements in international assets and domestic assets, rule III, in the Interwar period and he ascribed the instability of the Gold Standard in that period to that fact. However, it turns out that such violations, called *sterilization,* were also quite common in the pre-1913 Gold Standard. Central banks 'sterilized' or counteracted the impact of gold flows on domestic money supply when mint parities were not seriously at risk. Continental central banks built up excess gold reserves, that is, they did not permit gold flows to affect the money supply automatically in a positive direction. The Bank of

[3] See R. Nurkse *International Currency Experience*, Geneva: League of Nations, 1944.

England intervened permanently in the money market by an active interest rate policy to stem anticipated gold losses. In a crisis the Bank adopted Bagehot's[4] rule (rule IV), which in fact suggests that the central bank should *increase* its domestic assets when it was losing gold, which is a violation of rule III. This is the background for Bagehot's rule. It was applicable when there was both an internal and external drain. If the pound weakened on the foreign exchanges, depositors withdrew their bankdeposits and converted pounds to gold and exported it. In principle, the Bank of England should sell not only gold but also domestic assets, that is, let the money supply fall. However, the banking system was in a liquidity crisis when depositors abandoned banks, which could threaten the survival of the banking system. So by Bagehot's rule, the Bank of England increased its domestic assets and sterilized, i.e. offset, the negative impact of the gold outflow on the money supply by lending freely to banks at higher interest rates. In critical moments the Bank of England, or other central banks in similar circumstances, depended on the support of fellow central banks which extended loans to the central banks under pressure. The question then arises of how the system could exhibit its extraordinary stability before 1913 despite the violations of the rules of the game. The key words are *commitment, confidence and symmetry.*

Commitment to the Gold Standard is demonstrated through the so-called restoration rule, rule V, and *confidence* is about the widespread belief that under the International Gold Standard, exchange rates will *not* permanently deviate from their prescribed values. If there is confidence in a currency, then speculation will be equilibrating rather than de-stabilising. If a currency weakens at the foreign exchanges and the central bank increases the interest rate to stem gold outflows, currency speculators will start buying the currency that is under pressure in anticipation of a strengthening of the currency. Their anticipation will be self-fulfilling. Finally, *symmetry*, is explained by rule VI. Even if Great Britain was the financial centre of the world it did not unduly influence the world price level which was dependent on the demand and supply of gold. As we will see, the International Gold Standard differed in this respect from the post WWII Bretton Woods 'fixed dollar exchange' system. The nominal price level indicated what gold could buy. The fall in the price level from the mid 1870s to the mid 1880s reflected the increased demand for gold when a large number of countries adopted the gold standard. However that tendency was offset by two factors. When the price level fell, the basket of goods that gold could buy increased so marginal gold mines became profitable, increasing the supply of gold. The other factor was the institutional

[4] Bagehot was the founder and first editor of *The Economist*.

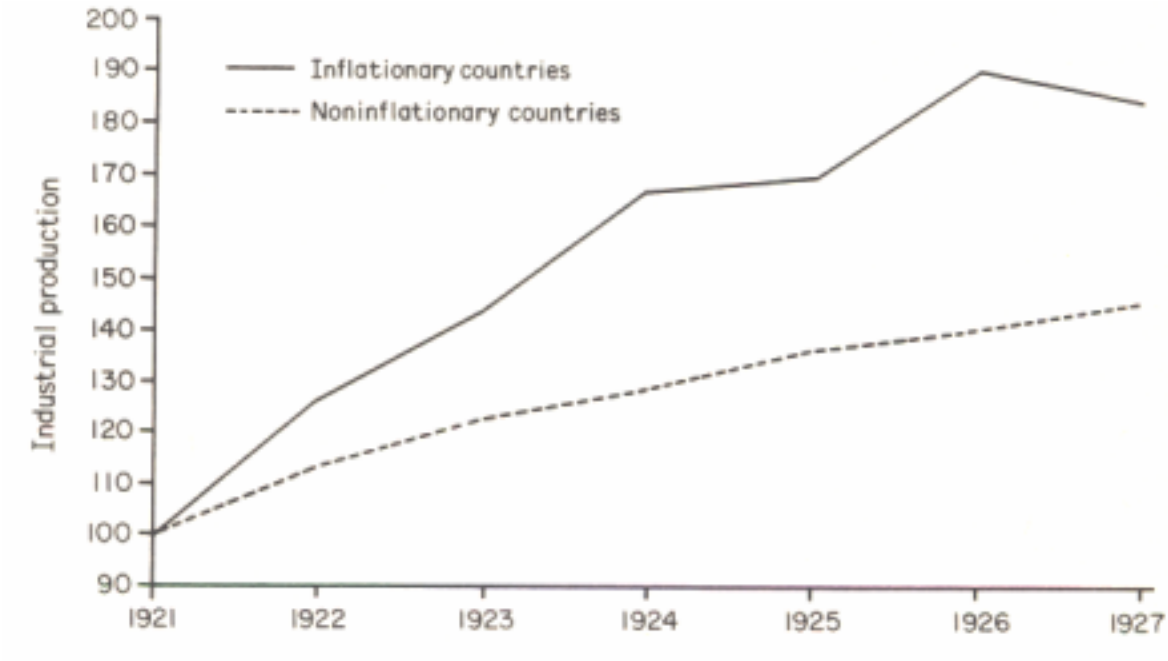
sophistication of the national monetary systems where by the ratio of gold to total money supply, including deposit money increased, which the decreased demand for gold.

The troubled Interwar period, 1919-1939.

If the Gold Standard was so successful in the pre-war period, why did it not work in the Interwar period? During the war inflation increased in all countries but at different rates because nations differed in their ability to finance the war effort through taxation and the bond market on the one hand and inflationary monetary financing on the other hand. Therefore real exchange rates had increased in most in economies with high inflation. After the war exchange rates floated and in that process nominal exchange rates found their *purchasing power parity* rates.[5] Early on discussions started on the need to restore the gold standard, but the question was at what mint parity. The price level had doubled in some countries but increased by a multiple of five or more in others and hyperinflation characterized Germany and Austria. By and large the high inflation nations, including France, reduced the mint parity considerably – to about 20 per cent of the pre 1913 mint parity, while the UK and Scandinavia restored the pre 1913 mint parity. The effect was that the UK and Scandinavia joined the new international old standard in the mid 1920s at overvalued exchange rates. The standard for judging whether a nominal exchange rate is 'correct' is to compare it with the *purchasing power parity* (see footnote 3*)* exchange rate, and by that standard the overvaluation was in the order of 15-20 per cent. The other camp, including France, made a better choice of mint parity and throughout the 1920s the UK and Scandinavia struggled to adjust their price and cost levels by reducing economic activity by means of restrictive monetary policy. In terms of growth the countries opting for a reduced mint parity did much better, as seen in Figure 3 below. The group of nations called inflationary are those that, prior to the return to gold, had experienced high inflation and reduced the gold content, mint parity, of their currencies. They did not need to actively deflate the price level. The non-inflationary group consists of the UK and Scandinavia who opted to a return to pre-1913 mint parities.

[5] A purchasing power parity exchange rate is such that, say, 100 units of the domestic currency buys the same basket of goods domestically as in a foreign country if exchanged to the foreign currency at the prevailing nominal exchange rate.

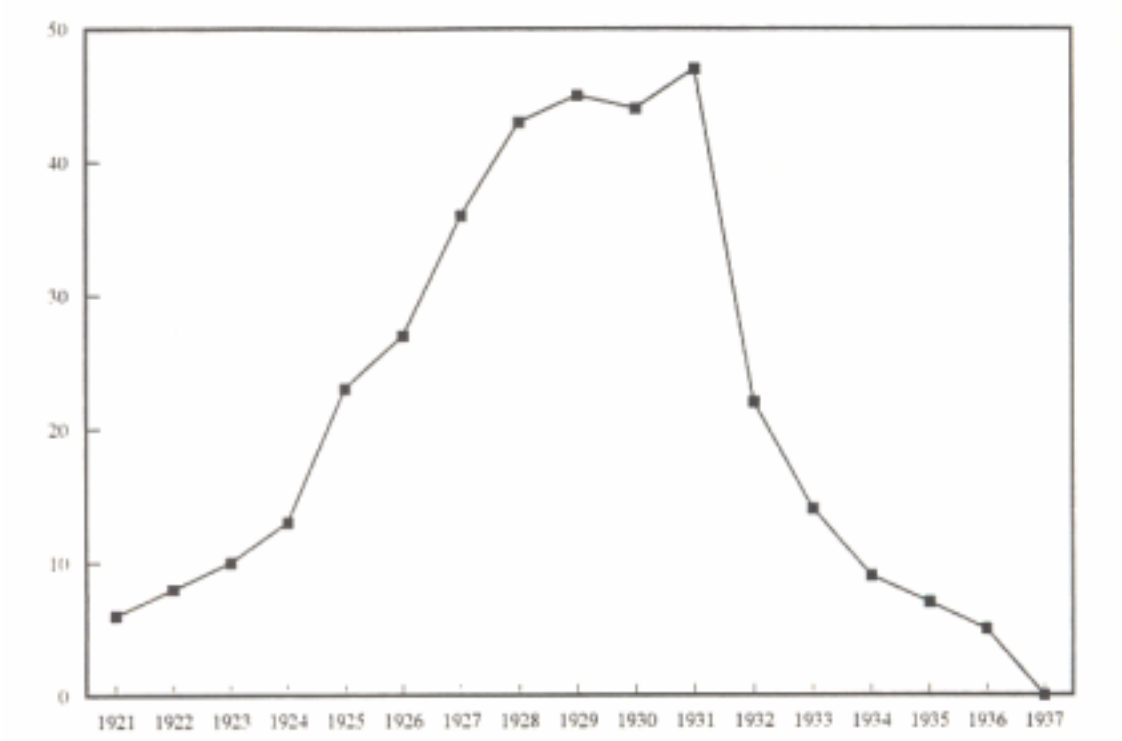
Figure 3. Industrial growth in deflationary and inflationary nations in Europe in the 1920's.



Source B.Eichengreen, *Elusive Stability,*Cambridge: Cambridge University Press, 1990, p.32.

Gold was flowing into France and the US but both countries *sterilized* its effect on the local money supply so the initial imbalance in terms of overvalued vs. undervalued currencies remained. Therefore the entire adjustment back to viable relative price levels, given the now fixed nominal exchange rates, fell on the non-inflationary group. Great Britain (UK) lost international reserves because industry was not competitive at the existing exchange rate. As a result Britain's international reserves position was not strong enough to accommodate the major international shock to its foreign currency earnings when it arrived with the Great Depression. The pound left gold and devalued in September 1931. Scandinavia followed and after a period of free floating exchange rates, remained reasonably stable throughout the 1930s, although that stability was in part a result of capital controls. The US remained on the Gold standard until 1933 while France was the last to leave in 1936 and suffered a prolonged depression. The short history of the Interwar gold standard is told in Figure 4. The number of countries joining the club peaked in the early 1930s but then defections started and grew rapidly.

Figure 4. Number of countries on the gold standard, 1921-37.



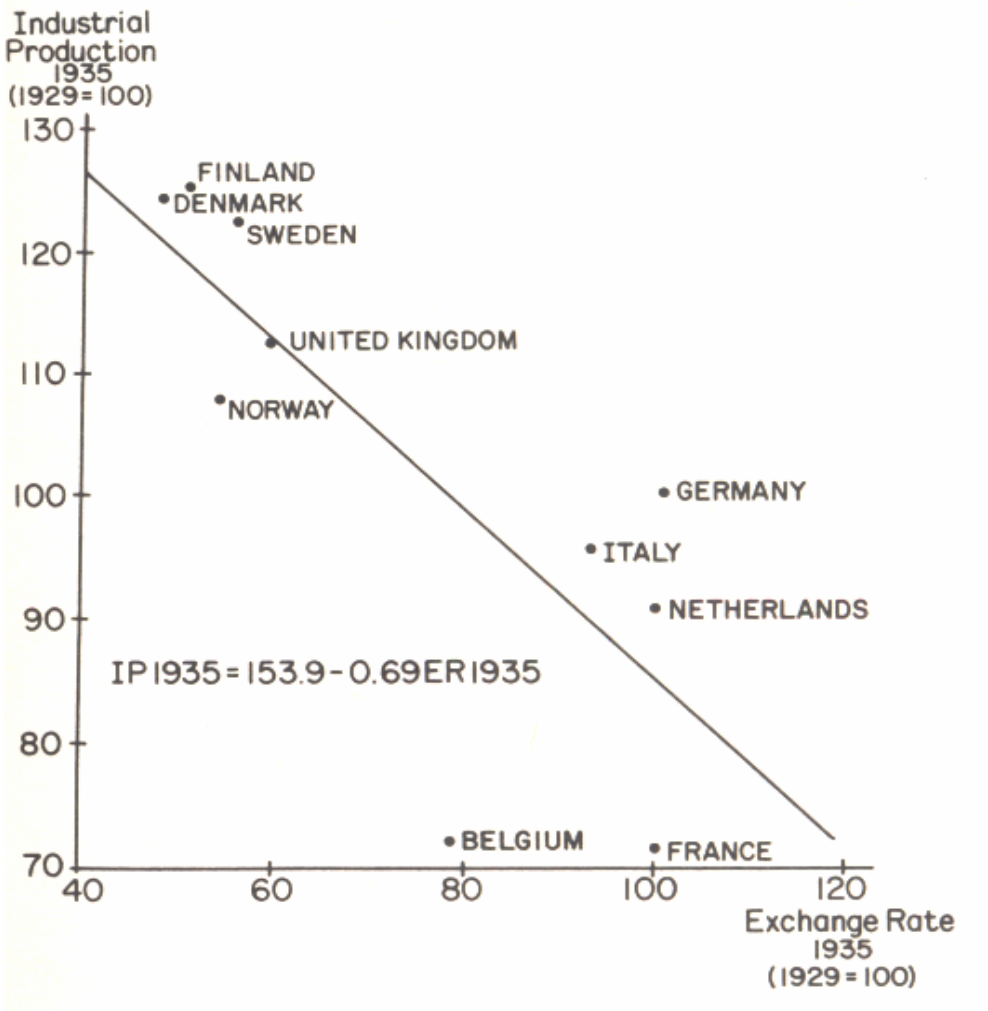
Source: B. Eichengreen, *Globalizing Capital, A History of the International Monetary System*, Princeton:Princeton University Press, 1996, p. 48.

Nations leaving gold early devalued to about 60 per cent of their 1929 exchange rate and recovered faster from the Great Depression as is demonstrated in Figure 5.

The mechanism behind the recovery is this. Early devaluation meant that the economies were released from the fetters of an overvalued currency. Industry improved its market share both locally and abroad. Devaluation also implied an increase in inflation, which reduced *product wages*[6] and real interest rates. Finally, monetary policy was no longer subject to the defence of the fixed exchange rate and could be used to boost the growth of the economy. In a floating or managed float exchange rate system a nation enjoys a degree of monetary autonomy, see. Fig. 1.

[6] The product wage is the wage relative to the product price. Product wages decreased because nominal wages did not increase as inflation picked up.

Figure 5. Changes in exchange rates and industrial growth, the 1930s.



Source: Same as for Figure 3, p. 227.

International capital mobility was considerably reduced in the 1930s, which forced many developing nations that had previously relied on US lending to introduce currency controls. Germany developed a non-convertible 'currency', the so-called ASKI- mark, in its relationship with Eastern and Central Europe but it was used only for bi-lateral transactions and generated more or less bi-lateral balanced, and therefore, reduced trade. The widespread use of capital and currency controls, in addition to very low capital mobility, led to an actual decline in world trade in the 1930s.

Something had to be done. New plans were developed during WWII.

The Bretton Woods 'fixed (but adjustable) dollar exchange standard', 1950 (58)-1971(73)

The new order emerging after WWII reflected conflicting interests and historical experience. In the negotiations aiming at creating a new international monetary order held in the US east coast resort village, *Bretton Woods*, the British representative, J. M. Keynes, wanted a much more flexible system than the traditional gold standard. In particular, there should be an element of national macroeconomic autonomy (see Figure 1) permitting nations to pursue a full employment policy. The spirit of the agreement is laid out in Box 2 below.

Box 2. (McKinnon's Handy) Rules of the Bretton Woods 1945 Agreement.

All Countries

I. Fix a foreign par value for the domestic currency by using gold, or a currency tied to gold, as the numéraire; otherwise demonetize gold in all private transacting.

II. In the short run, keep exchange rate within one percent of its par value; but leave its long-run par value unilaterally adjustable if the International Monetary Fund (IMF) concurs.

III. Free currency convertibility for current-account payments; use capital controls to dampen currency speculation.

IV. Use national monies symmetrically in foreign transacting, including dealings with the IMF.

V. Buffer short-run payments imbalances by drawing on official exchange reserves and IMF credits; sterilize the domestic monetary impact of exchange-market interventions.

VI. National macroeconomic autonomy: each member government to pursue its own price level and employment objectives unconstrained by a common nominal anchor or price rule.

Source: Same as for Box 1, p.41.

These rules describe the spirit of the agreement, but the actual operation differed in a number of ways outlined in what follows. Rule I give a prominent role to gold but only the US dollar was explicitly linked to gold and other currencies were pegged to the dollar. Central banks in member countries could, in principle, convert their dollar holdings to gold. For reasons discussed below, member countries, except for France, did not do that. That's why the appropriate designation of the system is that of a *dollar exchange standard*.

Rule II opens a different adjustment process than in the gold standard in which all adjustment had to go through changes in the price level of a nation. In the Bretton Woods system a nation in a fundamental disequlibrium could adjust its peg to the dollar by applying for permission to do so from International Monetary Fund, IMF, the institutional node of the Bretton Woods system. That option was used by, among others, Germany which revalued twice, 1961 and 1969, the UK which devalued in 1967 and France which devalued in 1957,1958 and 1969, and finally the US in 1971.

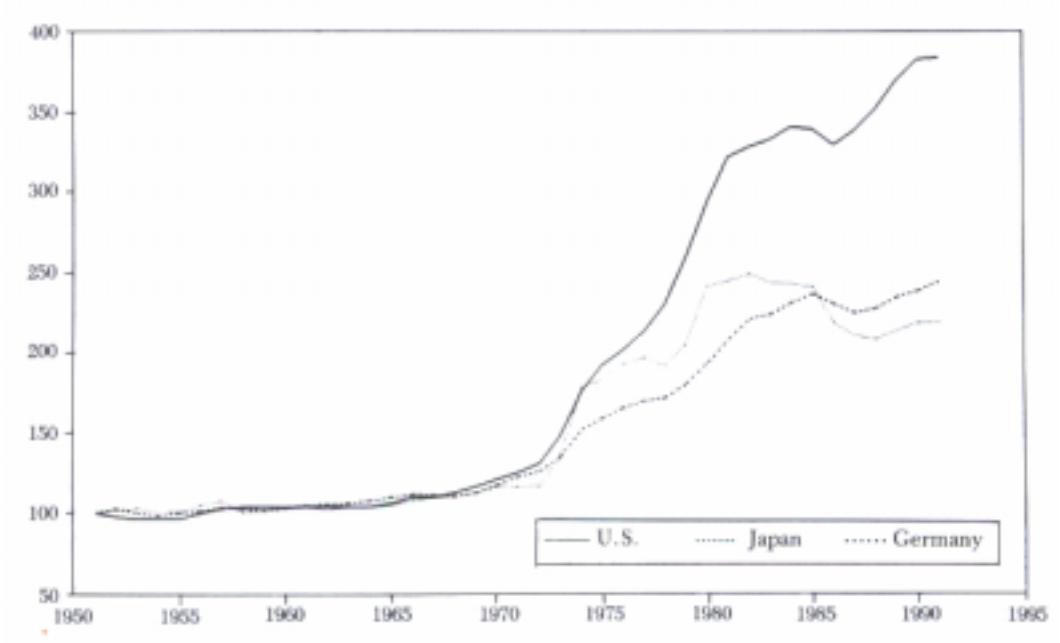
As suggested by Figure 1, the macroeconomic autonomy was possible only if there was an element of capital control. Rule III suggests that capital controls can permit countries some macro-economic autonomy by limiting de-stabilising currency speculation in the short run. When capital controls failed, a nation had to change its dollar peg. In fact both current and capital account movements were regulated by national governments until 1958 when current account restrictions were lifted. However, in real life it is difficult to control capital account movements when current account operations are free. A firm investing abroad can call it a payment for goods imported, making what is a capital account flow into a current account transaction.

Rule V introduces a new role for foreign exchange reserves, that of a buffer stock. In the gold standard foreign exchange reserves and gold were explicitly linked to the domestic money supply, see rule III in Box 1 above. The buffer stock view had no such link but suggested that temporary shortfalls in export earnings should be met by a nation's reserves, and if they were depleted, by the credits provided by the IMF. Bretton Woods's members had credit facilities (drawing quotas) in the IMF proportional to their deposits or subscriptions to the IMF.

Rules III and VI suggest that Bretton Woods was a symmetric system. In real life it was far from it. Only the dollar was used as an intervention currency, i.e. the currency used to keep the domestic currency within its one percent margin to the dollar. The national macroeconomic autonomy was also clearly restricted. Current account imbalances could not just be offset by foreign exchange reserves but often called for fiscal policy to increase savings. Britain was known for its 'stop-go' policy, that is, periods of tight fiscal policy followed by expansionary spending, sometimes with the aid of credit facilities provided by the IMF. The basic reason for the problems in the British economy was, however, that underlying inflation was higher than in most other nations. The advantage of the Bretton Woods system was (see rule II in Box 2) that Britain could devalue rather than being forced to deflate the economy, as was the case in the 1920s. In fact, it can be argued that Britain waited too long to devalue.

There was a surprisingly uniform inflation in core member countries between 1950-1970, but not as uniform as in the International Gold Standard. Figure 6 demonstrates the uniformity of wholesale prices until the early 1970's. When the fixed dollar exchange rate was abandoned, price levels became truly autonomous with the price level doubling in Germany and Japan and tripling in the US.

Figure 6. Wholesale prices 1950-1995.

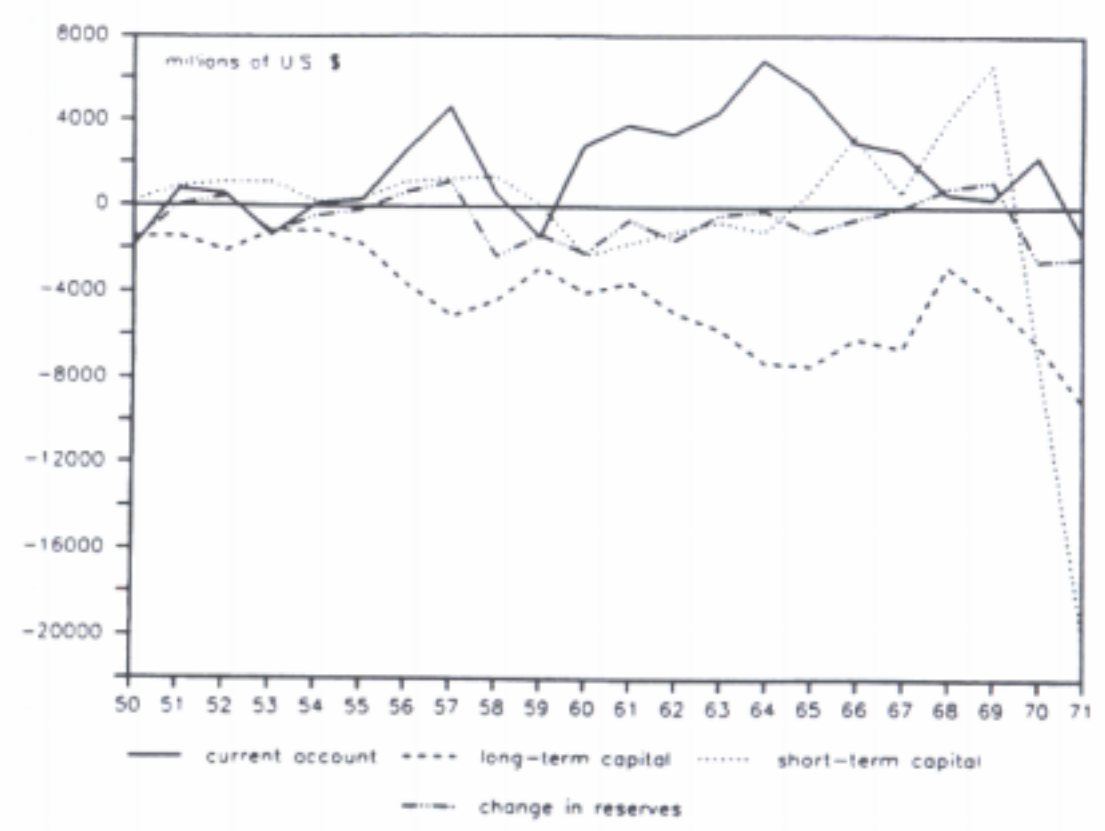


Source: Same as Box 1, p.76.

Internatonal 'liquidity'. Did Bretton Woods and the IMF provide enough international liquidity, that is, the foreign exchange reserves necessary for international trade, which was growing fast? That was a topic discussed over and over again within the IMF leading to a number of policy proposals. The IMF provided, as was briefly mentioned above, credits but they were of limited magnitude. Late in the 1960's a new instrument was launched, Special Drawing Rights, SDR. They can be briefly described as follows. Member countries got a number of SDRs (1 SDR= 1 USD) proportional to their subscription in the IMF. SDRs could only be used to settle current account imbalances. A country having a current account deficit could deposit a number of SDRs in a surplus country designated by the IMF. In return for its SDRs the deficit country received a convertible currency, say dollars.

But the main provider of foreign exchange reserves was the US, which over the years operated an almost permanent balance of payments deficit. Although the current account was largely balanced US had a growing capital account deficit originating in US investments in foreign assets. Figure 7 below traces the evolution of the current account, reserve losses and the short and long run capital accounts.

Figure 7. The US Balance of Payments, 1950-71.



Source: M.D. Borde, The Gold Standard and Related Regimes, Cambridge:Cambridge University Press, 1999, p. 453.

When US citizens bought assets broad, the dollars accumulated in national banks around the world were not converted to gold but kept as foreign exchange reserves, for example as US Treasury bonds, which unlike gold give a return. Being the issuer of the main reserve currency generates a seignorage gain for the US, being equal to the return from the assets bought by the dollars minus the interest paid on the assets in which foreigners hold the dollars. French politicians, in particular, were upset by this favour and started to convert their dollar holdings to gold in the mid 1960s. By then the Federal Reserve gold stock was just a small fraction of US international liabilities, not

because the gold reserve had fallen dramatically (see Figure 7) but because the dollar holdings by foreign banks had risen dramatically. By then it was quite clear that the dollar was not as good as gold, but that was not really what worried people. It was not a credibility problem that brought the Bretton Woods system to an end. If US monetary policy been more careful in the early 1970s, the Bretton Woods system might have survived without the link to gold.[7]

The N-1 problem.

What ultimately led to the failure of the Bretton Woods system was the conflict of interests between participating nations around the appropriate monetary policy. The spirit of the Bretton Woods system did not foresee the fundamental *asymmetry* characterizing the determination of monetary policy in the 1960s. It has been called the N-1 problem. If there are N currencies including the US dollar, there are only N-1 exchange rates to the dollar. (Imagine a world of two currencies, N=2. How many exchange rates are there? Just one, that is N-1). In a credible fixed exchange rate system without currency controls, interest rates would converge to the same rate. But which nation had the freedom to determine the interest rate? It turned out to be the country that issued the reserve currency and anchor currency in the system, the US. Other nations had an instrument to discipline the US since they could convert their dollar assets, for example US government bonds, to gold and thereby influence US monetary policy. A gold loss by the Federal Reserve, if not sterilized, should lead to a fall in the US money supply. But no nation except France, exerted that right. Why? Well, in a world of fast expanding trade, there was a need for international reserves, meaning dollars. When disagreements about monetary policy became too obvious to hide in the late 1960s, the US gold reserve was a tiny fraction of US international liabilities and US gold losses might have led to an immediate breakdown for Bretton Woods. That crisis came soon after, but for other reasons.

Let us see how US monetary policy determined the monetary policy for other Bretton Woods members. In the sixties successive Democratic administrations in the US (John Kennedy and Lyndon Johnson) expanded welfare spending and later got increasingly involved in the costly Vietnam war. That led to budget deficits and expansionary monetary policy with an increased rate

[7] The traditional analysis of the contradictions of the Bretton Woods system links it to a credibility crisis. The world demands dollars as international reserves but Bretton Woods did not provide a mechanism to secure an increase in the gold supply. In fact gold had fallen in real terms because the nominal price had been unchanged since 1934, which did not exactly stimulate production. The so-called Triffin dilemma arises: If the US does not run balance of payment deficits there will not be enough international reserves, which might trigger of a recession. If the US runs a balance of payment deficit, there will be enough international reserves but the credibility of dollar for gold convertibility vanishes, which will bring the system down. Yale based Belgian economist, Triffin, came up with a solution to create an institution similar to SDR, see above. However, his stress on the credibility problem was misplaced.

of inflation (it doubled in the late 1960s).[8] European governments had other and lower inflation targets but could not do much more than 'import' the monetary policy chosen by the US. Here is why: When the US lowered interest rates, speculative money moved from dollars to currencies with higher interest rates, for example the German Mark. The German central bank had to issue German marks to those who sell dollars, increasing the German money supply and driving down interest rates. When the German central bank bought dollars, it took dollars out of circulation, but the US Federal Reserve routinely sterilized these contractionary effects on the US money supply. If speculators believed that the Germans in fact preferred to revalue the Mark, the demand for Marks would be even higher in anticipation of the gains from holding a currency soon to be revalued. As a result, German money supply would have increased even more. Capital controls gave European nations some protection from the monetary choices of the US government but not enough to stop a growing sentiment that the asymmetry was not viable in the long run. US excess inflation had made the dollar overvalued and finally the US had to abandon the gold convertibility and devalue in 1971. New par values were declared, which meant a 10-20 percent US devaluation. However these new par values were abandoned in 1973 because US inflation was out of control. But by then the Bretton Woods system was no longer. A new era, one of floating exchange rates, managed or not managed, started but the dollar remained in use as 'international money' and for interventions to smooth exchange fluctuations.

The Post-Bretton Woods Era.

In the 1960's theorists such as Robet Mundell had increased our understanding of currency unions and fixed exchange rate systems. It was now understood that fixed exchange rate regimes that were very diverse in their membership had little chance of surviving because economic shocks were asymmetric, that is shocks had different employment and income effects in different countries. A fixed exchange rate system did not give nations enough economic policy autonomy to cope with asymmetries. Typically, the new exchange rate mechanisms that developed were regional rather than truly international, such as the European monetary system (EMS) in operation in the 1980s and early 1990s. It started as a rather flexible system but by the mid 1980s it became more rigid. However, even at a regional level the stability of a European system was difficult to maintain and for the same reason that the Bretton Woods system disintegrated: because of the N-1 problem. In the EMS Germany was the conductor of monetary policy. Many countries, including Denmark and

[8] Consumer price inflation did not differ that much between the US and its trading partners, but prices of tradeables are what matter.

France, pegged their currencies to the German Mark because Germany had a reputation for low inflation. But as a consequence they had to obey the monetary policy of Germany. By 1992-93 inflation had been controlled and asymmetric shocks made the German monetary dominance unsuitable for other core members. Germany experienced strong inflationary pressures because of the unification (East meets West) while Britain and France were in recession. The conflict over monetary policy could not be resolved. Several nations left the EMS in September 1992,[9] including Britain and Sweden The system remained in name only until the Euro-bloc was formed.

There were attempts in the post-Bretton Woods era to manage floating. The sharp appreciation of the dollar in the early 1980s led to the so-called Plaza-Louvre Intervention Accords, which agreed on smoothing or reversing strong changes in the dollar value by concerted interventions in the exchange markets, especially in the 1985-92 period. If the decline of the dollar continues we might see new attempts to manage the system of floating exchange rates. It is highly unlikely, however, that a new international fixed exchange rate system will be introduced again because we live in a world with asymmetric shocks and with governments with different economic policy commitments.. The basic reason why there is little interest now in restoring an international fixed exchange rate system is that it has been possible to combine floating exchange rates with fast growth in international capital flows and trade in the Post-Bretton Woods era

This lecture note draws heavily on the following sources:

Barry Eichengreen, *Globalizing Capital, A History of the International Monetary System* Princeton: Princeton University Press, 1998.

Paul De Grauwe, *International Money*, Oxford: Oxford University Press, 1996.

Ronald I.McKinnon, *The Rules of the Game, International Money and Exchange Rates*, Cambridge: The MIT Press, 1996.

[9] I was having lunch in Pisa on a Monday in September 1992 and identified the then Finance Minister of UK, Norman Lamont, at a neighbouring table. He was almost constantly on his mobile phone apparently 'talking up' the pound. The pound devalued the week after and has been floating since. Norman Lamont was soon 'floating' away from his government job.