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A REEXAMINATION

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Joachim Fels

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FLEXIBLE EXCHANGE RATES AND INSULATION: A REEXAMINATION

by

Joachim Fels*

Will a country embedded in an integrated world economy be able to completely insulate its economy from foreign economic disturbances by letting its currency float freely in the foreign exchange market? Both theoretical considerations and the actual experience after the movement to flexible exchange rates among the major currencies in 1973 suggest that the answer is no. According to conventional wisdom, however, the early advocates of flexible exchange rates in the 1950s and 1960s believed in the ability of floating rates to completely insulate an economy from disturbances originating abroad. This statement is frequently cited to show that the case for flexible exchange rates may not be as strong as it originally seemed to be, since part of the case appears to have rested on an erroneous belief.

It is one purpose of this paper to point out that, contrary to a widespread view, the outstanding early advocates of flexible exchange rates like Milton Friedman (1953), Egon Sohmen (1961; 1969) and Harry Johnson (1969) never promised complete and automatic insulation from all kinds of foreign

*An earlier version of this paper was presented at the Egon Sohmen Memorial Conference held at Tegernsee, Bavaria, on August 31 and September 1, 1990. I am grateful to John Chipman, Herbert Giersch, Herbert Grubel, Anne Krueger, Robert Mundell, Friedrich Schneider, and Regine Sohmen for comments and discussion.

economic disturbances. In fact, their argument was more refined. The main purpose of the paper is to contrast Sohmén's true promise, as well as that of other theorists', with the empirical evidence from the period of floating exchange rates since 1973 and to discuss several explanations for some remaining discrepancies between predictions and outcome.

I. The Promise of the Early Believers

In order to assess the view of the leading early proponents of flexible exchange rates on the insulation issue it is crucial to define carefully the sources and the nature of the supposed foreign disturbances. For example, it makes a difference whether the source of the foreign disturbance is a monetary or a fiscal shock and whether the disturbance affects prices or output, or both. In general, the degree of insulation provided by flexible exchange rates will differ according to the source and nature of the foreign shock.

In his celebrated case for flexible exchange rates, Milton Friedman (1953, pp. 199-200) asserted that freely floating rates would mitigate the transmission of foreign monetary disturbances by insulating the domestic price level from foreign inflation or deflation. Yet the domestic economy would still be affected by a possible change in foreign real output caused by the foreign monetary disturbance. Insulation would thus not be perfect under flexible exchange rates, but each country would

be able to "seek for monetary stability according to its own lights" (p. 200).

In contrast to that, economists rooted in the Keynesian tradition were more interested in the question whether floating rates would provide insulation from fluctuations in foreign output and employment. The early open-economy versions of the Keynesian model concentrated on trade in goods and services as the only transmission channel of economic disturbances between countries. The neglect of capital movements in the analyses in the 1940s and 1950s was obviously influenced by the vast amount of restrictions on the free flow of capital between countries that had been implemented during the interwar years. At that time, trade in assets had become negligible by historical standards.

Perhaps the most influential contribution in this tradition was James Meade's (1951) analysis of internal and external balance. The "Meade Paradigm"¹⁾ consists of a simple two-country model where each country produces its own specific output. Wages and prices are fixed, expectations are static, and aggregate demand determines output and employment. Aggregate demand, in turn, can be varied systematically by monetary and fiscal policies ("financial policies" in Meade's terminology).

The results derived from the model for the transmission of economic disturbances from one country to the other are

1) This term was coined by Michael Mussa (1979, p. 165).

straightforward. Under flexible exchange rates without capital mobility, incipient trade surpluses or deficits of the home country caused by a foreign fiscal or monetary disturbance lead to adjustments of the exchange rate in such a way that the incipient trade imbalance is eliminated. Thus, the only channel for transmission is interrupted and a country is completely insulated from foreign output fluctuations. It is this strong result that must be in the mind of those observers who accuse the early proponents of flexible exchange rates of having held an extremely naive view.

Egon Sohmen, like Friedman, is certainly innocent of that accusation, however. Evidence is provided by his various contributions to the theory of flexible exchange rates, the most comprehensive of which being the monograph that developed out of his Ph.D. thesis submitted at the M.I.T. in 1958 (Sohmen, 1961; 1969). Sohmen focused on the effects flexible exchange rates would have on income and employment. Like the "Meade Paradigm", he employed the Keynesian framework in assuming that money wages and prices are constant, or almost constant, in the presence of unemployment and excess capacity. But unlike the "Meade Paradigm", he concluded that flexible exchange rates would not serve as perfect stabilizers of national income in the face of foreign disturbances. The result followed from two separate lines of reasoning.

The first line of reasoning preserves the assumption that capital is immobile between countries. As a consequence, the trade balance, or the current account, is kept in balance at every instant in time by the flexible exchange rate; the

transmission of foreign income fluctuations through trade surpluses or deficits thus becomes impossible. However, Sohmen (1961, p. 95) pointed out that, while exports and imports in nominal terms would be forced into equality by flexible exchange rates, real exports and imports would not necessarily change in the same direction. For example, an appreciation of the domestic currency in the course of a foreign boom would leave the nominal external balance unchanged but would imply an import surplus in real terms that, *ceteris paribus*, would depress real output in the home country. Therefore, foreign booms would cause a recession in the home country. Conversely, a foreign recession would have an expansionary impact on the domestic economy.

An inverse transmission of business cycles in a model without capital flows had also been found by Laursen and Metzler (1950). It is interesting to note that Sohmen (1961, pp. 92 f.) initially considered his analysis as being merely a restatement of the well-known Laursen-Metzler effect. In a later article he revised that view and demonstrated that his transmission mechanism was different from that of Laursen and Metzler, though the result of an inverse transmission of business cycles under flexible exchange rates in the absence of capital movements was the same (Sohmen, 1974).²⁾

2) I do not intend to display the details of the two models here since the task has already been accomplished by Ernst-August Behnke (1980), one of Sohmen's former research assistants.

In Sohmen's own words, "[a]part from its theoretical interest, too much should not be made of the Laursen-Metzler effect" (1961, p. 99).³⁾ The main reason for his claim was that capital mobility, by assumption, was absent from the analysis. While being a viable device for analyzing one effect at a time, a model abstracting from capital flows seemed to miss an important aspect of reality already in the early 1960s. In the presence of capital flows, trade surpluses or deficits could occur and could lead to a transmission of business cycles similar to that under fixed exchange rates. For example, a boom in the foreign country accompanied by rising interest rates would lead to a capital outflow from the home country and the expansionary effect of the resulting current account surplus could well overcompensate the negative Laursen-Metzler-Sohmen effect of the foreign expansion on domestic income. Thus, under flexible exchange rates with capital mobility, positive or negative transmission could occur; there would be no automatic insulation from foreign business cycles.

Still, according to Sohmen (1961, p. 100n), in a system of flexible exchange rates a country could always counteract the effects of foreign business cycles on domestic income and employment by the appropriate use of domestic monetary policies. It is a recurrent theme in Sohmen's writings that monetary policy becomes a powerful tool under flexible exchange

3) Note that this remark also refers to Sohmen's own analysis because at the time of writing he thought it to be identical to that of Laursen and Metzler.

rates when capital is mobile internationally. Cyclical unemployment, caused by domestic or foreign influences, could always be eliminated rapidly by monetary expansion, which would immediately depreciate the exchange rate and thereby improve the trade balance, the improvement being equal to the capital exports induced by the fall in domestic interest rates. To Sohmen, this freedom of monetary policy for the purpose of domestic stabilization⁴⁾ was

"perhaps the most persuasive reason for the advocacy of flexible exchanges [...] and deserves to be stressed all the more since it appears that it has never received attention elsewhere" (1961, p. 84).

Nowadays, the emphasis on short-term, countercyclical demand management may sound somewhat outdated. However, it should not be forgotten that at the time of Sohmen's writing it was generally accepted that activist fiscal and monetary policies could, and ought to, keep the economy on an even keel by "fine-tuning". In any case, Sohmen deserves credit for being the first to highlight the consequences of a move to flexible exchange rates for the effectiveness of monetary policies.

He has to share this credit with Robert Mundell, however, without whom this short survey of the early theorists of flexible exchange rates would be incomplete. Unlike Friedman and Sohmen, Mundell was not an ardent supporter of flexible exchange rates, but rather concentrated on the positive analysis of the role played by international capital mobility in

4) The policy-autonomy argument for flexible exchange rates was later augmented by Harry Johnson (1969) to include monetary, fiscal and other policy instruments.

determining the effectiveness of monetary and fiscal policies under fixed and under flexible exchange rates. The Mundell-Fleming model is still an integral part of received wisdom in international macroeconomics.⁵⁾ It may suffice here to summarize briefly the well-known results derived from the two-country version of the model (Mundell, 1968, pp. 262-271) for the international transmission of economic policies when exchange rates are flexible. A monetary expansion (contraction) in one country will depress (raise) output and employment in the other country if capital is perfectly mobile internationally. Yet a fiscal expansion (contraction) will have a positive (negative) effect on foreign output and employment. Thus, the sign of the spill-over effect depends on the source of the initial disturbance, fiscal or monetary. Insulation no longer prevails in the flexible exchange rate system if capital is free to move between countries.

This quick overview, to sum up, has shown that the early analysts and proponents of flexible exchange rates did not believe in the ability of such a system to provide automatic or complete insulation from foreign disturbances. They stressed, however, that domestic monetary policies would be free to pursue domestic goals under flexible exchange rates and could thus, in principle, be employed to neutralize undesired macroeconomic influences from abroad. While some analysts emphasized

5) Frenkel and Razin (1987, p. 568) call it "the 'work horse' of traditional open-economy macroeconomics". The relevant articles by Mundell were first published in the early 1960s and are collected in Mundell (1968); see also Fleming (1962).

the advantages of attaining domestic price level stability in an inflationary or deflationary world, others focused on the possibility of stabilizing income and employment by alert and flexible countercyclical policies in the face of foreign booms or slumps.

II. Evidence from the post-1973 Period

In this section, I compare the behavior of a few important macroeconomic variables from a large sample of industrial countries during the period of generalized floating since 1973 to their behavior during the preceding fixed-rate years of 1960 to 1973 in order to see whether the hopes of the early advocates of flexible exchange rates have been fulfilled. Such an approach of simple before-after comparisons is, of course, subject to the strong caveat that not all the observed differences in the behavior of the variables under the two exchange-rate regimes must necessarily result from the switch to flexible exchange rates. Rather, the underlying structure of the economy may have changed for other reasons. What would be required, ideally, is a full structural model of the economies under consideration, which would allow us to control for all other changes in the economic environment in order to identify the pure impact of a switch from fixed to floating exchange rates. However, constructing and estimating such a model is impossible. For the purpose of this paper it may suffice, instead, to employ some simple statistical measures of dispersion and relatedness, such as standard deviations and

correlation coefficients, as a first approximation. I shall come back to the caveats later.

A first and rather intuitive way of testing the proposition that flexible exchange rates allow for a greater autonomy of monetary policy is to examine the cross-country variability of the growth rates of the money supply under fixed and under floating exchange rates. A higher divergence of monetary trends under flexible rates would indicate that monetary policies have become more independent from external constraints.

Table 1 presents the mean and the standard deviation of the growth rates of M1 in a sample of 19 industrial countries for each year from 1960 through 1987, and for the period averages 1960-73 and 1974-87. No clear-cut picture emerges from a comparison of the cross-country variability of money growth rates before 1973 and since. The yearly standard deviations of M1 growth rates fall in a range of 4.5 to 8.6 percentage points for the fixed-rate period, as compared to a range of 4.2 to 8.6 percentage points for the flexible-rate period. There is no observable general increase in the yearly standard deviations after the advent of generalized floating. For the two period averages, there is even a small decline in the standard deviation of M1 growth rates in the post-1973 period. Thus, in the fixed-rate years the long-run growth rates of M1 in industrial countries diverged more than in the flexible-rate years.

It is interesting to note, however, that two out of the three single years exhibiting the highest standard deviations

Table 1: Cross-Country Variability of Inflation Rates and Money Supply Growth Under Fixed and Flexible Exchange Rates

	Inflation Rates		M1 Growth Rates	
	Mean	Standard Deviation	Mean	Standard Deviation
<u>Fixed Rates</u>				
1960	2.0	1.3	6.8	4.8
1961	2.3	1.1	8.2	6.1
1962	3.8	2.0	9.0	5.2
1963	3.6	2.3	10.4	6.6
1964	4.2	2.2	9.9	7.6
1965	4.7	2.4	8.4	5.1
1966	4.0	1.5	7.1	4.6
1967	3.9	1.7	6.9	4.6
1968	4.0	2.0	9.6	4.5
1969	4.1	1.7	9.0	5.2
1970	5.5	2.0	7.2	7.0
1971	6.4	1.9	11.9	6.0
1972	6.3	1.3	15.2	4.5
1973	8.7	1.8	14.4	8.6
1960-73	4.6	1.0	9.6	4.0
<u>Flexible Rates</u>				
1974	13.3	4.1	8.7	5.6
1975	12.9	4.8	12.9	6.7
1976	10.7	4.6	13.3	4.3
1977	10.5	5.5	10.4	5.5
1978	7.9	4.2	11.6	6.7
1979	8.6	4.2	10.7	7.0
1980	11.7	4.9	6.2	5.2
1981	11.4	4.3	7.6	4.7
1982	9.8	4.1	8.0	4.7
1983	7.0	3.6	11.3	4.2
1984	5.9	2.6	8.7	5.6
1985	5.6	3.2	9.6	8.6
1986	4.0	3.5	10.8	6.0
1987	4.1	3.8	12.8	8.5
1988	3.7	2.1	.	.
1989	4.7	1.9	.	.
1974-89	8.2	3.1	1974-87: 10.2	3.5

Notes: The sample consists of 19 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, U.K., and United States. Mean and standard deviations for 1960-73 and 1974-89 (1974-87 for M1 growth) are of period averages.

Sources: See Data Appendix.

fall in the recent period of floating (1985 and 1987). Furthermore, the third year (1973) was, on closer inspection, also characterized more by the floating-rate system than by the fixed-rate system of Bretton Woods because the latter already dissolved in March 1973. Directly after the event, the monetary authorities apparently used their newly acquired freedom to inflate or deflate at will.

But even if the year 1973 is omitted from the fixed-rate period, it still appears to be a puzzling fact that the growth rates of the money supplies varied so much across countries in the Bretton Woods years. Yet the puzzle can be rationalized in three ways. First, an essential feature of the Bretton Woods system of fixed (but adjustable) exchange rates was the widespread existence of capital controls which had been implemented and were maintained for the very reason of enabling countries to enjoy at least some leeway for monetary autonomy.⁶⁾ Second, additional leeway was provided by the possibility of changing the official parity in certain circumstances. Third, differences in the money demand between countries will, in a fixed rate system, necessarily lead to divergent developments in the money supplies since domestic prices cannot diverge much

6) Actually, the promise that countries with flexible exchange rates could enjoy monetary autonomy without having to resort to welfare-reducing capital controls and trade barriers was one of the most powerful arguments of the advocates of floating rates.

from foreign prices with fixed exchange rates, a point emphasized by Friedman and Schwartz (1982, p. 314).

Moreover, there is a basic reason why, in general, it may be inappropriate to draw inferences for the degree of monetary autonomy from the dispersion of the growth rates of the money supply. The money supply is only an instrument, not the final target variable, of monetary policy. In the last analysis, the essence of monetary policy is to achieve a targetted inflation rate (or a targetted unemployment rate). Therefore, it makes more sense to compare the cross-country variability of possible target variables under alternative exchange rate systems in order to assess whether the degree of policy autonomy differs according to the exchange rate system. To illustrate this point, consider two countries, each aiming at a different inflation rate under flexible exchange rate. If, for example, the growth rates of natural output differ between the two countries, it may well be that the growth rates of their money supplies consistent with their targetted inflation rates will be identical. Obviously, an observer who passes his judgement on the degree of monetary autonomy in the two countries by comparing the growth rates of the national money supplies will end up with a wrong conclusion. He would rather have to check whether the target variables diverge from each other in order to be able to pass judgement on the degree of monetary autonomy.

Evidence on the cross-country variability of inflation rates in my sample of 19 industrial countries is presented in Table 1. The results confirm that flexible exchange rates allow

for a greater divergence of inflation rates between countries.⁷⁾ In the years from 1960 through 1973, the standard deviations of inflation rates range from 1.1 to 2.4 percentage points. They are relatively low as compared to that of M1 growth in the same years, and as compared to the standard deviations of inflation rates after 1973. The standard deviations of inflation rates in the flexible-rate period are higher in each year from 1974 through 1987 than in 1965, which was the year with the highest cross-country variability in the fixed-rate period.⁸⁾

However, the standard deviations of inflation rates in the recent years 1988 and 1989 are lower than in some of the Bretton Woods years. This shows that inflation rates do not necessarily have to diverge more under flexible exchange rates than under fixed rates. Flexible exchange rates allow countries to realize their preferred inflation rates. Yet preferences may change, and apparently the inflation preferences of industrial countries converged in the past couple of years after more than a decade of experimentation with greater differences in inflation rates.

In sum, the results on the cross-country variability of inflation show that under flexible exchange rates countries

7) Similar results are reported by Swoboda (1983) and Darby and Lothian (1989).

8) Note that the standard deviations in the post-1973 period are even likely to be biased in a downward direction by the fact that many of the 19 countries in the sample have formed regional fixed-rate systems, like the EMS.

enjoyed greater monetary independence in the sense of Friedman. To many observers, this monetary independence has been one of the negative features, rather than one of the positive, of the flexible exchange rate system. According to that camp, the Bretton Woods system acted as a disciplinary force against inflationary policies in participating countries. The loss of discipline that occurred with the demise of the Bretton Woods system in 1973, so the argument goes, led to the outburst of inflation in the course of the seventies and early eighties.

A more plausible view, however, is that causality ran from inflationary policies in the reserve center to the breakdown of the fixed-rate system, rather than vice versa. Inflationary pressures had already begun to build up in the late 1960s and early 1970s (see Table 1); and the main reason for the abandonment of fixed rates was that some countries were no longer willing to parallel the inflationary policies of the United States. Those countries enjoyed a degree of (relative) price stability⁹⁾ after 1973 that would have been impossible to achieve, had the Bretton Woods system been kept in place.

Another interesting question is whether flexible exchange rates have enabled countries to make their economies more independent from foreign output fluctuations, too. To answer this question, I have calculated simple contemporaneous correlation

9) Note that only three countries in my sample of 19 countries had a lower average inflation rate in the 1974-89 period than in the 1960-73 period, namely Japan, Switzerland and the Netherlands. This is evidence of the general increase in the propensity to inflate in the 1970s.

coefficients of detrended quarterly indices of industrial production for eleven industrial countries for a fixed-rate period (1961:2 to 1973:1) and a flexible-rate period (1973:2 to 1989:4).

The results are reported in Table 2. A comparison of the correlations among the eleven countries' output fluctuations over the fixed-rates years with corresponding correlations over the flexible-rate years reveals a marked increase in the co-movement of business cycles from the fixed to the floating-rate period. In 43 out of a total of 55 cases, the correlation coefficient is higher in the post-1973 period than in the pre-1973 period. Many correlations (about one quarter) are negative in the first period, whereas all but three are positive in the second period. Furthermore, only five out of 55 correlation coefficients in the Bretton Woods years are statistically significant at the five percent level; in comparison, 31 out of 55 are significant (and positive) in the flexible rate period.

Taken together, the evidence suggests that business cycles have been more synchronized by far under flexible exchange rates than they were under fixed exchange rates.¹⁰⁾ This result

10) Similar results have been obtained by Ripley (1978), Swoboda (1983), Huber and Saidi (1983), de Grauwe and Fratianni (1984), Gerlach (1988), Everaet (1988), and Darby and Lothian (1989). Some (weak) evidence for less synchronization under flexible exchange rates was found by Baxter and Stockman (1989) for the post-1973 period, and by Choudhri and Kochin (1980) for the great depression.

Table 2: Correlation Matrix of Detrended Industrial Production Under Fixed and Under Floating Exchange Rates

	US	CAN	JAP	U.K.	GER	FRA	ITA	NET	IRE	SWE	SWI
US	1.00	.72*	.60*	.39*	.40*	.43*	.39*	.22	.38*	.06	.45*
CAN	.51*	1.00	.53*	.11	.32*	.39*	.37*	.32*	.39*	.22	.28*
JAP	.06	.01	1.00	.13	.46*	.50*	.48*	.19	.39*	.04	.36*
U.K.	.05	.38*	.20	1.00	.39*	.29*	.22	.13	.05	.14	.14
GER	.10	.17	.14	.10	1.00	.59*	.32*	.32*	.17	.17	.29*
FRA	-.05	-.10	.08	.14	.08	1.00	.42*	.30*	.23	.10	.42*
ITA	-.03	.09	-.03	.19	-.18	.03	1.00	.22	.17	.11	.26*
NET	-.15	.26	.27	.38*	.45*	.14	.10	1.00	.02	-.08	.35*
IRE	-.07	-.07	.13	.28	-.13	.07	.03	-.12	1.00	-.03	.17
SWE	.02	.16	.04	.15	.41*	.09	-.10	.24	.07	1.00	-.08
SWI	.05	-.14	.17	-.09	.22	.23	-.10	.05	-.11	.28	1.00

Notes: Correlation coefficients in the upper right triangle are for the flexible-rate period (1973:2 to 1989:4); those in the lower left triangle are for the fixed-rate period (1961:2 to 1973:1). Correlation coefficients denoted with an asterisk (*) are significant at the five percent level. The seasonally adjusted quarterly indices of industrial production were detrended by computing first differences of the natural logarithms of the time series. The country symbols are: US = United States, CAN = Canada, JAP = Japan, U.K. = United Kingdom, GER = Germany, FRA = France, ITA = Italy, NET = Netherlands, IRE = Ireland, SWE = Sweden, and SWI = Switzerland.

Sources: See Data Appendix.

seems to be at odds with Sohmen's notion that flexible exchange rates would enable countries to make domestic output and employment more independent from foreign business cycles by freeing monetary policy from external constraints. However, there are several explanations for the observed synchronization of business cycles under flexible exchange rates that render Sohmen's view consistent with the post-1973 evidence. These explanations are discussed in the following section.

III. Why Have Business Cycles Been So Synchronized Under Flexible Exchange Rates?

There are three sets of explanations for the observed increase in the synchronization of business cycles since the movement to generalized floating in the early 1970s. The first set of explanations evolves around the proposition that there has been a marked increase in the positive transmission of business cycles after 1973. The second set of explanations attributes the higher comovement of business cycles to the synchronization of economic policies in the 1970s and 1980s. The third explanation emphasizes the role of common exogenous real shocks like the two oil price hikes in the 1970s and the early 1980s. In this section, I discuss the three explanations in turn.

The increase in the positive transmission of business cycles, which according to the first explanation is responsible for the observed international synchronization of output movements after 1973, is very likely to be related to the growing

economic integration among countries in the last couple of decades. The basic reason for the increase in interdependence and integration is the steady decline in international transportation and communication costs as a consequence of technological progress, an argument emphasized by Richard Cooper (1985) and Herbert Giersch (1989). These long-run improvements in international transportation and communication are independent of the exchange-rate regime. Cooper (1985, p. 1207) argues, however, that the move to flexible exchange rates may have acted as a brake upon growing interdependence by introducing barriers of uncertainty for both trade and financial transactions. Yet this view can neither be reconciled easily with my observation that economic activity has been more synchronized under flexible than under fixed exchange rates, nor with the general observation that the growth rate of trade between the industrial countries has accelerated during the 1970s and 1980s.

More plausible is the argument that the switch to flexible exchange rates has contributed positively to international integration. With the advent of generalized floating, governments started to dismantle the controls on the free flow of capital and goods which had been erected or kept in place during the Bretton Woods years in order to gain some leeway for autonomous policy actions. We have thus come closer to the "spaceless closed economy embracing the whole world" that Haberler (1937, p. 303) proposed as a starting point for the analysis of the international aspects of business cycles. According to Haberler (1937, p. 303-4), the three factors which

disintegrate and divide that economy are transportation costs, the imperfect mobility of capital, and national currency autonomy. The first two disintegrating factors apparently have diminished, and it is argued here that this may have partly come about as a consequence of the establishment of Haberler's third disintegrating factor, national currency autonomy, in 1973.¹¹⁾ Once the view of an integrated world economy is accepted, the finding that business cycles are synchronized across countries appears much less puzzling. It may then even be appropriate to speak of a world business cycle.¹²⁾

Some observers, especially Feldstein and Horioka (1980), claim, however, that capital markets are far from being integrated perfectly. They find a high correlation of saving and investment ratios in a cross-sample of 16 industrial countries and conclude that, since most of any incremental saving remains in the country in which the saving occurs, capital is not very mobile internationally. This finding has provoked heavy criticisms in numerous articles.¹³⁾ For our purposes it

11) To be precise, national currency autonomy also existed in the Bretton Woods years since countries had their own currencies. However, Haberler (1958, pp. 425-6) distinguishes between different degrees of currency autonomy, the highest degree being completely free exchange rates.

12) This view could perhaps be labelled the "Geneva view" since it appears repeatedly in publications of economists associated with the Geneva Graduate Institute of International Studies; see e.g. Swoboda (1983), Huber and Saidi (1983), Gerlach (1988) and Everaet (1988). Furthermore, Haberler wrote the monograph to which the view can be traced back during his stay in Geneva at the League of Nations in the early 1930s.

13) For references, see Frankel (1989).

suffices to note that, first, the original Feldstein-Horioka analysis only covers the years from 1960-74 and, second, they correlated data averaged over five-year periods. Thus, their analysis applied to the Bretton Woods years only and was intended to neglect short-term capital movements, which are relevant in our context. Furthermore, updates of the original analysis (Feldstein and Bacchetta, 1989; Frankel, 1989) show that the degree of capital mobility, as measured by saving-investment correlations, has increased in the 1980s. These results have thus moved closer to the results from different tests of capital mobility, such as that of Frankel (1989), who finds that covered interest parity holds rather well in a sample of 25 countries, indicating that financial markets are highly integrated.

But if the mobility of capital is indeed almost perfect, why should business cycles be transmitted positively? Recall that in the classic Mundell-Fleming analysis perfect capital mobility leads to an inverse transmission of monetary disturbances between countries. Positive transmission occurs in the model in the case of a fiscal, or real, disturbance. It would be tempting to conclude, therefore, that fiscal, or real, shocks have played a dominating role in the transmission of disturbances under flexible exchange rates. This conclusion is welcomed especially by the proponents of the "real business cycles" view, which figures prominently on current research agendas. According to this view, business cycles are equilibrium responses of optimizing agents to unpredictable shocks to preferences and technology. Money does not play an active

role in these models; the observed positive correlation between money and output over the business cycle is viewed as a reflection of money being endogenous rather than exogenous. In the extended two-country version of the real business cycles model, productivity shocks are transmitted positively across countries and lead to an international synchronization of output movements (Cantor and Mark, 1988). The nominal exchange rate, like money, is absent from the analysis; that is, the exchange rate regime does not matter for international transmission. Therefore, it is difficult to explain the observed sharp increase in the correlation of output movements after 1973 within the model: it is a priori very unlikely that shocks to technology and preferences have become so much more important in the last two decades that they could explain the differences in the international behavior of output movements between the pre- and the post-1973 periods. However, since there is currently much work employing and refining these models in progress, it would be too early to pass a final judgement on this issue.

Another way of reconciling theory with the facts has been to extend the original Mundell-Fleming model in various ways to include several neglected aspects. Since less restrictive assumptions are unlikely to produce more definite results, it becomes impossible to summarize the conclusions for the transmission of business cycles of all the numerous extensions of the Mundell-Fleming model. In some of the extended versions, the sign of transmission is reversed, so that a monetary expansion in one country is transmitted positively to the other

country. On the other hand, these models imply that fiscal policies may no longer be transmitted positively, but rather negatively.

There are at least four channels through which the traditional transmission results can be inverted. All of them work through effects of the exchange rate on variables other than the current account.¹⁴⁾ First, if the demand for money depends on a price index that includes the price of imports as well as domestic goods, rather than only the price of domestic goods as in the original model, the sign of transmission may change. For example, the appreciation of the domestic currency in response to a foreign monetary expansion will lower the consumer price index and thereby increase domestic real money balances. This may overcompensate the contractive effect of the appreciation on domestic output through the trade balance. The second channel works through the effect of the exchange rate on domestic real wealth and is similar to the first effect. Furthermore, the original transmission effect may be reversed or reinforced depending on whether the country is a net debtor or a net creditor in foreign currency (Corden, 1985b). Third, if import prices enter the aggregate supply function through imported intermediate goods, the contractionary impact of an appreciation may be overcompensated by the positive impact of

14) I do not include here the Laursen-Metzler effect because if it is built into the original Mundell-Fleming model it works in such a way as to reinforce both the negative transmission of monetary policies and the positive transmission of fiscal policies.

cheaper inputs on domestic output. Finally, wages are also likely to respond to exchange-rate induced changes in the price of consumer goods. In certain circumstances this may reverse the standard transmission results (Dornbusch, 1983). In sum, various modifications of the standard Mundell-Fleming model are able to produce a positive transmission of monetary disturbances. Yet at the same time these modifications lead to the result that fiscal disturbances may be transmitted inversely. To quote a somewhat resigned statement by Bordo and Schwartz (1988, p. 458), "[w]hether the theoretical effect of international transmission is positive or negative is thus ambiguous. The results obtained appear to reflect the model-builders' priors."

To conclude this discussion of the first explanation for the higher synchronization of business cycles, it is fair to say that some of the synchronization is likely to have been caused by positive transmission following from growing integration among countries. Capital has become more mobile after the move to flexible rates and there are many instances in which capital mobility can lead to a positive transmission of business cycles.

In order to isolate the pure transmission effect, the analysis so far has neglected an important aspect of the real world, namely the reactions of domestic economic policy to foreign influences. As Sohmen emphasized, one of the main advantages of the flexible exchange rate system is that, in principle, it allows the domestic monetary authorities to follow domestic stabilization purposes. No matter whether foreign

cycles are being transmitted positively or negatively to the home country, monetary policies would always be free to counteract undesired disturbances from abroad. This would lead one to expect business cycles to be less synchronized under flexible rates than under fixed rates. The observed discrepancy between expectations and outcome can be rationalized in two ways.

First, central banks may have tried to fight off foreign disturbances in the way envisaged by Sohmen, but they may not have achieved their aim. Monetary policy can influence output only if there is some degree of money illusion in the economy. The view that money illusion had been eroded by the overuse of inflationary policies gained currency in the late 1970s and contributed to the success of the new classical macroeconomics. It has culminated in the view of the real business cycles theory that money plays no role at all in the business cycle. Flexible exchange rates certainly contribute to a shortening of the time-lag between money and prices, at least for small economies: if wages are indexed to consumer prices and if foreign goods account for a large part of domestic consumption, much of the monetary expansion will quickly end up in price increases rather than in output increases. As a result of a learning process, central banks may finally have abandoned countercyclical policies in favor of policies aiming at lowering inflation rates. Some evidence for this view is provided by the general disinflation in the course of the 1980s and by the convergence of inflation rates in recent years.

Second, monetary policy may still be able to influence real activity, but it may not have been used to decouple domestic output from foreign business cycles. Evidence for the latter is provided by the fact that short-term monetary policies in industrial countries have also been synchronized under flexible exchange rates (de Grauwe and Fratianni, 1984; Darby and Lothian, 1989). The synchronization of monetary policies could have been motivated by the wish to avoid the inflationary or deflationary impacts of real exchange rate fluctuations caused by divergent monetary or fiscal policies. The coordination of macroeconomic policies ranges high on the policy agenda of finance ministers and heads of governments. Since monetary policies are easier to coordinate than fiscal policies and since exchange-rate movements are often seen as an evil by policy makers, it does not come as a surprise that monetary policies have been synchronized frequently. Consequently, this also helps to explain the observed synchronization of business cycles under flexible exchange rates.

The last explanation for the higher synchronization of business cycles under flexible exchange rates to be examined in this paper is the occurrence of real shocks exogenous to all industrialized countries. The two oil shocks of the early and the late 1970s are commonly cited as a case in point. There is little that can be said against the interpretation that these shocks have contributed to the synchronization of business cycles and that there is nothing economic policy can do to avoid the terms-of-trade deterioration vis-à-vis the oil-producing countries. It is an open question, however, how much

of the synchronization of business cycles can be attributed to the oil shocks. The question, of course, can only be answered (if at all) by a thorough empirical investigation, which is beyond the scope of this paper. But the issue should not be passed without noting that the common view of the oil shocks as completely exogenous events may be fallacious to some extent. It can be argued that the world-wide synchronized booms of the early 1970s and of the late 1970s turned the oil market from a buyers' market into a sellers' market and so contributed to the oil shocks (Corden, 1985a, p. 152). While the world-wide boom of the early 1970s can be attributed to the joint expansion of the money supplies in the strait-jacket of the Bretton Woods system, the second boom was initiated by the voluntarily coordinated locomotive experiment agreed upon at the Bonn Summit in 1978. Thus, the synchronization of monetary policies and the two oil price shocks ought to be seen not as distinct explanations, but rather as related causes for the high degree of synchronization under flexible exchange rates.

IV. Conclusions

Disillusionment with flexible exchange rates on the grounds of the feeling that they have not provided the promised degree of insulation from foreign disturbances is not warranted. This paper has presented evidence supporting the claim by the early proponents of flexible exchange rates that countries can make their price levels independent from foreign inflationary or deflationary trends. This has been a major advantage

of flexible rates, especially for those countries that tried to stabilize domestic prices in the general inflationary environment of the 1970s. Furthermore, the prominent early advocates and analysts of flexible exchange rates never promised complete or automatic insulation from foreign business cycles. Some of them, however, may have underestimated the positive effects of the move to generalized floating on the economic integration among countries and the resulting increase in the transmission of business cycles across countries. Egon Sohmen's claim that flexible exchange rates, in principle, allow individual countries to neutralize some adverse foreign influences remains valid. So far, it has not been subjected to a test because short-term monetary policies have been synchronized under flexible exchange rates to a considerable extent. Further research should be directed at subjecting the different explanations that have been put forward for the observed synchronization of business cycles to empirical testing.

Data Appendix

The following data were used for the calculations presented in the two tables:

INFLATION RATES: Consumer Prices (64x) from World Tables in International Monetary Fund, International Financial Statistics: Yearbook 1989, Washington, D.C., 1989; and in International Monetary Fund, International Financial Statistics, August 1990.

M1 GROWTH: Money (34x) from World Tables in International Monetary Fund, International Financial Statistics: Yearbook 1989, Washington, D.C., 1989.

INDUSTRIAL PRODUCTION: Quarterly index of industrial production, seasonally adjusted, from OECD, Main Economic Indicators , computer tape, Paris, 1990.

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