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## **Globalization without global money: the double role of the dollar as national currency and world currency**

Globalization of markets and enterprises has characterized postwar economic development. As a consequence, national economies have become increasingly interdependent in a process toward a supranational closed system, the world economy. However, the globalization of markets and enterprises has not been paralleled by a globalization of the monetary system—that is, by a transition from using national currencies to the creation of a supranational currency.

Rather, the opposite development has taken place: Ever since the end of World War II, the dollar has been playing a double role in that it has served as national currency of the United States and as key currency of the world economy. As long as confidence prevailed in the United States' commitment to the rules of Bretton Woods, the dollar remained a stable substitute for a genuine world currency. However, the double role of the dollar enabled the United States to finance growing external deficits through “dollar exports,” thereby undermining the credibility of the dollar-gold standard and ultimately leading to its collapse.

After the breakdown of the Bretton Woods system, the dollar remained the key currency of the world economy, although a rather unstable one. This is demonstrated by the fact that dollar exchange rates have fluctuated much more strongly than the exchange rates of any other reserve

The author is Senior Fellow at the Austrian Institute of Economic Research in Vienna. He would like to dedicate this essay to Charles P. Kindleberger who succeeded in all his activities—ranging from his contributions to the realization of the Marshall plan and his theoretical and empirical work in international economics with special regard to the inherent instability of financial markets to his studies in economic history and his teaching—to integrate being an economist and being socially useful at the same time. To put it differently: in the conflict between recognition and interest that characterizes the work of economists specifically, Kindleberger gave a clear priority to the production of concrete insights, useful for improvements of economic life, over the production of abstract theories, useful for justifications of economic interests. Valuable comments and suggestions from an anonymous referee, from John T. Harvey and in particular from Michael D. Goldberg are gratefully acknowledged. Special thanks go to Eva E. Sokoll for statistical assistance.

currency. The instability of dollar exchange rates, as well as of dollar interest rates, was to a great extent caused by “inward looking” U.S. economic policies (due to the role of the dollar as national currency). At the same time, however, this instability has had a tremendous impact on the international economy (due to the role of the dollar as world currency).<sup>1</sup>

As world currency the dollar serves as a means of international liquidity in general and as “numeraire” for supranational flows as well as for supranational stocks. This is evidenced by the following characteristics of our current international financial system:

- The pricing and trading of almost all standard commodities, including crude oil, are carried out in dollars. Standard commodities can therefore be called “dollar goods.”
- Most international assets/liabilities are held in dollars (i.e., “dollar stocks”).
- The dollar represents the “vehicle currency” in the supranational foreign exchange market.<sup>2</sup>

The consequences of this double role for the dollar are nothing less than profound. In its role as a national currency, changes in dollar interest rates and exchange rates have an impact upon the economic relations between the United States and the rest of the world. This is the conventional way of viewing the role of the dollar. But in its role as world currency, changes in dollar interest rates and exchange rates also influence the relative price between commodities and manufactures in world trade, the terms of trade between industrial and developing countries, the speed of inflation and deflation in world trade and the level of the real interest on international debts. Despite its importance, it is this second role of the dollar that often gets overlooked in analyses of developments in the international financial system.

<sup>1</sup> Mainstream theory does not take into account the double role of the dollar as national currency of the United States and as world currency, especially under a regime of floating exchange rates. The importance of this aspect was, however, repeatedly stressed by some concretely thinking “elder economists”—to use a term analogous to “elder statesman”; see, e.g., the presidential address of Kindleberger (1986) to the American Economic Association, or his essay collections, *International Money* (1981) and *The International Economic Order* (1988). For an excellent analysis of the problems related to international money from a Post-Keynesian perspective, see Davidson (1992).

<sup>2</sup> The term “supranational” is used for variables and markets that are truly global in nature, such as trade flows of standard commodities, eurodollar credits to developing countries, and the foreign exchange market. The term “supranational” is used instead of “international” to refer to the world economy as a whole.

The aim of this paper is to sketch the impact of changes in dollar interest rates and exchange rates on the development of the world economy as a whole, and on the development of the U.S. economy in particular. The paper argues that the most important events in postwar economic development—ranging from the “oil price shocks” in the 1970s to the financial crises in Latin America in the 1980s and in East Asia in the late 1990s—can be linked to the double role of the dollar and the related conflict between the need for stable monetary conditions for the world economy as a whole and the need to adjust U.S. monetary policy to national conditions prevailing in the United States.

I begin with a discussion of the dollar as “numeraire” of standard commodities (in particular of oil) and the impact of fluctuations in the value of this “numeraire” currency on terms of trade and inflationary dynamics in the world economy, focusing therefore on the role of dollar exchange rates as supranational “flow prices.” We shall then look at the role of the dollar as “numeraire” of international financial stocks and its impact on the process of debt accumulation, focusing on the role of dollar interest rates and exchange rates as supranational “asset prices.” I then highlight some of the consequences of the dollar’s role as “numeraire” in the supranational foreign exchange market and conclude by sketching how the contradictory relationship between the dollar as national currency and as world currency has shaped postwar development.

### **Dollar exchange rates as supranational “flow prices”**

For a general but still concrete analysis of how changes in the dollar exchange rate affect the terms of trade of the United States and other economies, I shall specify three types of goods—manufactures, oil, and nonoil commodities—and three types of economies—industrial countries, oil-exporting developing countries, and nonoil developing countries.

The prices of manufactures are (mainly) determined by production costs in the countries of their origin and are therefore denominated in the currencies of the respective countries (“nondollar goods”—with the exception of manufactures made in the United States). The prices of standard commodities are determined by supply and demand in a truly supranational market and are therefore denominated in the world currency (“dollar goods”).

#### *The dollar exchange rate, commodities prices, and terms of trade*

Commodities (or “dollar goods”) comprised on average 35 percent of world trade between 1965 and 1990. Their share in exports and imports differed

significantly, however, by country groups (the data stem from the U.N. trade matrix; see data appendix), as shown in Table 1.

*Ceteris paribus*, if both the dollar prices of commodities and the national-currency prices of manufactures remain constant, then any change in dollar exchange rates has two different effects:

1. It changes the terms of trade between the United States and other countries (due to the role of the dollar as national currency).
2. It changes the terms of trade between any pair of countries, the extent of which depends on the proportion of "dollar goods" relative to "nondollar goods" in their trade structure (due to the role of the dollar as world currency).

In concrete terms, any depreciation of the dollar against other currencies undermines *ceteris paribus* not only the terms of trade of the United States vis-à-vis Germany, for example, but also the terms of trade of, say, Saudi-Arabia vis-à-vis Germany, since dollar prices of manufactures produced in countries other than the United States increase but the oil price does not. Consequently, the stronger the fluctuations of dollar exchange rates, the stronger the induced changes in the terms of trade not only for the United States but for other countries as well. (The global income redistribution due to the interaction between the dollar exchange rate and oil prices is discussed in Davidson, 1992, ch. 9.)

Among all countries, the difference between the export and the import share of "dollar goods" is by far greatest for oil-exporting developing countries. Consequently, the income position of these economies is most strongly affected by changes in dollar exchange rates. Therefore, the incentive to react to a dollar depreciation by increasing export prices is by far the strongest for oil exporters (and, by the same token, they can more easily accept a decline in oil prices during a period of a rising dollar exchange rate).

As in any struggle over income distribution, the extent of price increases of "dollar goods" in reaction to a general dollar depreciation depends on the extent of market power possessed by the involved parties. Consequently, net exporters of commodities, and in particular those of crude oil, will try to increase export prices as much as they can, perhaps more than what is required to compensate for the depreciation of real export earnings due to a depreciation of that currency in which their export prices are denominated. (In theory, these countries should react to a decline in the price of commodities relative to manufactures by shifting their supply from commodities to manufactures. Such a change

Table 1

	Industrial countries	Oil-exporting countries	Nonoil developing countries
Export share	22.4	92.1	51.2
Import share	36.8	19.7	32.5

in their production structure, however, is not feasible in practice, at least in the short run.)

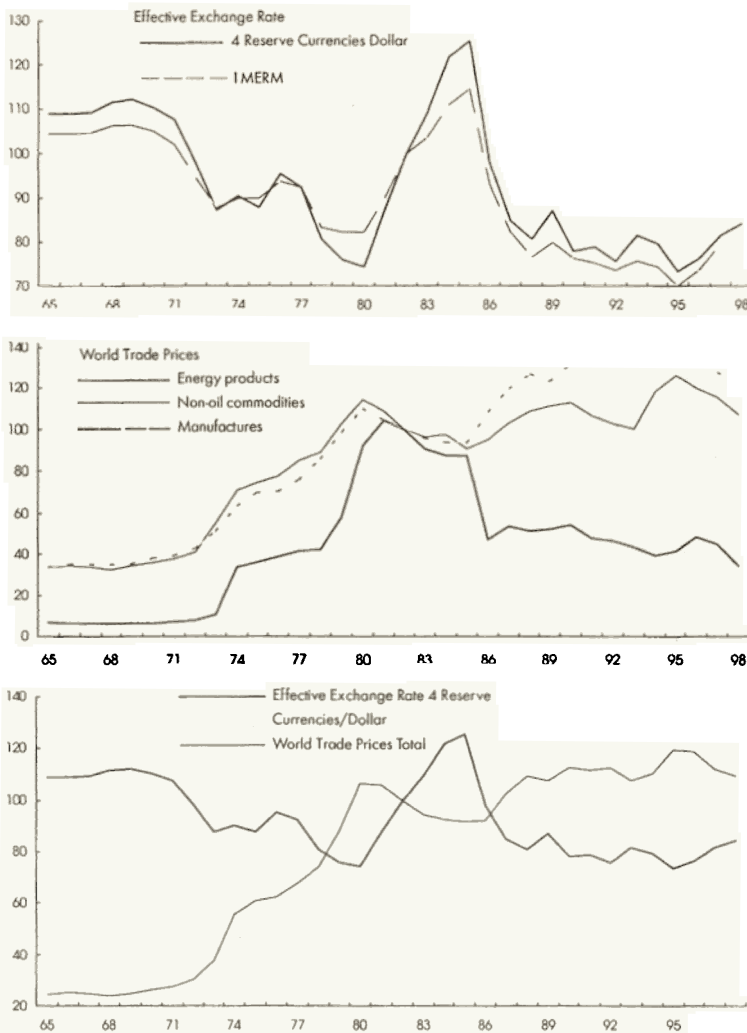
These direct price adjustments to changes in the dollar exchange rate will take place if oil producers enjoy a high degree of oligopoly or even monopoly power. Otherwise, the individual oil suppliers will react to changes in dollar exchange rates through quantity adjustments: since every dollar appreciation (depreciation) implies *ceteris paribus* a rise (decline) in the real price of oil (i.e., relative to prices in overall world trade), it will thereby cause producers to increase (decrease) supply. The aggregate outcome of these adjustments can easily induce a fall (rise) in the price of oil with some lag.

These general considerations help to clarify the fluctuations of commodities prices, such as the two oil price “shocks,” which evolved since the breakdown of the Bretton Woods system (see figure 1).<sup>3</sup>

Between mid-1971 and mid-1973 the dollar had lost roughly 25 percent of its value relative to the four other SDR currencies (DM, yen, French francs, British pound). This depreciation induced a significant increase in the dollar prices of manufactures in international trade, which amounted to 30.4 percent between 1971 and 1973. (This magnitude refers to all manufactures in world trade so that the dollar-equivalent prices of non-U.S. manufactures rose even more.) Over the same period, prices of nonoil commodities almost doubled, at least in part fostered by the preceding dollar depreciation and the related inflationary climate in international trade. Both developments weakened the income position of oil-exporting countries significantly, especially in the Middle East. In reaction to the deterioration of their terms of trade, oil producers more than tripled the price of oil in the last quarter of 1973. Several factors fostered the development of the first oil price “shock”:

<sup>3</sup> The chart shows that the effective exchange rate index calculated by the International Monetary Fund (MERM), which covers a great number of currencies, develops similarly to the index, which includes only the exchange rates between the dollar and the four other SDR currencies.

**Figure 1** Dollar exchange rate and dollar prices in world trade, 1982 = 100



Source: UN trade matrix, *International Financial Statistics* (IMF)

- The organization of the interests of oil producers in a cartel, the OPEC.
- The high share of OPEC in the world oil market.
- Political and military turbulence in the Middle East (Yom Kippur War and the erroneous announcement of an oil boycott by Arabic oil producers).

Between 1974 and 1976 dollar exchange rates and the prices of “dollar goods” remained relatively stable. The strong dollar depreciation during 1977 and 1978, however, set the same sequence of price movements in motion as between 1971 and 1973 (see figure 1). The depreciation of the dollar caused dollar prices of manufactures to rise (by 21.6 percent between 1976 and 1978), and in mid-1978 the prices of nonoil commodities increased within the year by 27.4 percent. Oil prices remained stable between 1976 and early 1979 so that the oil producers experienced a significant decline in their terms of trade as between 1971 and 1973. This development induced the OPEC cartel to increase oil prices strongly in the second half of 1979. Once again turbulence in the Middle East—the coming to power of the Ayatollahs in Iran and the Gulf war between Iraq and Iran—made it easier for OPEC to put through a second oil price “shock.”<sup>4</sup>

The fact that the prices of nonoil commodities rose earlier and more gradually in response to the decline of dollar exchange rates than the price of oil (in 1971–73 as well as in 1978–79) can be attributed to the different types of price formation. In the case of nonoil commodities, prices were determined by supply and demand in the respective markets in a decentralized manner. In the case of oil, however, prices were set by the then dominant OPEC cartel, which needed some time for putting through a common price strategy among its member countries.

Over the period of a strongly appreciating dollar—that is, between 1980 and 1985—world trade prices of manufactures fell in dollar terms by 14.6 percent (see figure 1 and note that dollar-equivalent prices of non-U.S. manufactures declined even more since U.S. manufactures are included in this figure). Because of the deep recession of 1979–82 in industrial countries and the low market power of non-oil-developing countries, which was further weakened by the debt crisis, nonoil commodities prices fell even more (by roughly 30 percent). In 1981 oil prices started also to decline; they fell until 1985 slightly more than the dollar prices of manufactures.

The subsequent, and again overshooting, depreciation of the world currency between 1985 and 1988 (the dollar fell significantly below

<sup>4</sup> When the relationship between changes in oil prices and in the dollar is analyzed in the literature, it is almost always implied that the causality ran from the former—conceived as “shocks”—to the latter (see, e.g., Krugman, 1983, or De Grauwe, 1996, p. 146 ff.). That the oil price “shocks” might have been endogenous to a system of unstable exchange rates has rarely been taken into consideration (for an exception see Johnson, 1975, p. 442 f.), mainly because the double role of the dollar has not been considered.

purchasing power parity—see figure 5) induced a strong increase in the dollar prices of both manufactures (by 35.5 percent) as well as nonoil commodities (by 33.5 percent). In order to lay the ground for an oil price increase as a reaction to the ongoing dollar depreciation, Saudi Arabia gave up its role as a “swing producer” by the end of 1985 and flooded the oil market with additional supply. The idea was for Saudi Arabia deliberately to cause the oil price to plummet, which would then force the other, financially weaker OPEC members to stick to their production quotas. The fall of oil prices was thus a calculated measure to restore production discipline within the oil cartel and was therefore expected to last only briefly.

This strategy, however, designed by Saudi Arabia’s oil minister Yamani, failed, because the market power of the oil cartel had been weakened over the preceding years for both internal and external reasons. Disputes between OPEC members had continuously intensified, in part due to the rising influence of Islamic fundamentalism. At the same time, the share of OPEC in the world oil market had strongly declined from almost 70 percent in the early 1970s to less than 50 percent in 1985, mainly due to additional supply of North Sea oil.

Between 1988 and 1993 dollar exchange rates and the relative prices between manufactures and commodities remained rather stable. However, between 1993 and 1995 the dollar depreciated again by roughly 10 percent against the four other SDR currencies, and over the same period the dollar prices of manufactures and of nonoil commodities rose by 8.1 percent and 36.1 percent, respectively. With a lag of roughly one year, oil prices also recovered strongly, rising by almost 30 percent between 1994 and 1996.

In mid-1995 the dollar started to appreciate faster than it had since the early 1980s. Until mid-1997 the dollar exchange rate rose by more than 20 against the four other SDR currencies; once again this appreciation of the key currency induced a deflation in world trade, as it had between 1980 and 1985. Dollar prices of manufactures declined between 1995 and 1998 by 13 percent, prices of nonoil commodities by even more than 20 percent, and once again oil prices started to fall one year later, sinking by roughly 30 percent between 1996 and 1998 (see figure 1).

To summarize: Changes in the exchange rates of the world currency have a significant impact on the terms of trade and thus on the income distribution in international trade. Any general appreciation of the dollar causes dollar prices of manufactures to decline, thereby improving *ceteris paribus* the terms of trade of net exporters of commodities. By the same token, any depreciation of the dollar causes dollar prices of



manufactures *ceteris paribus* to rise, thereby depreciating the real value of commodities.

However, the “cetera” seldom remain “paria” under these circumstances, since developing countries will react to any significant deterioration of their income positions due to a dollar depreciation by increasing the dollar prices of their main export goods. This is particularly true for oil exporters from the Middle East, since their exports consist almost exclusively of crude oil, which in turn is exclusively priced in dollars. If such a retaliation on the part of developing countries in the struggle over income distribution is successful, then the initial acceleration of world inflation caused by a general dollar depreciation and the related increase in dollar prices of manufactures is further strengthened by increasing commodities prices, as in the 1970s. If, however, the market power of producers of “dollar goods” has become weak, as in 1986, then falling commodities prices dampen the acceleration of inflation in world trade due to a dollar depreciation.

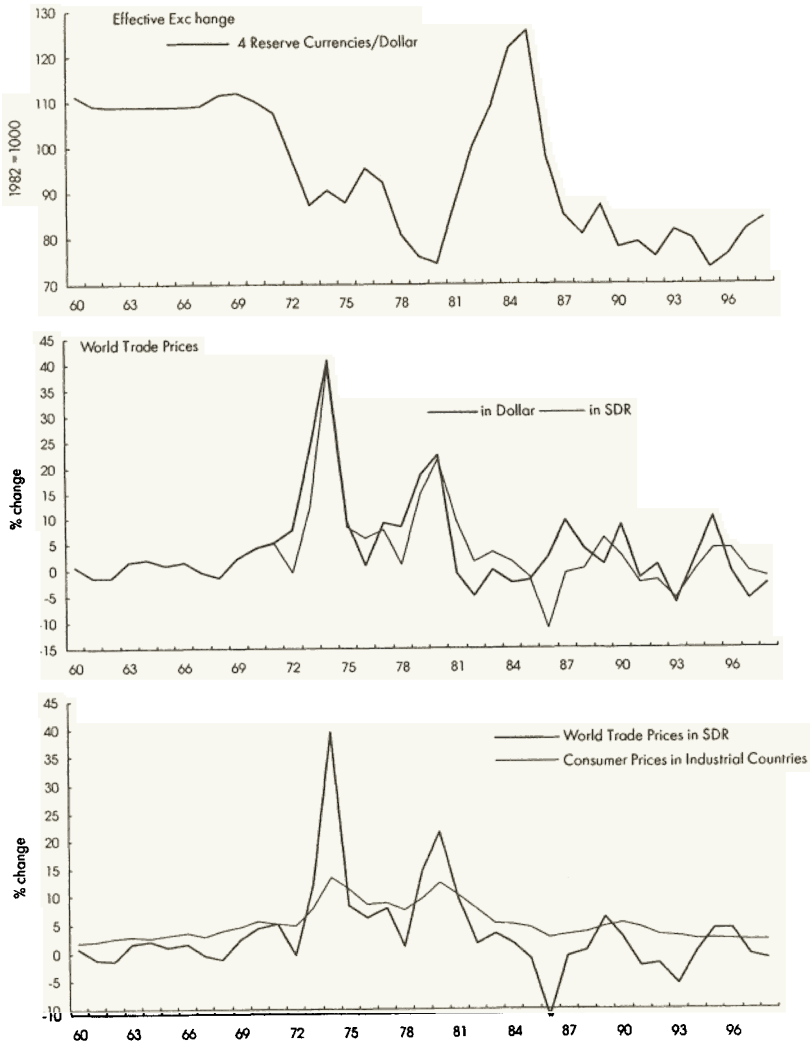
*The dollar exchange rate and the sequence of inflation and deflation in world trade*

Figure 2 demonstrates the significant influence of the two strong depreciations of the world currency during 1971–73 and 1976–78 on the subsequent acceleration of world inflation. It also shows the influence of the overshooting dollar appreciation on dollar prices in world trade that fell in absolute terms between 1981 and 1985 and the subsequent dollar depreciation that induced again an acceleration of world inflation that was, however, dampened in 1986 due to the oil price decline. These medium-term fluctuations in world inflation then spilled over to inflationary dynamics within the industrial countries. Both significant accelerations of consumer price inflation during the 1970s were to a large extent caused by the much stronger acceleration of inflation in international trade, and the significant disinflation in industrial countries over the first half of the 1980s was in turn strongly fostered by falling world import prices.

Taking the role of the dollar as world currency explicitly into account leads one to conclude that the two oil price increases should rather be understood as endogenous responses to the two preceding dollar depreciations than as exogenous “shocks.”

Both oil price increases had two main effects. They contributed to an acceleration of inflation as well as to a recession and a related increase in unemployment. Hence, the Philips curve relationship broke down in the 1970s primarily due to the destabilization of the world currency. Monetarists, both old and new, however, neglected the importance of

**Figure 2** Dollar exchange rate and world inflation



Source: UN trade matrix, *International Financial Statistics* (IMF)

the first dollar depreciation and the related oil price “shock” for the subsequent recession and the simultaneously accelerating inflation. This neglect, together with the assumption of a “natural” rate of unemployment and of “rational” expectations, enabled economists such as Friedman and Lucas to interpret the coincidence of rising inflation and rising unemployment in such a way as to “prove” the irrelevance of any full employment policy.

There is a paradox of history to this story: The same economists who used the—alleged—breakdown of the Phillips curve as an argument against full employment policy, notably Milton Friedman, had for many years advocated a system of flexible exchange rates and had thereby indirectly contributed to those international turbulences that were the most important causes for the simultaneous increase in inflation and unemployment.

### **Dollar exchange rates and interest rates as supranational “asset prices”**

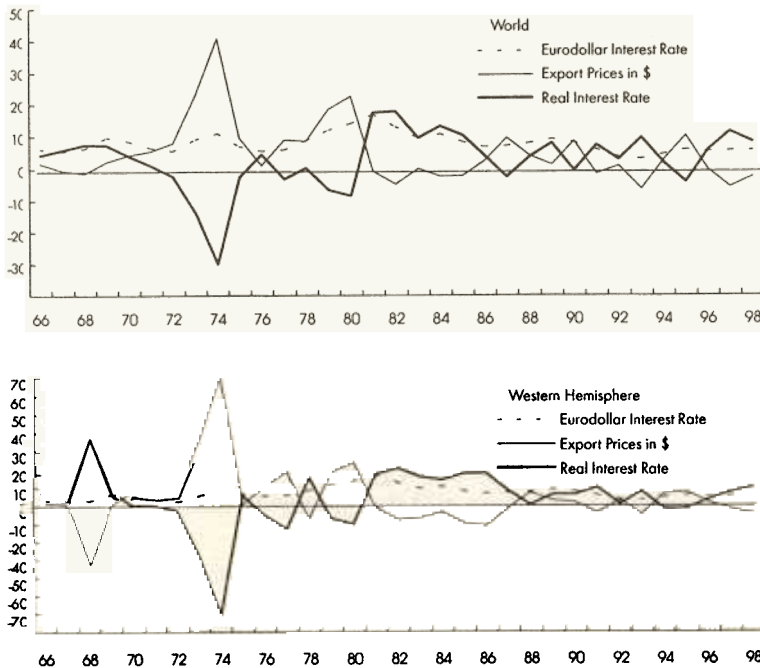
Most international financial stocks are held in dollars, and this is particularly true for credits to developing countries. Consequently, any change in dollar exchange rates simultaneously changes the value of dollar debt, in that the higher is the share of “nondollar goods” in overall exports of a dollar debtor country, the greater is the “debt depreciating effect” of a dollar depreciation and the greater is the “debt appreciating effect” of a dollar appreciation.

These debt valuation effects of changes in the exchange rate of the world currency can equivalently be expressed in terms of changes in the real rate of interest on international dollar debt. Any dollar depreciation, *ceteris paribus*, causes dollar prices of manufactures to increase (except for U.S. manufactures), which in turn causes the real rate of interest (the eurodollar rate minus the rate of change in world export prices) to decline.<sup>5</sup> If commodity prices also increase in reaction to a dollar depreciation, then the real rate of interest on an international dollar debt declines even more.

How does the interaction between dollar interest rates, dollar exchange rates and dollar prices determine the movements in the real interest on international debt? On empirical grounds one can discern the following relationships (see figures 2 and 3):

- A low and in most cases declining level of the nominal eurodollar interest rate relative to other reserve currencies (e.g., 1970–72, 1974–77, and 1984–86) tends to induce a depreciation of the dollar; the opposite is true in the case of a relatively high and mostly rising dollar interest rate as between 1977 and 1981.
- A persistent dollar depreciation causes world inflation to acceler-

<sup>5</sup> The eurodollar rate (LIBOR) is used since it represents the benchmark interest rate for international dollar credits.

**Figure 3** Real interest rate on international debt, in percent

Source: UN trade matrix, *International Financial Statistics* (IMF)

ate in dollar terms and a persistent dollar appreciation causes a deflation in international trade.

- Consequently, a relatively low nominal eurodollar interest rate coincides with high world inflation, and a comparatively high eurodollar interest rate coincides with deflation in international trade.

In the international economy, nominal dollar interest rates and dollar inflation rates do not move in a parallel manner (as implied by the Fisher relation for a national economy), but inversely, whereby both movements are linked to each other through changes in dollar exchange rates. As a consequence of this “anti-Fisher relation,” the movements of nominal dollar interest rates and dollar inflation rates reinforce each other so that the real interest rate fluctuates the most by far (see figure 3).

The strong fluctuations of the real rate of interest relative to the real rate of export growth then determine the speed and the sustainability of the debt accumulation process due to the dynamic external budget constraint. This relationship implies that a debtor country can run a perma-

nent external primary deficit (current account deficit minus net interest payments) without facing an increase in its debt–export ratio if and only if the rate of interest is lower than the rate of export growth.<sup>6</sup>

If, by contrast, the interest rate exceeds the rate of export growth, then a debtor country either has to achieve an external primary surplus—that is, a net resource transfer to the rest of the world—or it will experience a permanent increase in its debt–export ratio. The latter alternative, however, is often not practicable since creditors react to a persistent rise in the debt–export relation by cutting additional funds, which in turn forces the debtor country to improve its current account, mainly through import reductions.

The foregoing observations indicate that, in an international economic system shaped by an unstable key currency, either one of two possible regimes prevail concerning the costs of financing external deficits and of servicing the related dollar debts (see figure 3):

1. A regime of a cheap world currency, which is characterized by low and often declining nominal dollar interest rates, declining dollar exchange rates and high inflation of dollar prices. Hence, the real rate of interest on an international dollar debt is often negative, as between 1971 and 1980, 1986 and 1995.
2. A regime of an expensive world currency, which is characterized by comparatively high nominal dollar interest rates, rising dollar exchange rates and negative inflation of dollar prices. Hence, the real rate of interest on an international dollar debt often lies persistently at an extremely high level, as between 1981 and 1985 and between 1996 and 1998.

According to the relative dominance of either regime, one can divide the period since the breakdown of Bretton Woods into five subperiods (the real interest rate is calculated as the difference between the nominal eurodollar interest rate and the change in world export prices), as shown in Table 2.

<sup>6</sup> Analogously to the dynamic budget constraint concerning public finance, the external dynamic budget constraint describes the time path of (net) foreign debt of a country relative to its export earnings in dependence on its external primary deficit (current account deficit without interest payments) and the difference between the rate of interest and the rate of export growth (all variables are expressed in that currency in which the foreign debt is held, e.g., in dollars):

$$d(D/X)/dt = (M/X - 1) + (i - gx)D/X,$$

where  $D$  represents foreign debt,  $X$  and  $M$  (nominal) exports and imports net of interest payments,  $i$  the rate of interest, and  $gx$  the rate of export growth (thus, the external primary deficit relative to export earnings is defined as  $M/X - 1$ ).

Table 2

	1971/80	1981/85	1986/90	1991/95	1996/98
Eurodollar interest rate	8.5	11.7	7.8	4.7	5.6
Change in the dollar exchange (4 RC/\$)	-3.9	11.0	-9.1	-1.2	4.7
Change in world export prices	15.0	-2.8	6.1	1.2	-2.9
Real interest rate on international debt	-6.5	14.5	1.7	3.5	8.5
Real rate of world export growth	4.7	2.3	7.0	7.8	7.0

Only in one period—namely, in the first half of the 1990s—did dollar exchange rates, dollar interest rates, and dollar prices in world trade remain stable, implying that the real rate of interest during this period stood at a “reasonable” level of 3.5 percent on average. All other periods, however, were characterized by extremely high or low costs of financing international debts. Table 2 shows that over the 1970s the real interest rate on dollars was strongly negative (-6.5 percent). It then jumped to 14.5 percent on average during the first half of the 1980s, only to fall again to 1.7 percent during the second half of the 1980s. Since 1995, the dollar appreciation and the related deflation in world trade caused the real rate of interest on international dollar debt to stay extremely high once again (8.5 percent).

These switches from a cheap world currency to an expensive world currency were to a much greater extent caused by changes in dollar exchange rates and the related changes in world inflation than by changes in nominal dollar interest rates. This is particular evident in the two periods of extremely high real interest rates (1981–85 and 1996–98), when an appreciating dollar induced a persistent deflation of world trade prices (see figure 3).

#### *The debt crisis in Latin America*

In the 1970s the constellation of low dollar interest rates and high dollar inflation resulted in a strongly negative real interest rate on international debts, namely -6.5 percent on average for the world and even -8.9 percent for the Western Hemisphere (export prices of Latin American countries increased faster than overall world trade prices; see figure 3). These extremely low credit costs induced (and seduced) developing countries to keep import growth on a high level despite a slowdown in

export growth, and to finance their rising deficits by piling up a huge amount of international debts. This behavior had three main effects (since it was most pronounced in the case of Latin America, I shall use this country group as an example):

- Latin America experienced the highest economic growth in post-war history, with GDP per capita growing by 3.5 percent on average between 1970 and 1980 (some countries like Brazil or Mexico, which realized growth rates of 7 percent and more, could be called the “tigers” of the 1970s). This dynamic development was to a great deal enabled by strong import growth.
- By expanding their imports, these countries acted as “spenders of last resort” during the recessions of 1974–75 and 1979–82 when industrial countries decreased imports to such an extent that the additional demand from oil producing countries could not compensate. In terms of financial flows, the Latin American countries took over a great part of the surpluses of oil exporting countries as additional dollar debts (see figure 7).
- Even though the external debt of Latin America expanded at a very high rate (by almost 20 percent per year), the debt–export ratio remained stable. This was possible because the rate of interest was 11.3 percentage points lower on average than the rate of export growth (see figure 3).

Between 1980 and 1981, the real interest on the external debt of Latin America increased by almost 30 percentage points due to a simultaneous increase in the interest rate and the effective exchange rate of the dollar, which in turn caused dollar prices in international trade to fall (see figure 3). At the same time, real export growth of these countries was dampened by the severe recessions in industrial countries. As a consequence, the difference between the rate of interest and the rate of export growth increased dramatically, namely, from –11.3 percent (1971–80) to 14.2 percent (1981–86). The extent of this difference caused the debt–export ratio to increase by almost 50 percent between 1980 and 1982.

The creditors reacted to this deterioration of the financial stance of practically all heavily indebted countries by reducing the flow of additional funds and, as a consequence, the international debt crisis of 1982 erupted. Even though developing countries in Latin America, and also in Africa, managed to achieve significant trade surpluses (mainly by cutting imports and consequently economic growth; see figure 8), their debt–export ratios continued to rise, primarily because the rate of

interest persistently exceeded the rate of export growth. The main cause for the size of this differential was the continued rise of dollar exchange rate and the associated dollar deflation in world trade (see figure 3).

In 1985 financial conditions shifted from a regime of an expensive world currency to one of a cheap world currency. The dollar interest rates and exchange rates declined and international dollar prices picked up again, causing the real rate of interest on international debt to fall by roughly 15 percentage points. This fall was even more pronounced for Latin America (see figure 3). As a consequence, the rate of interest again became lower than the rate of export growth, which in turn enabled these economies to significantly reduce their debt-export ratio. This development helped to mitigate the debt crisis, and allowed for a net inflow of financial capital and rising direct investments, which induced a strong recovery in Latin America in the early 1990s (see figure 8).

### *The financial crisis in East Asia*

Until the debt crisis of 1982, developing economies in Asia and Latin America had been growing at roughly the same rate, but with the debt crisis, real imports and GDP per capita stagnated for almost one decade in Latin America (see figure 8). The Asian economies, by contrast, continued to grow at high rates, fostered by a tremendous expansion of real imports, in particular of investment goods. As a consequence, the external balance of developing countries in Asia deteriorated strongly and continuously between 1986 and 1996 (see figure 8).

However, some countries in East Asia had successfully transformed themselves into industrialized economies ("tiger countries") and became so competitive, that their exports could keep pace with their import growth. Probably the most impressive example was South Korea. South Korean imports, exports, and GDP grew between 1982 and 1997 at annual rates of 12.4 percent, 13.4 percent, and 8.5 percent, respectively, and government finance and the current account were in balance.

Two developments in the prehistory of the financial crisis of 1997 were common to all tiger states: First, their current account deficits worsened markedly after 1993–94; second, they funded these deficits chiefly with dollar loans from Western banks, notably in Germany and Japan. The main cause of the increase in the external deficits of the tigers was the widening gap in growth rates between them and Europe and Japan. In Europe, high real interest rates, the collapse of stable exchange rates within the EMS, and concerted fiscal restriction slowed economic growth; in Japan, growth remained sluggish primarily because of the appreciation of the yen, together with the bursting of the specula-



tive bubble in the stock and real estate markets. At the same time, investment and production in the tiger economies continued their rapid expansion. As a result, their demand for imports from the EU and Japan grew far faster than they did in the other direction.

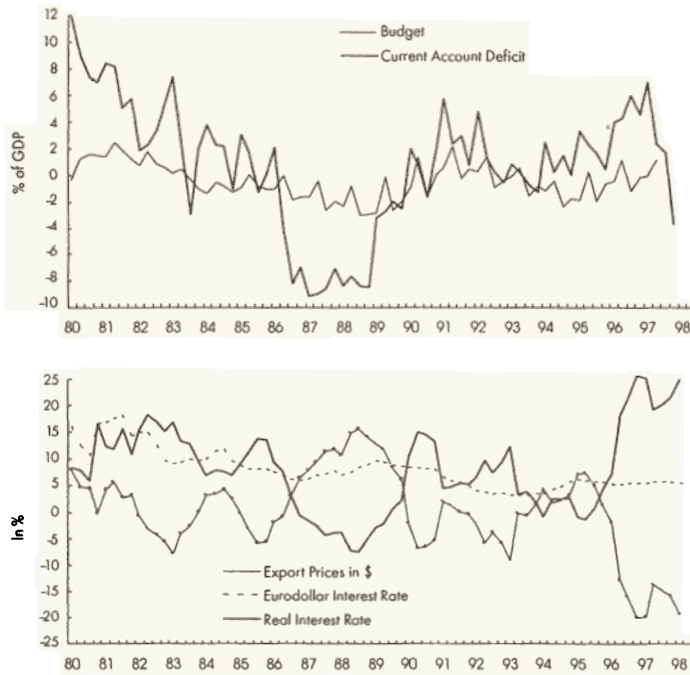
The foregoing framework outlining the double role of the dollar suggests that the financial crisis of 1997 was triggered by neither the level of foreign debt nor the rate of its growth, but rather by the fact that it was held primarily in dollars and that dollar interest rates and dollar exchange rates increased strongly. Based on domestic policy considerations, the Fed began raising key U.S. interest rates in 1994, which caused the eurodollar rate almost to double, from 3.5 percent in early 1994 to 6.2 percent one year later. This development, together with the strong performance of the U.S. economy, induced a steep appreciation of the dollar and thus a “tilt” from a cheap world currency to an expensive world currency. For the first time since the early 1980s, the world economy was characterized by a deflationary regime in dollar terms and consequently by an extremely high real interest rate on international dollar debts (see figures 3 and 4).

By mid-1997, the dollar exchange rate had risen from DM1.40 to DM1.80 and from ¥85 to ¥115 (i.e., by 30 percent and 35 percent, respectively). This cut the dollar-export revenues of the tigers needed to service their foreign debt. For example, a car exported to Germany and sold at DM20,000 earned Hyundai about \$14,400 in mid-1995. Two years later, this dollar revenue was down to around \$11,100—solely because the dollar had risen against the Deutschemark.

The effect of the dollar appreciation on dollar export earnings is reflected in the development of export prices in dollar terms. Export prices declined between mid-1995 and 1997 for South Korea by 14.0 percent per year, implying the real interest on dollar debt amounted to 18.8 percent in 1996 and to 21.1 percent in 1997 (see figure 4). The main reason why the dollar prices of Korean exports fell more strongly than the world average lies in the fact that the won had started to depreciate against the dollar in the first quarter of 1996, losing almost 15 percent of its value only one year later. Since Korean producers priced exports mainly in terms of their costs in won, export prices and export earnings in dollars were particularly depressed.

These elements characterized the development in all tiger economies before the outbreak of the crisis in mid-1997 (as in 1982 in Latin America), causing in the first place a shortage in dollar liquidity on behalf of the debtor countries. The difficulties in servicing their short-term dollar debt then shattered the confidence of the lending banks and

**Figure 4** Development of the financial crisis in South Korea



Source: *International Financial Statistics* (IMF)

induced them to withdraw their capital abruptly. Even though such actions seemed rational for an individual bank, their aggregate outcome was rather disastrous (for the features of financial crises in an historical context, see Kindleberger, 1996). Financial panic brought the tiger economies to the brink of insolvency and forced them to much higher reductions in imports and production than would have been necessary had the financial debts been restructured in a coordinated way.<sup>7</sup>

<sup>7</sup> Radelet and Sachs (1998) document carefully how the crisis in East Asia turned from an illiquidity crisis (almost) into an insolvency crisis. However, to my mind the authors underestimate the impact of the increase in the interest rate and, particularly, in the exchange rate of the dollar on the development of the crisis, since they do not explicitly distinguish between the dollar as currency of the United States and as world currency; e.g., when explaining the fact that the growth of export earnings in dollars declined strongly in all countries comprised in their table 6, the authors mention the dollar appreciation only in the last place (p. 33f). And even in this context they seem to consider as the most important channel through which a dollar appreciation affected the tiger economies the peg of their currencies to the dollar (however, the won had already started to depreciate one and a half years before the crisis broke out).

*The “spillover” of the financial crisis to Russia and Latin America*

The crisis in the financial relations between the Western countries and Russia and the related collapse of the Russian ruble exchange rate are linked to the crisis in East Asia through two channels:

1. Western banks almost flooded Russia with short-term loans exactly at the time when they withdrew capital from East Asia. Investments in Russian-debt securities amounted to only \$8 billion in 1996, but increased to \$13 billion in the first half of 1997 and reached more than \$30 billion in the second half of that year. Obviously, the banks tried to take advantage of high ruble interest rates in the belief that the ruble exchange rate would remain stable, as had been the case since early 1995.
2. The confidence in the stability of the ruble exchange rate was shattered in the course of the last quarter of 1997 due to the sharp fall in oil prices, which in turn was to a large extent induced by the preceding appreciation of the dollar as world currency. As a consequence, the banks tried to withdraw their funds from Russia and consequently to lobby for further “financial injections” to be provided by the IMF.

The worsening of the financial situation in Latin America in 1998 can also be attributed not only to psychological contagion effects, but also to the real costs of financing international debts. As a consequence of the strong dollar appreciation and the induced fall in commodities prices, export prices in dollars of Latin American economies fell in 1997 and 1998 so that the real interest on international dollar debts increased to more than 10 percent (see figure 3). This development contributed to the further deterioration of the current accounts in 1997 and 1998 (see figure 8).

### **The role of the dollar in the supranational markets for foreign exchange**

As the “numeraire” currency, the dollar dominates the foreign exchange markets with respect to quotation standards, trading practices and expectations formation:

- The exchange rate of any single currency vis-à-vis the dollar is taken as the most important indicator for its external value (cross rates only play a minor role).
- Almost all foreign exchange transactions concern trades between

the dollar and some other currency (the dollar serves as the “vehicle currency”).

- Exchange rate expectations are formed primarily with respect to future movements of dollar rates and not of cross rates.

These characteristics of the foreign exchange market have a strong impact upon the different dynamics between dollar rates on the one hand and the cross rates on the other (see figure 5):

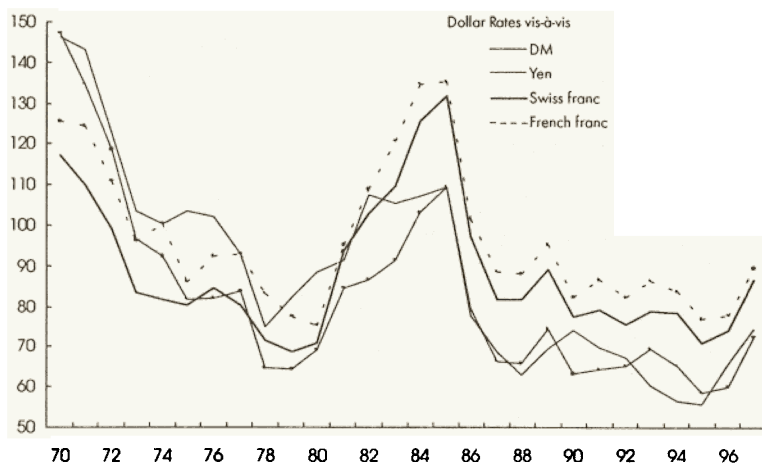
- Dollar exchange rates vis-à-vis the most important other currencies move in a parallel manner.
- The extent of overshooting is much greater in the case of the dollar than of the other currencies (as measured by the deviation of the nominal exchange rate from PPP).
- Also the short-term volatility of the dollar rates is much higher than that of the cross rates (as measured by the standard deviation of monthly exchange rate changes).

Consequently, that currency that serves as the key currency in the world economy, the dollar, is at the same time the most unstable of all reserve currencies.<sup>8</sup> The reasons why floating exchange rates have been so unstable, especially dollar rates, are unclear. Frankel and Froot (1987), Schulmeister (1988), and Harvey (1993) suggest this instability is due in part to the presence of traders who make use of technical trading systems. Froot et al. (1992) suggest that the instability arises because of short trading horizons, and Goldberg and Frydman (1996) show that floating exchange rates should be characterized by long swings involving persistent movements away from PPP when market players possess imperfect knowledge about the true model governing exchange rate movements. Whatever the reasons, dollar exchange rates have been much more unstable than anyone would have expected prior to the 1970s (Dornbusch and Frankel, 1987).

### **How the double role of the dollar has shaped postwar economic development**

Finally, I would like to summarize how the conflicts between the role of the dollar as national currency of the United States and as world cur-

<sup>8</sup> Exchange rate theory does not take into account the significant differences in the dynamics of the dollar rates and the cross rates. Instead, theories as well as empirical exchange rate studies model the exchange rate of the dollar in the same way as that of any other currency. Recent studies, however, confirm that the real exchange rate behavior of the dollar is significantly different from that of other currencies (Jorion and Sweeney, 1997; Lothian, 1998; Papell and Theoridis, 1998).

**Figure 5** Exchange rate fluctuation and purchasing power parity (PPP = 100)

Source: *International Financial Statistics* (IMF), *Economic Outlook* (OECD)

rency have shaped postwar economic development. The fiscal and monetary policies of the United States focus on the internal problems of the U.S. economy. At the same time, however, the United States' internally oriented policy often has a tremendous impact on the world economy because of the dollar's double role.

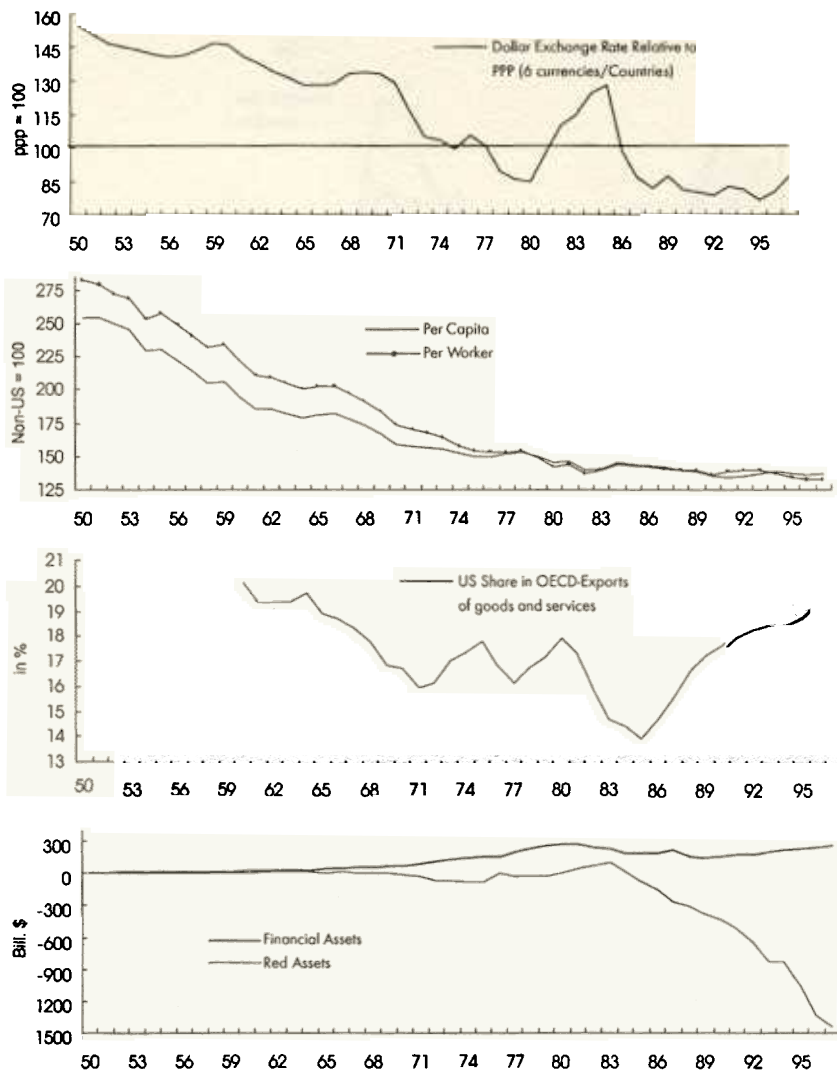
#### *The United States and the world economy under the Bretton Woods system*

The strong catching-up of industrial countries vis-à-vis the leader United States in the 1950s and 1960s was in part caused by the Bretton Woods system (see figure 6):

- The stabilization of exchange rates strongly contributed to the high growth in international trade, although the United States, which was an almost closed economy in the 1950s and 1960s, profited less from this development than the other industrial economies.
- Also, the great extent of the overvaluation of the dollar (relative to PPP) enabled the other industrial countries to grow at a significantly higher rate than the United States.

This catching-up, together with the overvaluation of the dollar, caused the market share as well as the trade surplus of the United States to decline (see figure 6). Even though the obligation to keep the dollar exchange rate stable at an overvalued level became a burden for the real

**Figure 6** The international monetary system and the U.S. economy



Sources: *Economic Outlook* (OECD), *Penn World Tables*, *Flow of Fund Accounts* (Federal Reserve)

sector of the U.S. economy, it provided favorable conditions for the world economy as a whole. The stable dollar exchange rate contributed to the stability of relative prices between commodities and manufactures (see figure 7) and hence, to the stability of terms of trade between industrial countries, oil exporters, and nonoil developing countries. Stable

terms of trade in turn helped to avoid struggles over the distribution of trade earnings. Under these favorable conditions, persistent trade imbalances did not emerge, so that no country group had to adjust to external imbalances by reducing imports (see figure 7). This contributed to the unprecedented high growth rates in world trade and production.

The stability of dollar exchange rates was accomplished by the (relative) stability of nominal dollar interest rates, mainly because stabilization of the financial conditions for the accumulation of real capital was an explicit target of economic policy. Also, except for the Korean boom in 1951, inflation in world trade fluctuated little. Consequently, the real rate of interest rate on international debt also remained stable; at the same time it was persistently lower than the rate of growth in world trade (see figures 7 and 8).

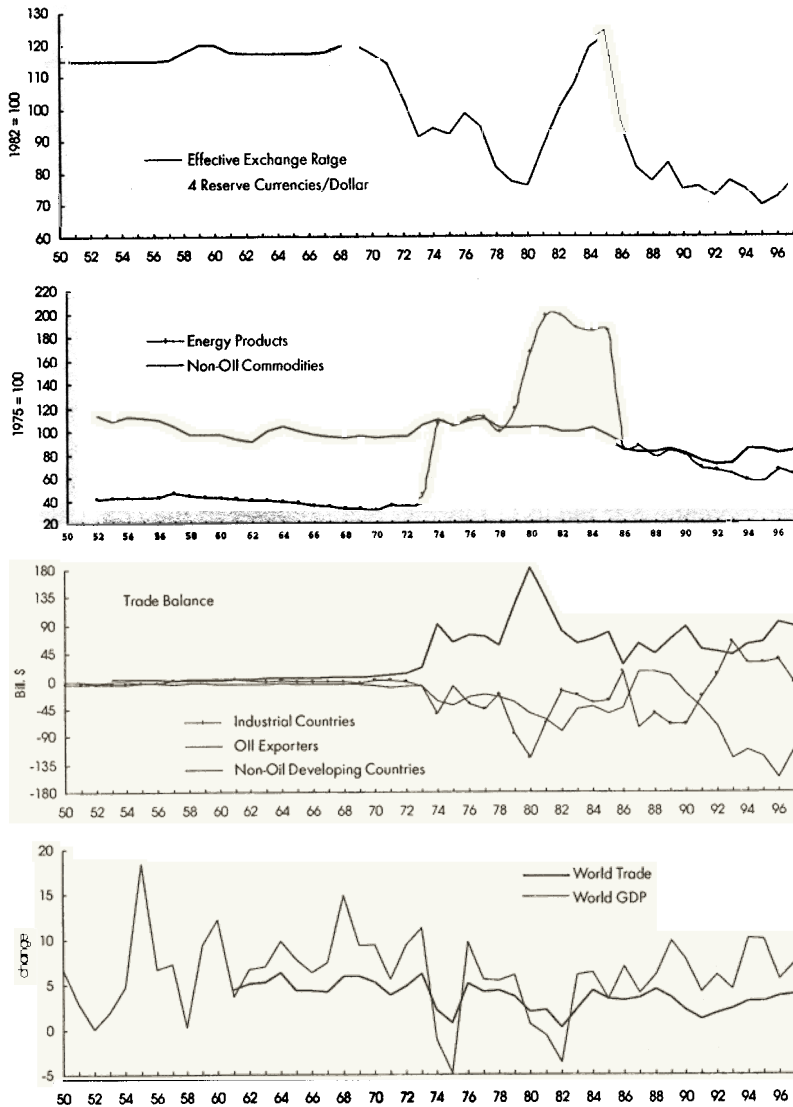
During the second half of the 1960s, the internally oriented economic policies of the United States became increasingly expansionary, causing inflation to accelerate significantly. At the same time, the escalation of the Vietnam War induced a further deterioration of the U.S. balance of payments which was financed through dollar exports. As a consequence, the discrepancy between the amount of dollar assets outside the United States and the gold reserves of the United States widened more and more ("dollar glut"), undermining the credibility of the dollar-gold parity.

In order to fight the pronounced recession in 1970, the United States reduced interest rates significantly. Given the already strong pressure on dollar exchange rates, particularly relative to the DM, this decline in dollar interest rates induced a huge capital outflow from the dollar in anticipation of a dollar devaluation. As a consequence, the United States had to suspend the gold convertibility of the dollar and to devalue their currency in 1971. These events constituted the decisive steps toward the definite breakdown of the system of fixed exchange rates which took place in early 1973.

*The United States and the world economy under an unstable dollar*

Once the United States had unloaded the burden of keeping the dollar exchange rate stable, the Fed followed an expansionary policy. The low dollar interest rates contributed to the strong dollar depreciation, and by the end of the 1970s the dollar exchanges vis-a-vis the currencies of the other G7 countries were lower than PPP for the first time since World War II (see figure 6). The cheap dollar helped the real sector of the U.S. economy to remain relatively little affected by the international turbulence of the 1970s, not least due to a rising market share. Economic

**Figure 7** The international monetary system and the world economy, I



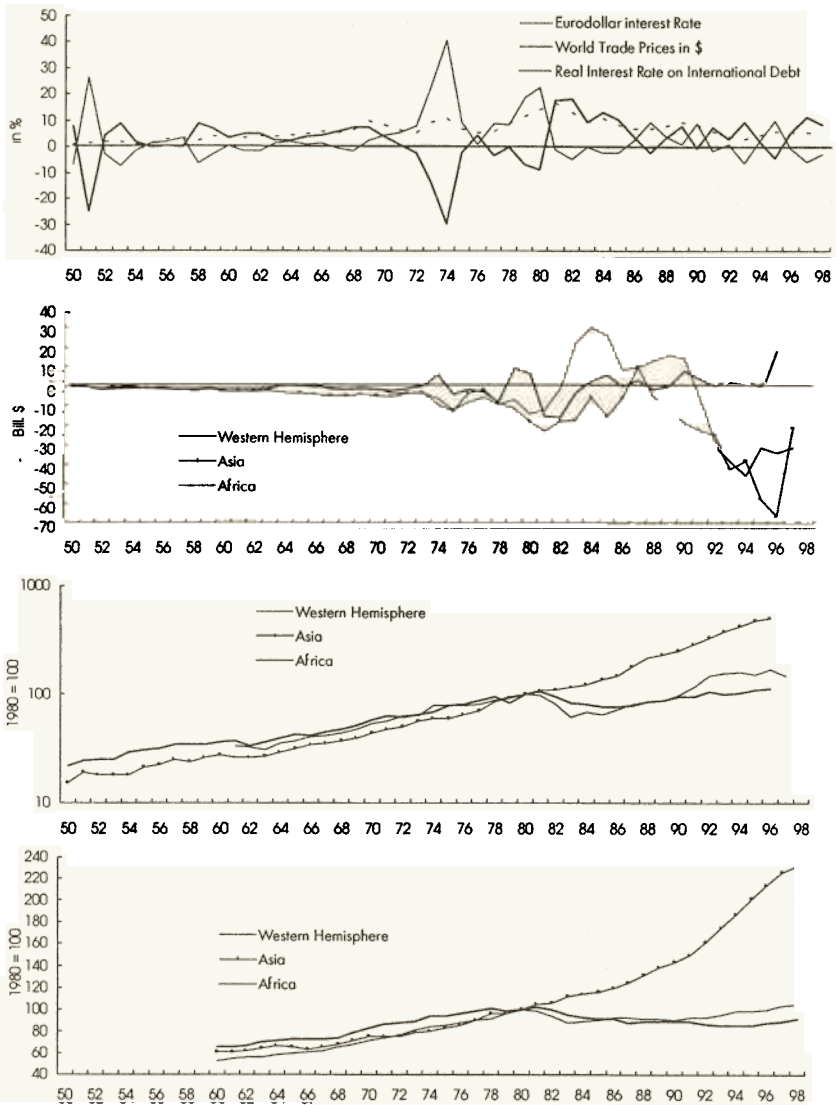
Sources: UN trade matrix, *International Financial Statistics* (IMF)

growth in the United States declined less than in the other industrial countries, the catching-up of the latter came to a halt (see figure 6).

For the world economy as a whole, the nationally oriented policy of the United States had far-reaching consequences. The two dollar



**Figure 8** The international monetary system and the world economy, II



Sources: UN trade matrix, *International Financial Statistics* (IMF)

depreciations contributed significantly to the two subsequent oil price “shocks” and the related shifts in the terms of trade, which in turn caused imbalances in international trade to grow tremendously (see figure 7). High inflation in world trade in dollar terms caused the

real interest rate on international debt to become strongly negative (see figure 8). Under these conditions, many developing countries accumulated huge amounts of debt which enabled them to accelerate import growth in spite of a significant decline in export growth.

At the same time, the oil price “shocks” triggered two severe recessions as well as two waves of accelerating inflation (see figure 2). The constellation of a rise in unemployment and inflation was then taken as evidence against the whole concept of Keynesian macroeconomics, in particular by those economists like Milton Friedman who had strongly advocated a system of floating exchange rates and thereby indirectly contributed to realization of this constellation.

The monetarist (counter)revolution got additional support from the financial sector and particularly the big owners of financial assets (the “city” and the “rentiers” in Keynesian jargon), who were hit hard by extremely low dollar interest rates, declining dollar exchange rates, and high inflation. The switch in mainstream economics became effective with a fundamental change in monetary policy. The Fed gave up the target of stabilizing interest rates at a relatively low level in order to stimulate the real sector in favor of restricting money growth in order to fight inflation (thereby stimulating the financial sector).

The shift in the U.S. monetary policy induced a strong appreciation of the dollar in 1980, which continued until 1985. The related fall in world trade prices in conjunction with rising nominal dollar interest rates then caused the real interest on international debts to increase dramatically (see figures 2 and 8). At the same time, export growth of debtor countries was dampened by the recession of 1980–82. Under these conditions, the debt–export ratios had to rise tremendously, which in turn triggered off the debt crisis in 1982.

As a consequence, the developing countries were forced to run huge current account surpluses, which they could achieve only by cutting imports. This development was the main reason for the decline in real GDP per capita in Latin America and Africa between 1980 and 1990 (see figure 8).

For the U.S. economy, the combination of higher dollar interest rates and rising dollar exchange rates had contradictory consequences. The financial sector boomed and became more innovative than ever before. The real sector, however, remained depressed: The recession in the early 1980s was the longest in postwar history, and the losses in market shares incurred by U.S. exporters became dramatic, with a persistently deteriorating U.S. current account (see figure 6).

In reaction to these developments, the Fed loosened its monetary

policy in mid-1985 which induced, together with the high U.S. current account deficit, a strong and again overshooting dollar depreciation. Since then the dollar has been persistently undervalued, which is the most important reason for impressive market share gains by U.S. exporters (see figure 6).

For national economic interests—namely, to dampen potential inflationary pressures—the Fed started to increase dollar interest rates in 1994, which lay the ground for a strong dollar appreciation between 1995 and 1997, also fostered by the good performance of the U.S. economy.

For the world economy as a whole, the dollar appreciation of 1995–97 had qualitatively similar effects as in the early 1980s. Dollar prices in world trade declined significantly and the real interest on international debts soared. This development hit the dynamic economies in East Asia most since their external dollar debt had grown particularly strongly over the 1990s. As in the 1980s, the dollar prices of commodities declined more strongly than those of manufactures, which contributed to the spillover of the financial crisis to Russia and Latin America.

The relationship between the United States and the rest of the world with respect to the double role of the dollar is currently characterized by the following trilemma:

First, as the U.S. national currency, the dollar has been heavily undervalued relative to the ECU and the yen since the mid 1980s—the main reason for the continuous growth in U.S. market share. This becomes particularly clear if one calculates the dollar PPP on the basis of a basket of internationally traded goods instead of a GDP basket. In the former case, the undervaluation of the dollar is more than 10 percentage points higher than on the usual GDP basis. On a GDP basis, the dollar is currently undervalued by roughly 10 percent vis-a-vis the ECU/EURO (using the exchange rates from the end of 1998), whereas on a tradables basis, the dollar is undervalued by more than 20 percent.<sup>9</sup>

Second, as a world currency, the dollar appreciated too far between 1995 and 1997 because, as we have seen, a rising dollar de-

<sup>9</sup> The PPP for the Euro is calculated in the same way as the nominal Euro exchange rate is calculated, using the bilateral PPP data instead of the bilateral exchange rates. For a discussion of the persistent overvaluation of the Euro (ECU), see Schulmeister [1997]. The fact that the dollar is generally more undervalued (less overvalued) on the basis of a tradables basket than on a GDP basket is in line with theoretical expectations, in that the “richer” an economy is, the more expensive are services (health, education, etc.) compared with internationally traded manufactures (Balassa, 1964; Samuelson, 1964).

presses dollar prices in world trade, in particular the prices of commodities, and such a deflationary regime in turn strongly revalues dollar-denominated debts.

Third, the dollar's dual role enables the United States to incur foreign (international) debt denominated in its national currency, and consequently without any reasonable limit. It has exploited this ability to an exorbitant degree for the last fifteen years. Net U.S. foreign debt approaches \$2,000 billion (in 1997 it amounted already to almost \$1,500) and is currently growing by some \$300 billion a year (see figure 6). Thus, the world's richest economy is simultaneously its biggest debtor and the greatest net consumer of goods and services from the rest of the world. As the annual borrowing of the United States far exceeds its interest payments on existing debt, the creditor countries (primarily the EU and Japan) are effectively paying the interest themselves. In return for this and the real transfer of resources, they merely receive credit notes from the United States in ever-increasing value (the United States follows Mr. Ponzi in its external finance and can do so only because it issues the world currency).<sup>10</sup>

### *Toward a systemic therapy*

It is everyday speculation on currency markets, to a great extent based on trend-following and thereby trend-strengthening "technical" trading systems, that accumulates to the bubblelike upward and downward movements of the dollar over the medium run (Schulmeister, 1988). The persistent changes in the value of the world currency in turn change the distribution of income and wealth on a global scale—between exporters

<sup>10</sup> Ironically, the "external seigniorage" of the United States was discussed in the economic literature mainly at a time, when its quantitative importance was relatively small, i.e., in the 1960s and 1970s (see, e.g., Aliber, 1964; Kirschen, 1974). In addition to that, these discussions only dealt with the "classical" seigniorage, which stems from the difference in the yields of the financial assets of the "seigneur" relative to the yields of his liabilities (at constant exchange rates). The "new" seigniorage, however, stems from the change in the real value of the "seigneur's" liabilities through exchange rate changes and their impact on inflation. To put it concretely: if the United States is ever to (partly) repay its foreign debt through persistent current account surpluses, this would require a strong dollar depreciation which would also depreciate the real value of the debt of the United States (i.e., the assets of the rest of the world) through the related increase in the price level in the United States. If, however, the United States will never repay its debt, partly because the creditor countries—plagued by unemployment—do not want to accept a slow-down in the growth of their exports linked to a future net transfer of goods from the United States, then the past net transfer of goods to the United States (the counterpart of which is the U.S. debt) will turn out to represent in effect gifts to the "seigneur."

of raw materials and industrial goods on the one hand, and between creditor and debtor countries on the other. These often abrupt redistributions in conjunction with the inherent uncertainty about future exchange rate movements represent a systemic reason for both the slowdown in economic growth in the early 1970s as well as commodity price “shocks” and financial crises.

Because of this, the coming of the Euro should be taken as an opportunity to stabilize exchange rates between the three main currencies—the dollar, the euro, and the yen—analogously to EMU’s forerunner, the EMS. This would be a first step toward a new world monetary system under which, instead of the national currency of the leading economy serving simultaneously as the world currency, the numeraire for stocks and flows in the global economy would be a basket of the main currencies (like the ECU in the EMS).

The coming of the euro would make exchange rates much easier to stabilize within target zones, because there would only be two exchange rates left to stabilize—between the dollar, the euro, and the yen. Standard commodities such as raw materials, and also international financial stocks, should also be denominated not in dollars but in a basket of the three main currencies. This would greatly reduce the incentive to realign exchange rates, and if it did come to a realignment, its global price and redistribution effects would be mitigated.

A systemic therapy of this kind may appear utopian today, but financial crises like that in East Asia or Latin America together with their consequences will make it increasingly clear that the monetary framework of the global economy needs radical restructuring. After all, we had come very close to creating a stable world monetary system once before. In negotiations on the new world monetary order, Keynes proposed the following in 1943–44 based on the experiences of the Great Depression (Keynes, 1980):

- No national currency should serve as a world currency. Instead, a genuine world currency should be created as a basket of the main national currencies (he called the basket currency the “Bancor”).
- International settlements should be handled at fixed exchange rates by a “Clearing Union.”
- Temporary disequilibria in global economic goods and financing should be corrected by expansionary policies in the surplus countries and not by belt-tightening measures in the deficit countries. In this way equilibrium can be restored at a higher rather than a lower level of activity (the IMF still fails to grasp this logic today).

Keynes was unable to push through these proposals at Bretton Woods in 1944. The new world power, the United States, wanted its own currency to take on the role of the world currency (as sterling had before). In view of the experiences of the current dollar standard, and urged on by further financial crises, we may yet succeed at a second attempt in creating a world monetary system that complements the globalization of markets and enterprises.

## DATA SOURCES

The annual world trade prices and payments by commodity groups as shown in the graphs stem from a world trade matrix for 80 countries and 4 commodities (SITC 0+1, 2, 3, 5+6+7+8) developed by the UN (trade deflators). Data on changes of the prices for crude oil and of non-oil commodities presented in the text are based on price indices published by the *Weltwirtschaftliches Archiv* in Hamburg (HWWA); these indices are available on a monthly basis and depict spot price movements for different commodities more precisely than the trade deflators (e.g., the deflator for SITC 3 comprises all energy products, whereas the HWWA oil price index refers only to crude oil).

Data for purchasing power parities (figures 5 and 6), for GDP per capita and worker and for the U.S. share in OECD exports of goods and services (figure 6) are taken from the OECD data base *Economic Outlook* (for the 1950s PPP and GDP data from the Penn World Tables were used).

Data on the net asset position of the United States (figure 6) stem from the *Flow of Funds Account of the United States* provided by the Federal Reserve.

Data on the debt–export ratios of country groups, in particular for the Western Hemisphere (Latin America), are taken from *World Economic Outlook* published by the IMF, various issues.

All other data (exchange rates, eurodollar interest rate, trade and GDP data for developing countries in the Western Hemisphere, Asia, and Africa) are taken from *International Financial Statistics* published by the International Monetary Fund.

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