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No. 53 November 1986

Monetary and Exchange Rate Policies for International Financial Stability : a Proposal

Ronald I. McKinnon *

Internal Paper

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C O N T E N T S

INTRODUCTION

To avoid a relapse into protectionism, should the major industrial economies--the United States, the Western European bloc, and Japan--seek better aligned and more stable exchange rates? Their enormous trade in goods and services, and rapid integration of previously insulated national financial markets, would seem to require a common monetary standard. Otherwise, enterprises in any one nation are continually subject to capricious, and what is perceived to be unfair, changes in their international competitiveness.

But what prevents the three major industrial blocs from coordinating their policies to secure exchange stability? Although many people would point to political differences, I shall argue that doctrinal disputes among economists are more important. Well intentioned politicians and government officials are stymied because of the differing theoretical perspectives of their economic advisors.

First is the question of whether or not foreign exchange risk can be effectively hedged in financial and forward exchange markets--and thus whether or not international monetary reform is even necessary.

Secondly, after a decade and half of unremitting turbulence in the foreign exchanges, economists cannot agree on what are "equilibrium" or desirable target levels for exchange rates if they were to be stabilized. Two separate and contending principles--that of purchasing

power parity or of balanced trade--give very different estimates for the optimum yen/dollar or mark/dollar rates of exchange in 1986.

Thirdly, if nations can agree on exchange-rate targets, there is disagreement over how national monetary policies should be coordinated to achieve them.

Let us consider each issue in turn.

Exchange Fluctuations, Financial Innovation and Capital Mobility

Over the past decade and a half, how volatile were exchange rates among the three major blocs? Major peak-to-trough movements in the U.S. dollar since 1970 are presented in Table 1--although it doesn't capture day-to-day or month-to-month volatility. The larger percentage changes in the dollar/mark and dollar/yen exchange rates in the two right hand columns of Table 1 show the extraordinary degree of interbloc movement. More generally, people agree on the following stylized facts:

(1) Relative to profit margins on investment measured in any one national currency, interbloc exchange rate changes have been very large. One percent in a day, five percent in a month, and 20 percent in a year are commonplace [IMF, 1984].

(2) Exchange fluctuations have been mainly unanticipated by the market, reflected neither in exante interest differentials across countries nor in forward premia or discounts in the exchange markets [Frenkel and Mussa, 1980].

(3) These changes have been real in the sense that domestic prices have remained relatively sticky. Among these industrial countries, large cyclical fluctuations in exchange rates have not been

Table 1

ALTERNATIVE MEASURES OF VARIABILITY IN THE NOMINAL EXCHANGE VALUE OF THE U.S. DOLLAR, SELECTED PERIODS, 1970-1986

Percent appreciation (+) or depreciation (-) of U.S. dollar[a]

Period	Weighted average exchange rate, bilateral trade weights[b]	Weighted average exchange rate, multilateral trade weights[c]	SDR value of U.S. dollar[d]	Spot exchange rate with German mark	Spot exchange rate with Japanese yen
June 1970 to March 1973	-15.6	-17.3	-17.1	-22.6	-27.0
March 1973 to July 1973	-3.9	-7.3	0.0	-17.0	+1.0
July 1973 to January 1974	+9.9	+15.5	0.0	+20.5	+12.6
January 1974 to March 1975	-7.1	-12.3	-3.8	-17.6	-3.4
March 1975 to September 1977	+7.8	+10.5	+8.0	+0.2	-7.3
September 1977 to October 1978	-13.4	-17.1	-12.4	-20.9	-31.2
October 1978 to May 1979	+4.9	+5.0	+4.3	+3.8	+19.0
May 1979 to July 1980	-3.6	-6.3	-4.3	-8.4	+1.2
July 1980 to August 1981	+19.8	+32.6	+18.3	+43.2	+5.5
August 1981 to November 1981	-5.4	-6.9	-3.7	-10.9	-4.4
November 1981 to November 1982	+14.8	+18.9	+9.3	+14.6	+18.3
November 1982 to January 1983	-4.6	-5.3	-3.0	-6.5	-11.8
January 1983 to January 1984	+8.6	+14.7	+6.2	+17.7	+0.5
January 1984 to March 1984	-3.1	-3.8	-2.6	-7.6	-3.7
March 1984 to February 1985	+18.2	+21.9	+10.6	+27.1	+15.6
February 1985 to July 1986	-23.8	-30.3	-19.2	-34.8	-39.1
June 1970 to September 1977	-10.7	-14.2	-13.9	-36.0	-25.7
September 1977 to July 1980	-12.3	-18.4	-12.5	-24.8	-17.1
July 1980 to February 1985	+54.3	+87.2	+38.0	+89.0	+17.8
February 1985 to July 1986	-23.8	-30.3	-19.2	-34.8	-39.1
June 1970 to July 1986	-8.1	-8.7	-15.9	-40.8	-55.8

a. Underlying spot exchange rates and weighted indexes are monthly average of daily rates.

b. Source: Morgan Guaranty Trust Company.

c. Source: Federal Reserve Board staff.

d. Source: International Monetary Fund.

Note: Data compiled courtesy of Ralph C. Bryant of the Brookings Institution, Aug. 13, 1986

offset by the much smaller, largely secular, differences in domestic price inflation [Levich, 1985].

(4) Despite the free flow of financial capital, large but variable "real" interest differentials of up to three or four percentage points between similar assets denominated in different currencies are commonplace [Frankel, 1986].

In response to this turbulence in the foreign exchanges, financial markets in Chicago, New York, London, Frankfurt, Tokyo and so on have developed an amazing range of financial devices for hedging both exchange and interest rate risk. In order to relieve some of the currency stress on manufacturers and merchants, a swarm of young MBAs find gainful employment in providing innovative forms of forward and futures contracts, options to buy or sell foreign exchange, currency or interest rate swaps and so forth. Since the late 1960s, the massive growth of interbank trading in the Eurocurrency markets has allowed banks to more easily cover net foreign exchange risk arising out of such "retail" transactions with their nonbank customers.

"...innovation has improved the efficiency of international financial markets, mainly by offering a broader and more flexible range of instruments both for borrowing and for hedging interest rate and exchange rate exposures. These changes have clearly aided banks and their customers to cope with stresses associated with the greater volatility of exchange and interest rates in recent years".

[Bank for International Settlements (BIS), 1986, page 1]

Only if private financial specialists may freely take positions in foreign exchange though unrestricted capital movement, however, can forward hedging help merchants better cope with exchange and interest rate risk [McKinnon, 1979]. For example, consider the final but long-delayed emergence in the 1980s of the Japanese yen as a major currency for invoicing foreign trade and international banking transactions. Previously existing Japanese exchange controls and interest rate restrictions in the Tokyo capital market had unduly hampered the development of forward exchange, swap, and options markets --thus greatly reducing the yen's international usefulness.

Now in the mid 1980s, however, capital mobility among the three major blocs is unrestricted, and there are no artificial restraints on innovative new forward contracts--and other financial devices--for hedging against exchange risk.

Market Failure in Hedging Exchange Risk

After glancing at the dazzling array of new financial instruments, most economists might rest comfortably assured that most, if not all, international currency risk associated with trade and investment could be effectively hedged. Nevertheless, merchants and international investors still find they have substantial residual exchange risk which cannot be hedged as long as exchange rates are free to fluctuate. Why the paradox?

In purely domestic trade within a single currency area, we know that a manufacturer cum investor cannot make all his investment and production decisions at time zero--and then lay off the economic risks

with a complete set forward contracts contingent on various uncertain states of nature. Arrow and Debreu [1973 and 1959] have taught us that, in practice, forward markets for goods and services are seriously incomplete in a capitalist economy. Thus a producer must simply live with the fact that his future sales, output, and supply purchases remain somewhat uncertain. However, this uncertainty is easier to bear if the real purchasing power of domestic money is stable. Then he can carry liquidity forward to cover unexpected contingencies, and he needn't worry about arbitrary valuation changes in the monetary standard themselves leading to intertemporal relative price changes between his inputs and outputs.

In international (interbloc) commerce, by contrast, this fundamental price and output uncertainty is greatly exacerbated when "nature" includes continual sharp changes in exchange rates. Forward markets in foreign exchange cannot be effectively utilized by exporters or importers who are unable to contract forward in commodity markets. Only if an exporter can forward sell all his goods for foreign money, can he effectively "double hedge" by taking out a forward foreign exchange contract to get safely back into his home currency [Kawai and Zilcha, 1986]. But double hedging is only feasible for a small proportion of the potential future flow of international commerce--confined mainly to the near term of a few months to a year. In effect, the fundamental Arrow-Debreu (empirical) conundrum of incomplete forward commodity markets leaves merchants and international investors exposed to foreign exchange risk which they cannot avoid!

For example, when the dollar was generally weak in the 1970s, and became substantially undervalued from 1977 to 1980, American tradable goods industries looked profitable and "excessive" investments occurred in certain kinds of mining and manufacturing--with agriculture also becoming overcapitalized. As the dollar (unexpectedly) rose in 1981 and became overvalued until mid 1985, these industries then suffered a big shakeout with bankruptcies and plant closures. The resulting avalanche of protectionist sentiment in the U.S. Congress is still with us--even though by 1986 the dollar is no longer overvalued.

Similarly, as the yen has risen incredibly from 260 yen/dollar in March 1985 to below 160 yen/dollar in mid 1986, Japanese industrial output has turned down and much of her previously installed manufacturing capacity has suddenly become unprofitable. This has prompted Japan's preeminent industrialist, Mr. Akio Morita, President of the Sony Corporation, to call for reforms such that national money becomes "a common scale of value internationally rather than just another speculative commodity" [Morita, 1986]. Otherwise, he can't properly decide on what kinds of goods in which to invest, in which country to produce them, or how to arrange for future sales and supplies.

In summary, how well do floating rates (without exchange controls) approximate having a single international money across our three major blocs?

As a means of payment, the elaborate interbank market in foreign exchange is cheap and efficient for spot and forward payments several

months hence. From this narrow perspective of transactions efficiency, not much is lost by not having a single international money.

In providing a stable unit of account (or standard of deferred payment) for investments, however, the floating rate system has performed poorly [Kindleberger, 1985]. Without a common (and stable) standard of value in the longer run, the efficiency of investment--both intrabloc and interbloc--has declined.

Two Views of the "Equilibrium" Exchange Rate

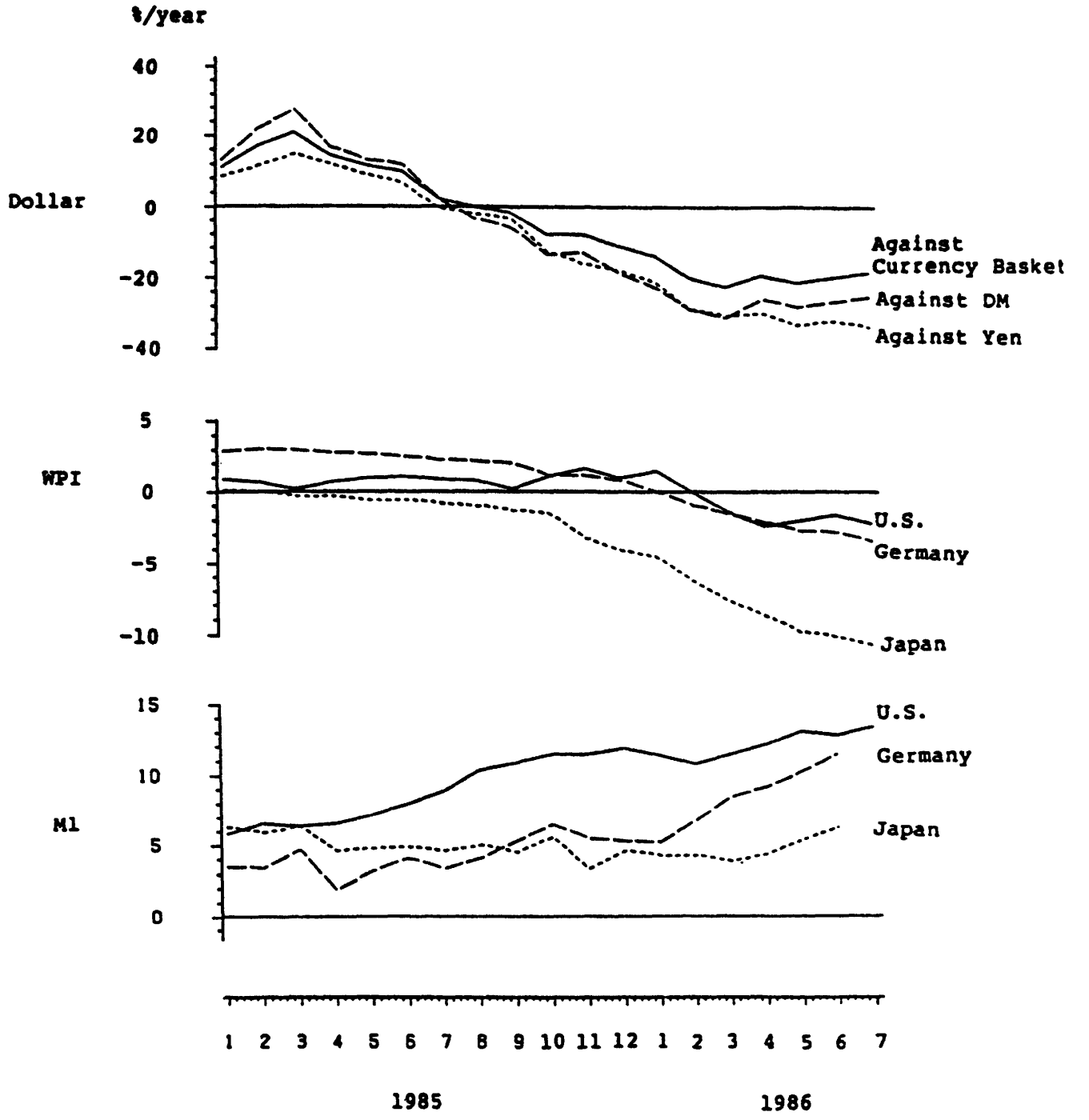
The landmark accord at the Plaza Hotel in New York on September 22, 1985 among the Group of five (Britain, France, Germany, Japan and the United States) finally recognized the need for official action to secure exchange stability. When the dollar was grossly overvalued in the early 1980s peaking out at 260 yen/dollar and 3.7 D.M./dollar in February 1985, people generally agreed that action should be taken to bring the dollar down. In addition to (modest) official foreign exchange intervention in September and October 1985 to sell dollars for marks and yen, U.S. money growth expanded in 1985 relative to that in Germany and Japan--see the lower panel of Figure 1. The dollar came down--see Figures 2 and 3--and international monetary coordination seemed to be working.

But then, in 1986, monetary cooperation appeared to fall apart. Despite some coordinated cuts in discount rates early in the year, in April of 1986, the U.S. Federal Reserve system failed to support the Bundesbank and the Bank of Japan in their intervention to prop the dollar up--after it had fallen to 170 yen and 2.2 marks. Subsequently

FIGURE 1

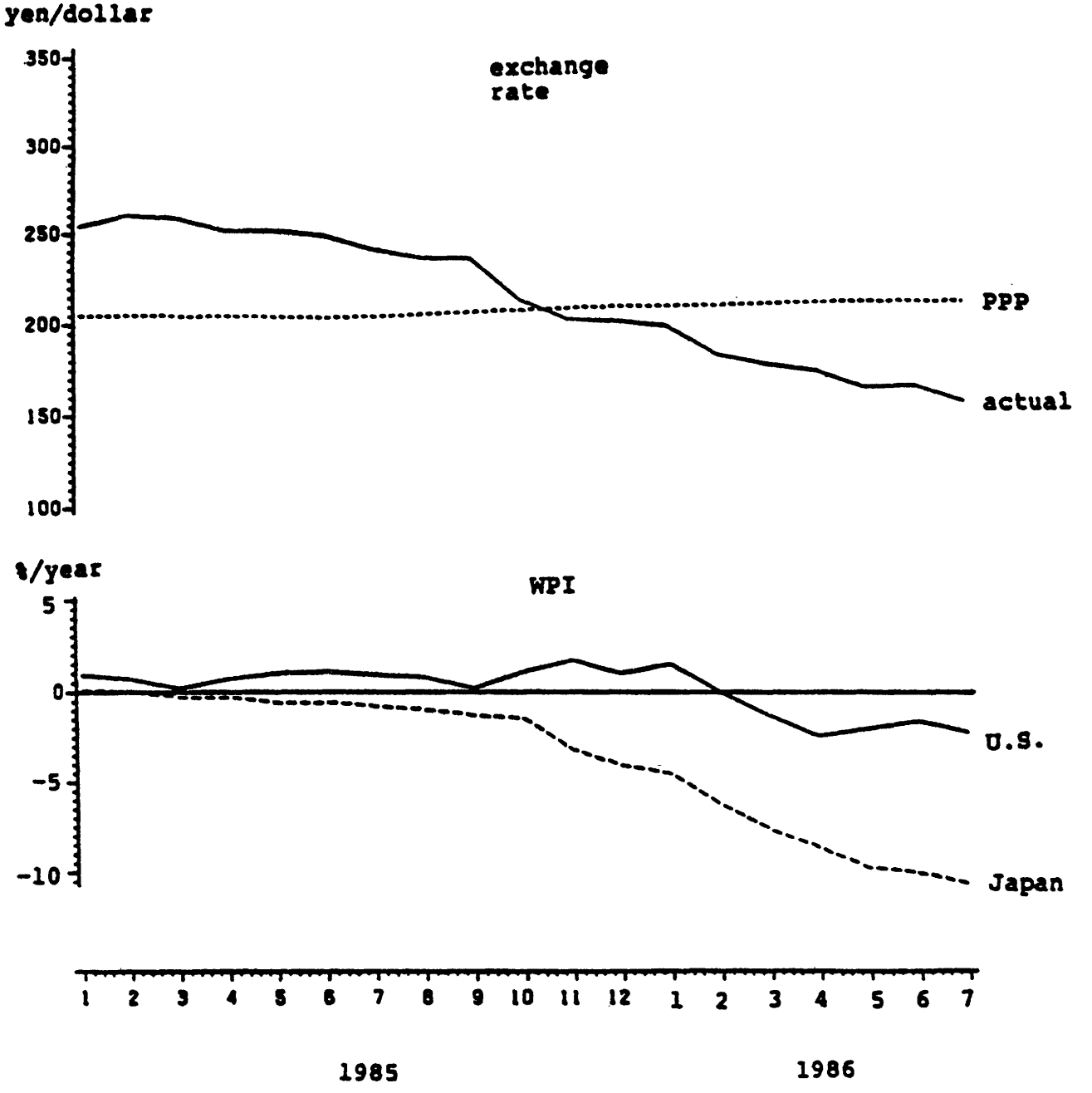
DOLLAR, PRICES AND MONEY SUPPLIES

JANUARY 1985-JULY 1986. RATES OF CHANGE OVER THE YEAR



Sources: IMF International Financial Statistics (exchange rates)
Economist (WPIs and M1s)

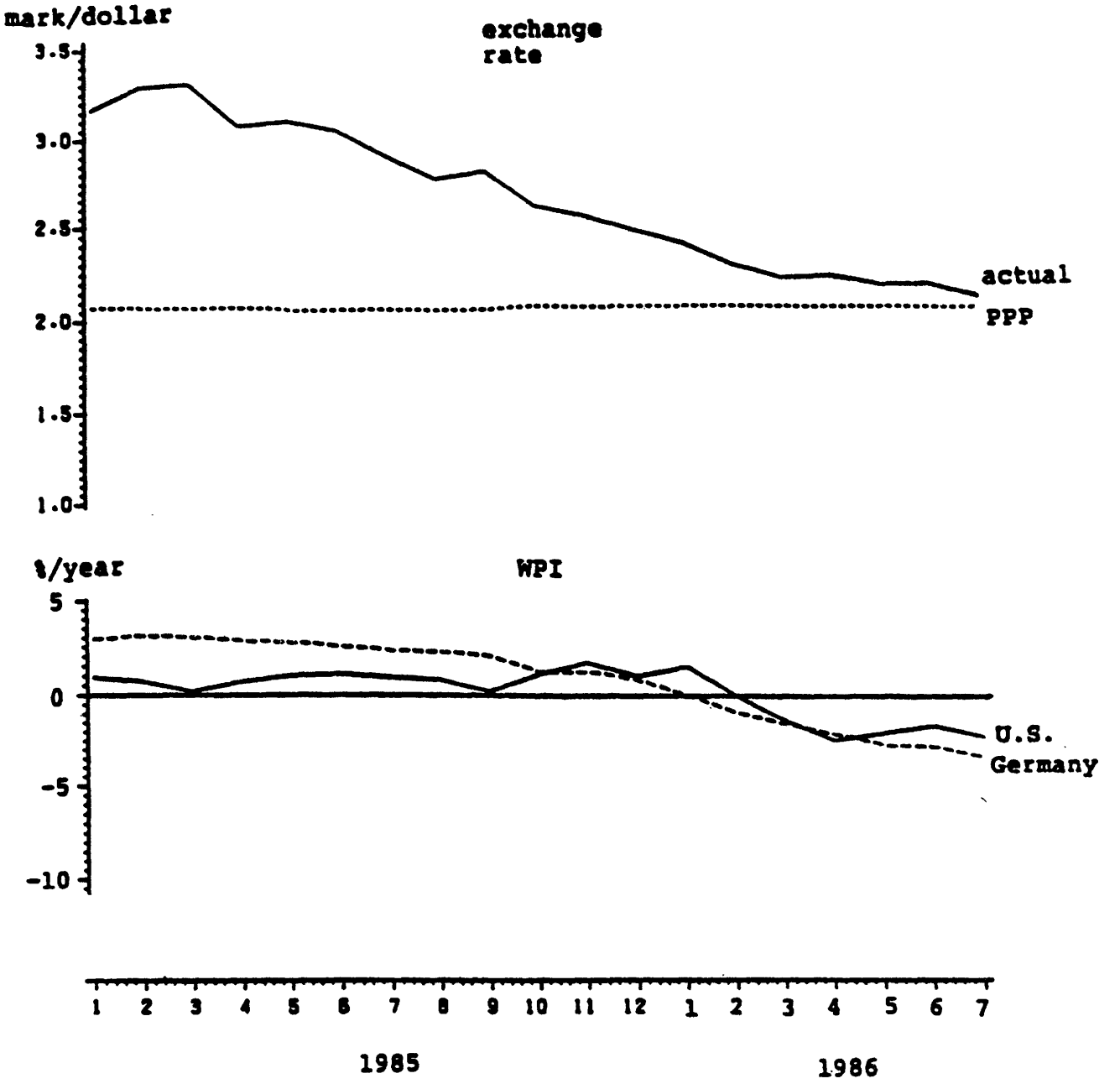
FIGURE 2



Sources: IMF International Financial Statistics (exchange rate)
OECD Main Economic Indicators (prices)

PPP rates for Jan - July 1986 are preliminary estimates and extrapolated from Kenichi Ohno "Estimating Purchasing Power Parities in the 1970s and 1980s: The Price Pressure Approach." Stanford University, August, 1986.

FIGURE 3



Sources: IMF International Financial Statistics (exchange rate)
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PPP rates for Jan - July 1986 are preliminary estimates and extrapolated from Kenichi Ohno "Estimating Purchasing Power Parities in the 1970s and 1980s: The Price Pressure Approach." Stanford University, August, 1986.

(September 1986), the dollar fell significantly further--particularly against the yen--with some evident acrimony among the three central banks as to what should be their exchange rate targets.

For example, in 1986, newspaper surveys of Japanese entrepreneurs frequently find 200-220 yen to the dollar to be the rate consistent with their long run normal profits. McKinnon [1984] regards 200 yen as the right yen/dollar rate. The Japanese government seems willing to tolerate 170-180 yen; while the U.S. government seems inclined to push the yen higher than that. Williamson [1986] estimates the proper rate to be 162, and an even higher yen is regarded as desirable by Bernstein [1986] and Krause [1986], whose estimates are 120 and 100, respectively.

Clearly, this difference of opinion is of major importance in determining what U.S. monetary policy should be, and how it should be coordinated with those of the European and Japanese central banks. It is not mainly due to statistical discrepancies or differential access to information. Rather this difference is rooted in two separate theories of what the exchange rate is expected to accomplish:

(1) Purchasing Power Parity (PPP). Official exchange rate targets should be set to align national price levels so that the real purchasing power of money, say one dollar, is roughly the same in terms of internationally tradable goods in each country. Monetary policies should be coordinated so that this common price level is stable--without significant inflation or deflation being imposed on any one of the trading partners.

(2) Balanced Multilateral Trade (BT). The exchange rate should be set to roughly balance the flows of imports and exports of any one country--allowing for the need to make interest payments and other debt-service requirements, and for "small" new net capital flows. Net trade flows are dominated by relative prices at home and abroad as determined and potentially controlled by the exchange rate.

The differences between these two approaches to targetting exchange rates are quite fundamental.

The PPP criterion looks at the exchange rate as simply an extension of domestic monetary policy, where the primary obligation of the central bank is to stabilize the domestic and international purchasing power of the domestic money. (1) says nothing about what the net trade balance should be, although maintaining PPP at a steady level would itself tend to minimize the probability of there being any undue or precipitate change in a country's international competitiveness. Whether there is a trade surplus or deficit when PPP is satisfied, however, is outside the model and depends on the saving-investment balance in the economy.

The balanced trade criterion under (2) shows no explicit concern for the state of inflation or deflation across trading partners, or for the price level targets of the central bank. The exchange rate is seen more to be an adjunct of commercial policy, like tariffs and quotas, in maintaining international competitiveness--as defined by the net trade balance itself.

(3)

Problems with the Balanced Trade Criterion

This focus on the net balance in commodity trade arose in the theoretical literature of the 1930s and 1950s and is sometimes called the "elasticities" approach to international payments. At that time, countries with trade deficits had to worry about protecting official exchange reserves because the private international captial market was moribund, and one could not expect balancing capital inflows. Then too, countries were not sufficiently integrated in foreign trade for exchange rate changes to have much effect on their domestic price levels. Hence, by affecting relative prices at home and abroad, the exchange rate was assigned to balance international commodity trade.

The BT criterion implies that "equilibrium" exchange rates will change continually in response to nonmonetary disturbances. For example, the recent fall in the price of oil has benefited the Japanese trade balance much more than the American. This has prompted some analysts [Williamson, 1985 and 1986] to lower their estimates of the equilibrium yen/dollar exchange rate. (Whereas under the PPP approach, the exchange rate would be invariant to worldwide changes in the price of oil or any other commodity.)

Most importantly, the BT approach to the exchange rate is logically incomplete. It says nothing about the saving-investment imbalance in the domestic economy which must be changed if a devaluation is to have the conventional effect of improving the trade balance. At the present time, for example, the huge U.S. Federal budget deficit is creating a shortage of saving in the American economy which is being met

by borrowing abroad--thus making a trade deficit inevitable. If capital inflows and the trade deficit were both curtailed arbitrarily, U.S. real interest rates would have to jump sharply to curtail American absorption--perhaps causing a slump in investment.

Similarly, there is no predictable effect of "real" exchange rate changes on the trade balance among open economies where capital flows freely. For example, no exchange rate exists that would balance U.S. foreign trade with an ongoing fiscal deficit of 200 billion dollars a year. In the intermediate run, a devaluation of the dollar could have the unconventional effect of worsening the U.S. trade balance and increasing Japanese surplus. If the overvalued yen causes a profit squeeze and business slump in Japan with declining imports, conceivably Japan's trade surplus could get bigger even though her exports are now more highly priced in world markets.

Nevertheless, analysts who wish to push the dollar down further usually have the (ambiguous) BT criterion in mind.

Why Purchasing Power Parity?

Because the BT criterion is deficient, and because the Japanese and American economies are now so integrated in flows of commodities and financial capital, I claim that that purchasing power parity is the (only) correct criterion for judging the appropriate equilibrium level for the yen/dollar exchange rate (and, of course, the dollar's equilibrium exchange rates with European currencies.) Only the PPP criterion for setting the exchange rate is consistent with the idea of coordinating national monetary policies so as to approximate having a

single international money across the industrial economies--having "a common scale of value" in Mr. Morita's words.

If PPP is satisfied, by definition each national money will have the same purchasing power over a common broad basket of tradable goods and services. True, discrepancies in the prices of nontradable goods and services would remain: rental prices on land or wage costs could vary significantly from one country to another--just as they now vary interregionally within a single country. Compare the south of Italy to the north at the present time, or the relatively low cost of labor and/and in the southern United States for almost a century after the American Civil War. In contrast to floating exchange rates, however, a stable exchange-rate regime prevents the prices of a broad basket of tradable goods in Country A from arbitrarily changing in comparison to similar tradable goods in Country B.

Macroeconomic stability is a second important reason for using the PPP criterion for targetting exchange rates. If, exchange rates vary randomly and unexpectly as they do under floating, then departures from PPP could cause sudden deflation or inflation within any one country. For example, the rapid appreciation of sterling in 1979, when it was a "petrocurrency", imposed sudden deflation and unemployment on the British economy; and the recent rapid appreciation of the yen, raising Japanese prices price above those in the rest of the world, is imposing undue deflation in Japanese manufacturing--see Figures 2 and 3. In 1986, the surprisingly devaluations of the New Zealand and Australian dollars

over the past year and a half is causing unwanted inflations in those economies.

In summary, the PPP criterion for setting exchange rates is preferred: (1) to provide a uniform standard of value for international investments and, (2) to minimize the likelihood of sharply and unexpectedly different rates of inflation in individual countries. (The still open question of how to control worldwide inflation or deflation is considered below.)

Measuring Purchasing Power Parity

Even if one accepts PPP in principle, and central bankers agree to bend national monetary policies towards achieving it, how can one accurately estimate today's PPP exchange rates? After all, for the past decade and a half of unrestricted floating, exchange rates have fluctuated wildly relative to national price levels.

As yet, no international secretariat publishes a broad index of tradable goods prices--with common quantity weights--that is then used to establish the price level for Japan in yen comparable to that for the U.S. in dollars comparable to that for Germany in marks. If such cross-country price indicies existed, "absolute" PPP exchange rates could be precisely calculated: those rates at which one dollar would have exactly the same purchasing power in all three countries at any point in time. In practice, however, each country calculates its own wholesale price index (WPI) using different weights and price relatives which are not directly comparable.

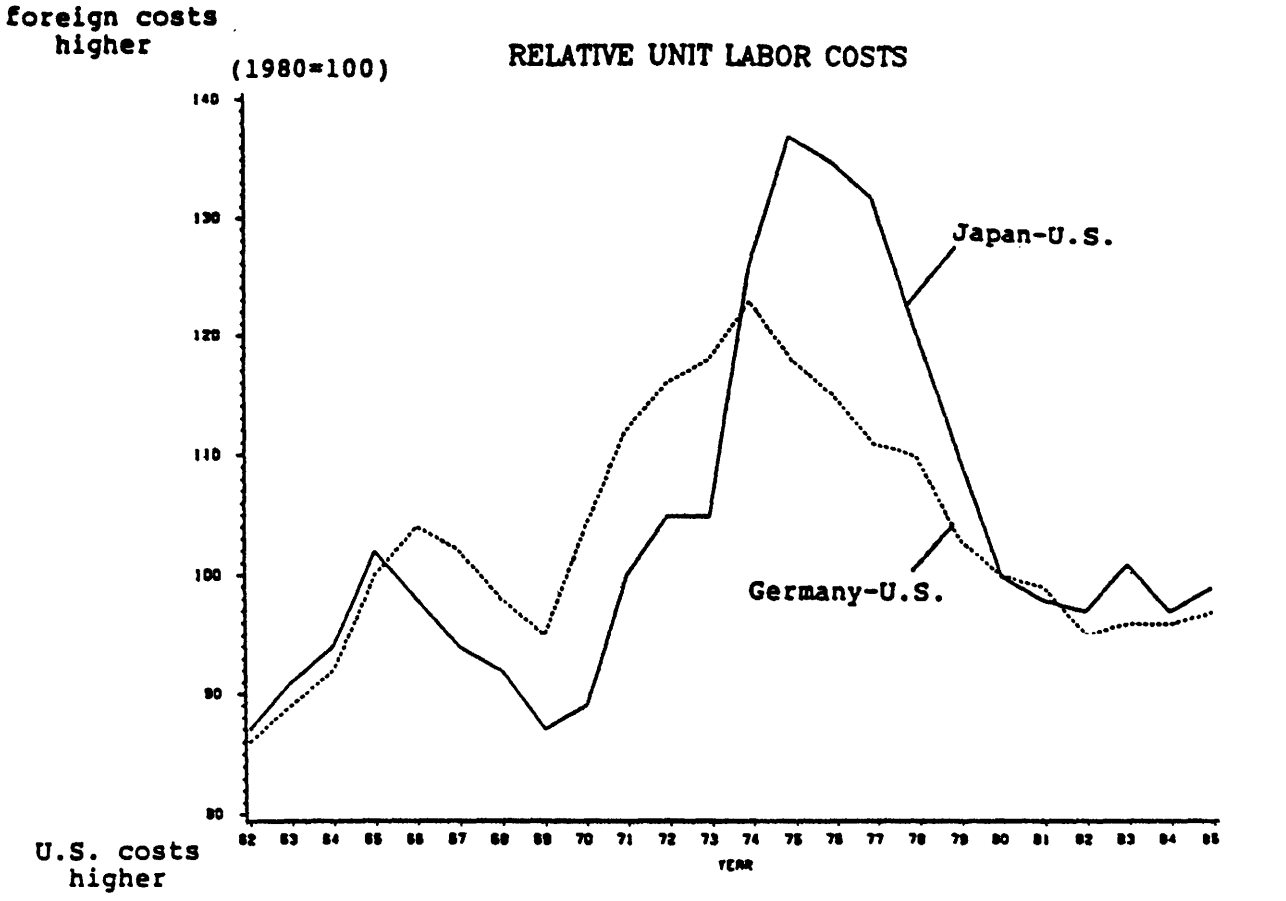
Thus, one has to use various approximations. Cassel (1922)

introduced the familar method of relative purchasing power parity assuming knowledge of a single base year where PPP initially held, and then deflating by subsequent national rates of price inflation. McKinnon (1984) used this technique by choosing 1975-76 as the base year, and then deflating with subsequent changes in relative unit labor costs (Figure 4). He estimated PPP to be 210 yen to the dollar at the end of 1983--projected to be 200 yen in 1986; and estimated the PPP DM/dollar rate to be 2.00 for late 1983, projected to be 2.1 DM/dollar in 1986.

But how can one have confidence that these crude estimates are close to being correct? From the modern asset approach to exchange rate determination [Frenkel and Mussa, 1980], we know that exchange rates are "forward looking" variables. From this one can plausibly infer that exchange rates behave as if they lead or cause (in the Granger Sense) tradable goods prices. This suggests a suitable test for any estimate of the true PPP exchange rate.

For example, consider my estimate of 200 as PPP for the yen/dollar rate. If the yen appreciates below 200 yen per dollar, Japanese tradable goods prices (WPI) should fall relative to the American WPI. And Figure 2 shows this effect rather dramatically. Since the end of 1985, Japanese tradable good prices have begun to fall sharply relative to their American counterparts. By July 1986 at 160 yen/dollar, the Japanese WPI had fallen 8 percent more than the American WPI from a year earlier. Japanese industrial goods price in yen are now falling at the rate of about 10 percent per year. In September, 1986 at 153

FIGURE 4



Source: OECD Main Economic Indicators

yen/dollar, the yen is grossly overvalued.

In contrast, Figure 3 shows that the German mark, currently 2.05 D.M., is not significantly different from its PPP level. In 1986, the German and American WPIs are (slowly) declining at about the same rates. Hence, I infer that the dollar is not significantly undervalued with respect to the European bloc of currencies.

Kenichi Ohno (1986) has made similar PPP exchange-rate calculations much more precisely by explicitly incorporating the effect on relative price levels of deviations from PPP--assuming that unit labor costs also affect relative price movements in both countries. His new "price-pressure approach" for measuring PPP exchange rates avoids having to assume some base year in which PPP held--and incorporates statistical information from all exchange rate and price-level data since 1975.

For 1985 and 1986, Ohno's path for PPP exchange rates is given by the dashed lines in Figures 2 and 3 respectively. Currently, his estimates for PPP are close to 210 yen/dollar and 2.1 DM/dollar. Looking at the fall in the Japanese price level relative to that of the U.S. and Germany, he also concludes that the yen is greatly overvalued relative to the dollar and European currencies.

From this, however, one cannot predict that the yen is likely to fall into a better exchange rate alignment. In the absence of systematic international monetary coordination, we know that exchange rates will continue to fluctuate randomly and, thus, unpredictably.

Elements in the Monetary Accord

Once governments in the three major blocs agree on a consistent set of PPP targets, international negotiations to stabilize exchange rates within a narrow range are necessary and desirable. At the same time, the triumvirate would anchor the common price level by agreeing to aim for zero inflation in a common basket of internationally tradable goods. Elsewhere, I have analyzed [McKinnon 1984 and 1985] in some detail how such monetary coordination could be affected on a step-by-step basis. Here let me briefly stress the key features on which the Bundesbank (representing the European bloc), the Bank of Japan, and the U.S. Federal Reserve System should agree.

(i) That target zones for exchange rates be officially established. Initially, fairly broad 10 percent bands--say, keeping the dollar between 190 and 210 yen, and between 2.1 to 2.3 marks--could be formally announced. As international monetary coordination successfully evolves, these bands could be significantly narrowed at a later stage.

(ii) that the three central banks agree to mutual and symmetrical monetary adjustment to achieve these exchange rate targets. That country whose currency is relatively overvalued would expand its money growth rate above normal and reduce money-market rates of interest. Whereas those countries whose currencies were undervalued would reduce their money growth below normal and raise interest rates.

Although mutual monetary adjustment under (ii) is the necessary driving force for the new agreement to be credible, the announcement effect under (i) is extremely important for allowing private

expectations coalesce around the newly announced official exchange rate targets.

With private expectations successfully supporting the official actions, relatively little actual monetary adjustment would be necessary. Indeed, one might have gotten away with less mutual monetary adjustment in 1985--of rapid growth in the U.S. and quite slow growth in Japan--if the triumvirate had announced exchange rate targets.

(iii) That "normal" money growth rates in the three countries be chosen so as to stabilize the common price level in internationally tradeable goods. If international deflation threatened (as is often heralded by a decline in primary products prices), the three would jointly expand their money growth--and vice versa when inflationary pressure developed.

At the present time (September 1986), for example, the unusual weakness in world commodity prices suggests that joint money growth in the triumvirate should be greater than normal. But the weakness in the U.S. dollar against the yen and mark suggests that this incremental growth be concentrated in Japan and, to a lesser extent, in Europe.

Once exchange rates are properly aligned (according to PPP), the three central banks should meet continually to monitor the behavior of the common price level in internationally tradable goods. In this respect, an international secretariat (associated with the Monetery Accord) could help by developing a common price index with fixed weights reflecting the importance of goods produced in Europe, Japan and the U.S. (A similar proposal has been made by Pentti Kouri in the context of

the "Shadow" Group of Seven (G-7) [1986]). Collective money growth would be increased if this index showed deflation--and decreased if it showed international inflation.

Each participating central bank would also use this international index as own internal price level target. For example, the Bundesbank would use the mark value of the international WPI as its target for "zero" domestic price inflation--rather than using the German GNP deflator or CPI or some other such index. The Federal Reserve System and Bank of Japan could adopt similar internal targets based on changes in the dollar and yen values of the international WPI.

Use of such a common price index would then ensure that the domestic price-level targets of each central bank are fully consistent with exchange-rate stability based on purchasing power parity. In the mean time when no such international index is available, the triumvirate could rely on existing national WPIs to get approximate estimates of whether international prices of tradable goods were rising or falling.

By these techniques, international monetary policy would be assigned to maintaining a stable international standard of value, while avoiding cycles of inflation and deflation of the kind experienced over the past 15 years of floating exchange rates--and described in the Appendix.

Appendix: The International Business Cycle Under Fixed and Floating Exchange Rates

Many readers will be concerned that the three central banks are giving up too much monetary autonomy in order to establish a common international monetary standard. Indeed, a supposed advantage of floating exchange rates was that each country would have greater effective autonomy in macroeconomic management.

How well has this independence in the conduct of monetary policy served the United States, and other countries, in the 1970s and 1980s? Using the fixed exchange rate period of the 1950s and 1960s as a benchmark for comparison, Ohno [1986] summarizes the collective macroeconomic performance of the eight principal industrial economies over the past decade and a half of floating thus:

(1) trend rates of domestic price inflation tend to be higher in each of the eight countries (Table 2), while

(2) trends in real GNP growth are all much lower; and fluctuations in prices and output around these trends are more synchronized across countries (Figures 5 and 6).

Nobody denies that the macroeconomic performance of the industrial economies has become distinctly worse since the early 1970s. More surprising perhaps is the stronger positive correlation in output fluctuations across national boundaries--the synchronization and mutual reinforcement of the real business cycle--in moving from fixed to floating exchange rates. But, using more or less sophisticated statistical techniques, several researchers have established the greater

Table 2

Trends[1] in Inflation and Real GNP Growth Under Fixed and Floating Exchange Rates: Eight Industrial Countries (annualized percentage change in quarterly data)

	GNP Deflator		Real GNP	
	fixed[2]	float[3]	fixed[2]	float[3]
U. S.	2.8	6.5	3.3	2.9
Japan	4.5	5.2	9.4	4.6
Germany	3.3	4.6	5.3	2.1
Canada	2.7	8.0	4.7	3.3
U. K.	3.8	11.6	2.6	1.5
France	4.2	9.2	5.6	2.7
Italy	3.7	13.5	5.3	2.2
Netherlands	4.4	6.3	4.6	2.4
Simple Means (8 countries)	3.7	8.1	5.1	2.7

Source: IMF International Financial Statistics

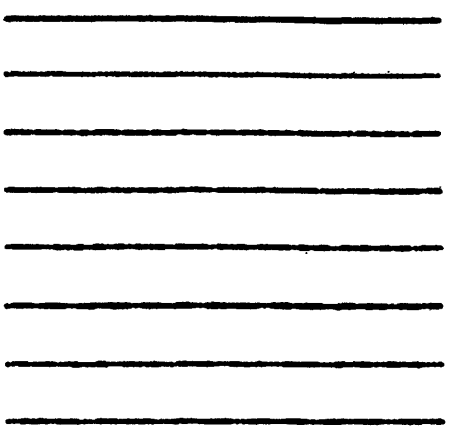
1/ Period means for each country.

2/ Fixed Exchange Rates from 1956.1 to 1971.2.

3/ Floating Exchange Rates from 1971.3 to 1985.1.

Legend for the Figures

FIGURES 5-6



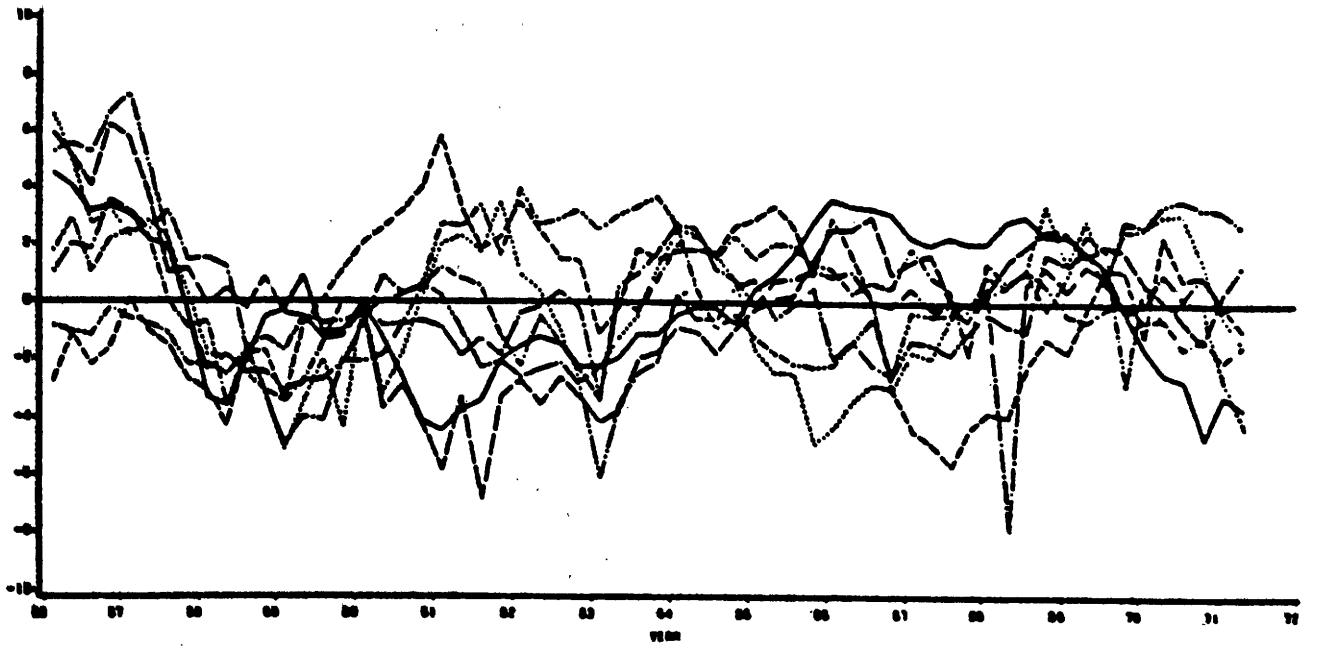
Source: Figures 5 and 6 are taken from Kenichi Ohno "International Synchronization of Inflation and Real Activity" Feb. 1986, Stanford University.

Note: The underlying trends from which the deviations in Figures 5 and 6 were calculated are provided in Table 2.

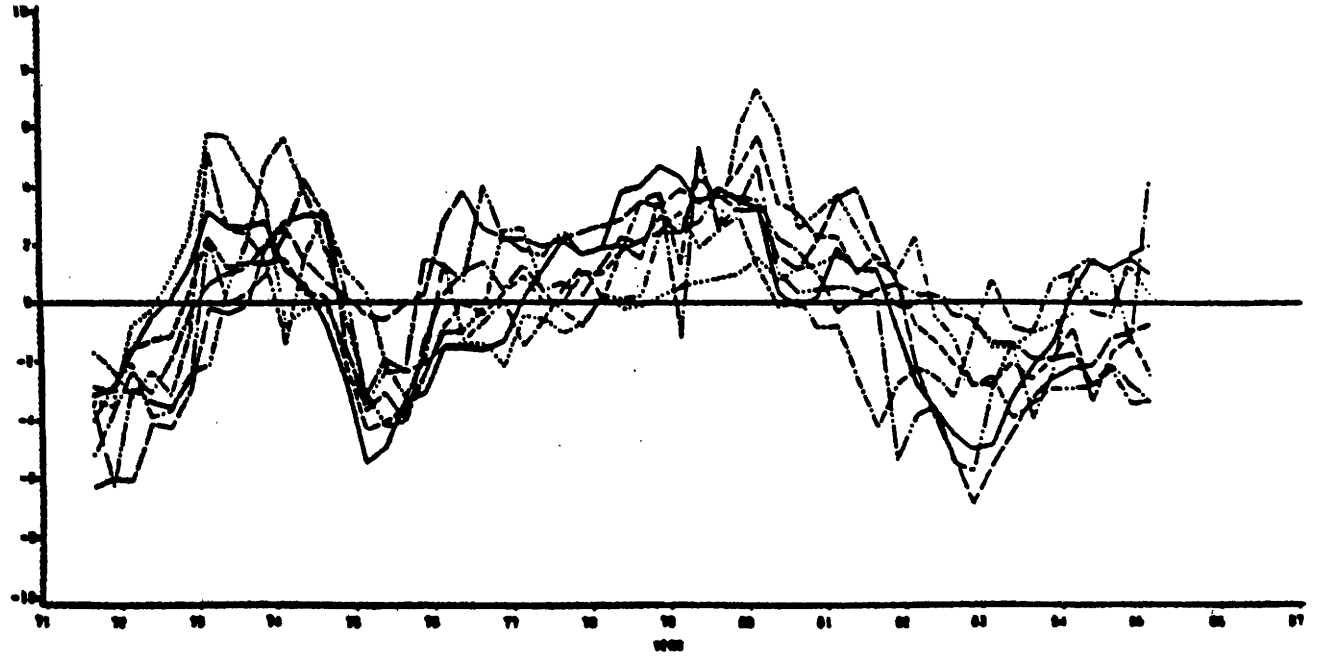
FIGURE 6

Real GNPs : Deviation from Trend

(a) Fixed Exchange Rate Period



(b) Floating Exchange Rate Period



Source and Legend: See Ohno Op. cit.

synchronization and severity of macroeconomic fluctuations in the more recent period.

Clearly, the high degree of synchronization in the international business cycle suggests that it is best dealt with collectively--providing that the goals of the three major central banks are narrowly specified in terms of price-level stability. Most importantly, in order to avoid the sudden inflations or deflations characteristic of the floating-rate period, U.S. monetary policy should be better internationalized. The asymmetric behavior of U.S. money growth with respect to other industrial countries--as shown in Figure 7 and Table 3--has been a major source of cyclical instability in the world economy. But that is a story for another time [McKinnon, 1984 and 1985].

Table 3

Contemporaneous Correlation in Money Growth and Changes in the Dollar Exchange Rate Under Floating: 1971:III - 1985:I

	Dollar	U.S. money	ROW money
Dollar	1.00		
US money	-0.04	1.00	
ROW money	-0.62**	-0.03	1.00

Source: Kenichi Ohno "International Synchronization of Inflation and Real Activity" February, 1986, Stanford University.

Notes: "Dollar" is quarterly changes in IMF's "merm" weighted index of the dollar exchange rate against 17 other industrial countries. It is very similar (but not identical) to the index shown in the second column of Table 1.

"U.S. money" is quarterly growth in U.S. M1.

"ROW money" refers to the weighted average (using fixed GNP weights for 1977) of M1 growth in the rest of the industrial world: Japan, Germany, Canada, United Kingdom, France, Italy and the Netherlands.

The table shows within-quarter correlation coefficients among the rates of change of each variable. All data are smoothed with a four quarter moving average.

**, * and # mean significance at the 1%, 5% and 10% level, respectively.

The significant negative correlation between dollar and ROW money also holds for unsmoothed data.

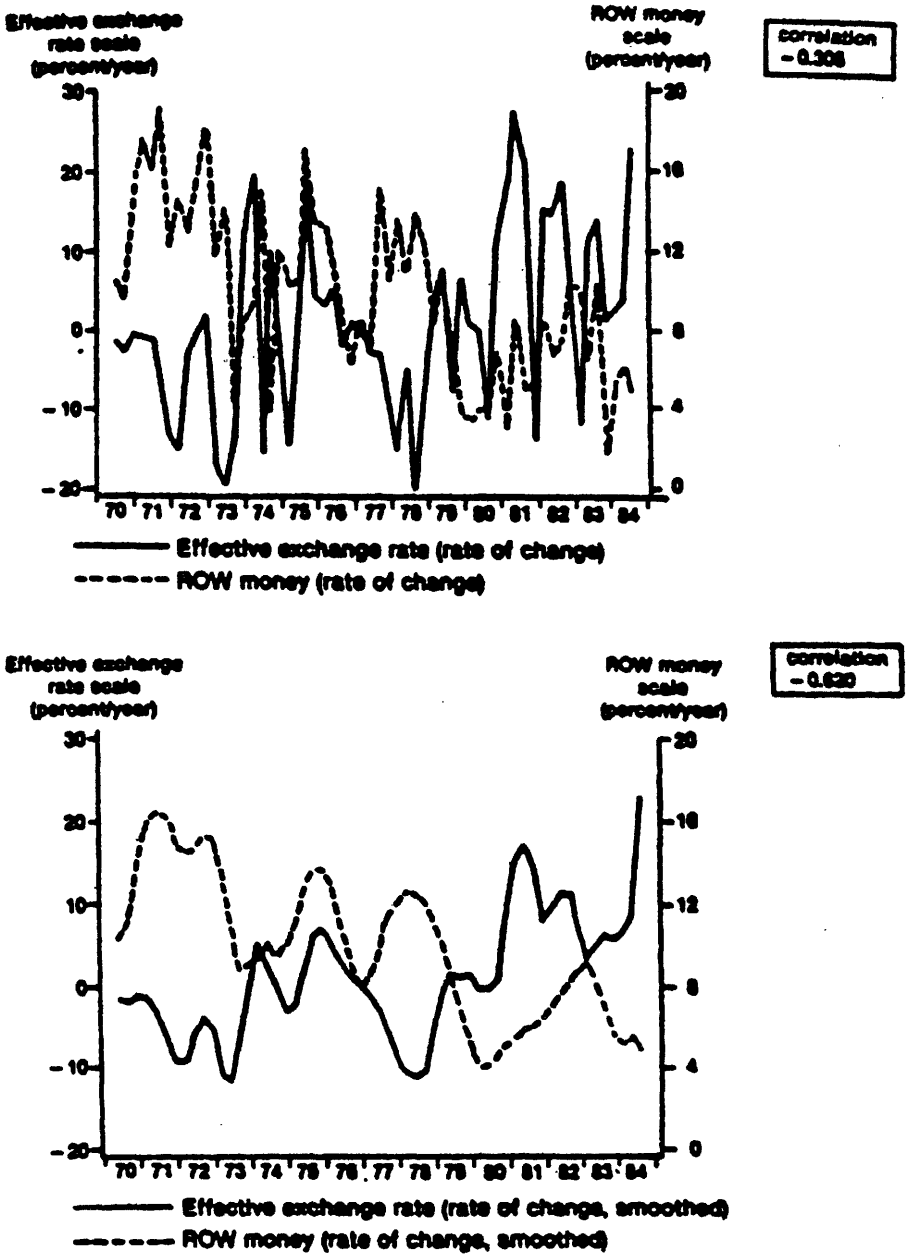


Figure 7. U.S. Effective Exchange Rate and Money in the Rest of the World, 1970–84

Note: For definitions of ROW money and dollar exchange rate, see Table 3.

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