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THE INTEREST RATE, THE EXCHANGE RATE
AND THE INTERACTION OF
THE REAL AND THE FINANCIAL WORLD

Some Observations and First Generalisations
as a Prerequisite to Characterizing the
Economic Prospects for the 1980's

Stephan Schulmeister

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Some Skeptical Remarks on Economic Forecasting

At the time of this writing, almost all professional forecasters agree that a strong economic recovery is under way in the US. This conviction seems to be strongly confirmed by the most recent data. In the second quarter of 1983, US production grew by 9 percent and inflation has come down to 2 1/2 percent.

In those years during the last decade, when at least qualitatively correct forecasts were most needed, the forecasting community (from the international organizations to private consulting firms) has made its greatest blunders. Immediately after the first oil price shock, under the assumption of an oil shortage (end 1973) a severe recession was predicted. At that time a speculative increase in inventories had already induced a boom in international trade of primary commodities. When the respective data became available, the forecasts were reversed: in mid 1974 it was generally believed that a strong recovery was under way. At that time the decline into deep recession had already begun. Since 1979, several recoveries have been predicted; in the case of the US, the consensus was strongest in 1981 after production had grown by 7 1/2 percent in the first quarter.

The most fundamental reason for the low accuracy in economic forecasts might be the belief that it is indeed possible to predict future developments in a scientific way. This belief assumes the existence and

the knowledge of the "true" theory, its specification in an adequate model, and its estimation by the optimal methods. Given certain values of the exogenous variables, one may calculate the future state of the whole system. The scientific forecast is therefore always conditional, but not uncertain, since all deviations are of a stochastic nature.

This scientific framework hides one factor which is in practice crucial — the a priori assumptions of what the forecaster considers a reasonable outcome. These assumptions are influenced first of all by the most recent data and the forecasts of the other important forecasters. Since it is difficult to sell or justify a prediction which contradicts the most recent "empirical evidence" or the opinion of other forecasting authorities, one often tends to adjust the results into this direction. This behaviour is reasonable in that the consumer of a forecast seldom compares these results ex post with the actual outcome, since at that time he is already concerned with the next forecast. Nevertheless, this acceptance might be one important source of forecasting errors. Another possible factor influencing the a priori assumptions is the supposed interest of the consumer (buyer) of the forecasts. Politicians, for example, generally prefer optimistic predictions, hoping for some positive feed-back; organizations of entrepreneurs usually like low inflation forecasts, for they might dampen the demand for wage increases; environmentalists prefer low energy forecasts, and so on. Finally, the intellectual and political convictions, emotional attitudes (inclination towards optimism or pessimism) and personal interests of the forecasters themselves are also influential factors (even if they do their best to play the schizophrenic role of a subjective person and an objective scientist which is so necessary to keep science free of value judgements). For technical reasons these a priori assumptions do not directly affect the endogenous variables, but only indirectly through the determination of the future values of the exogenous variables. The process of solving the equation system with the help of computers then serves as a kind of purification from subjective elements, and more generally as a scientification of the results.

With respect to the model specification, a certain trade-off between the formal elegance and the explanatory power might also have weakened the relevance of economic analysis and forecasts. In the scientific community of economists, the highest prize is awarded for mathematically elegant and thus consistent solutions, whereas in reality the inconsistencies seem to grow more and more.1)

This conflict is aggravated by the fact that only rather simple theories are appropriate for an elegant presentation, whereas the interaction in reality becomes more and more complex. Thus, rather old ideas like the "invisible hand" and its political implication of "laissez-faire", or the quantity theory of money again become fashionable, dressed in the new rational style and presented in the most elegant manner. But since these concepts were developed in the different environment of the 17th and 18th century, the gap between economic theorizing and the surrounding reality has widened remarkably in recent years.2)

Empirical models by nature can never abstract from reality as much as academic theorizing. Nevertheless, the tendency to represent reality by highly formalized econometric models has resulted in the neglect of those relationships which might have become the most important in recent years (they are too complex to be modeled in the conventional way)—the interaction of the "real" world (production and trade of commodities) and the "financial" world (production and trade of different kinds of paper). Ex post both worlds are related through account identities, but ex ante two prices most determine the intermediation: the real interest rate (means of exchange in time) and the real exchange rate (means of exchange across countries). Neither these prices nor the interaction of both "worlds" are usually explained in econometric models.

Another possible shortcoming of the postulate of model elegance is that these techniques appear much more appropriate for the partial analysis of some relationships within a national economy than for the global

analysis of the interdependencies between the different sub-systems on a worldwide level. But just these linkages might represent the most important problems nowadays, since the world has indeed become more and more a closed, interdependent, but not sufficiently integrated economic system.

The last objection concerns the existence and knowledge of the "true" theory in economics. The analysis of the development of other sciences - particularly of physics - has shown that the "truth" of any theory strongly depends on the specific historical circumstances, i.e., on the economic, social, political and cultural environment (see for example Kuhn (1962), Feyerabend (1975) and in particular, the path-breaking monograph by Fleck (1935)). If in the case of natural sciences the "true" theory does not exist, but is just accepted and used for a certain period of time, it does not seem very plausible that something like a "true" model exists in economics where the object of science changes much more. However, the belief that the "true" theory exists and that it can be discovered by following certain rules (the scientific method) is an element of any young science. To gain a reputation among the already established disciplines, methods of other sciences are sometimes imitated (in the case of economics, for example, the principles of Newtonian mechanics). If one considers the importance of the existence and the knowledge of the "true" theory in rational expectations models, one could conclude that economics has kept itself astonishingly young (or it is just living its third childhood). However, this conclusion seems somewhat onesided since there are still some other schools alive in economics.

The need to believe in the existence of "true" theories which do not depend on specific historical circumstances might be particularly strong in the case of economics, because this science affects the interests of different social groups more directly than any other discipline. For the same reason, the postulate of value-free judgments is of great importance.

The principles of scientific forecasting as sketched above have different consequences: the degree of pluralism in both the theoretical considerations and the methods applied is rather low. This tendency towards uniformity is strengthened by the tight communication between the forecasting institutions, which also ensures that errors and even disgraces are collective and thus shared by the whole community (this fact can also serve as some kind of proof of the impossibility of making more accurate predictions - the shock of the forecasters is thus sometimes externalized). The predominance of deduction on theoretical grounds and of rather long sample periods in the empirical model specification renders traditional forecasting techniques especially weak in those transition periods when the anticipation of future changes is needed most.

In this essay I will try to comment on some aspects of the future development of the world economy using different approaches. The first point is the conception of forecasts as the qualitative anticipation of changes in an essentially uncertain future. If one perceives the future as some kind of "mixture" of the repetitions of the "old" and the emergence of the "new", it follows that "true" quantitative predictions are impossible. (Keeping this in mind, quantitative techniques can be very useful, in particular to check the non-stochastic range of possible developments.) But it is not impossible to anticipate future changes in a qualitative way. The simple reason is that events develop in a time-consuming process so that the sources of the future can be discovered in present conditions and their development. Therefore, the changes in the "mixture ratio" between the "old" and the "new", which is typical for any transition period, can be perceived analytically and intuitively as well. Also, the character of the "new" can be anticipated to some extent. To give a concrete example: with the simple arithmetic of compound interest, the available data indicated already in 1980 that the combined effect of the development of the dollar interest rate, the dollar exchange rate and the terms of trade must lead to turmoils in the international financial system, and consequently to a drop in

international trade or to country defaults or both (see figure 16). But neither banks nor economists anticipated this necessary outcome; it only became clear when it had already occurred (troubles of Mexico and its lenders in mid 1982). Even such events as the oil-price "shocks" do not fall from heaven: for more than 20 years the price of crude oil had been kept constant in nominal terms. This caused a continuous income redistribution to the disadvantage of oil exporters. These relative losses increased strongly due to the depreciation of the dollar since 1971. (This was the dollar price "shock" for OPEC.) The willingness to take countermeasures was strengthened by the fact that the prices for other raw materials went up strongly from the end of 1972 on. It seems, therefore, as if a qualitative anticipation of the first oil-price "shock" had been possible. Of course, it remained unpredictable that OPEC would take advantage of a Yom Kippur War and that the cooperation with the oil companies would be so harmonic that the whole world believed in a quantitative shortage. It is interesting to note that the second oil-price "shock" followed exactly the second wave of dollar depreciation (see figure 14).

Both examples suggest that some kind of sensibility and imagination is necessary to understand the situation and possible reaction to it. But as long as one is in the winner position, one feels comfortable in his own role and therefore lacks the kind of psychological intuition which is necessary to anticipate future events. To put it in a concrete example, the high profits reaped by the banking community in the international credit business in the early 1980's might have diverted the banks' attention from the credit conditions as seen from the debtor's viewpoint. This would have led much earlier to the insight that the debt services and thus the bank profits could not be realized under these conditions.

Another prerequisite to anticipating future events is the ability to think in terms of various possibilities, which implies a theoretical and methodological pluralism (this aspect is particularly stressed by

Feyerabend (1975) in the general context of scientific development). This implies also the attempt to think the "unthinkable". A good example of the latter was the individual or collective country defaults which were considered impossible due to the myth of "sovereign borrowers". Another example would be the possibility that the federal debt of the US might reach comparable proportions in the 1980's (and this should not be unthinkable for those familiar with the famous article by Domar (1944)).

This ability to think in terms of different and even contradictory possibilities becomes more important the more inconsistent and unclear the reality appears. To force the preselected observations into the structure of a consistent model (which reflects the theories and data configurations of the past) reduces the complexity of reality to the intellectual level of the economist (whereas the latter should be rather elevated, challenged by the emergence of the "new"). However, this "harmony of illusions" (Fleck) removes uncomfortable doubts about the validity of the "true" theory or model, but it is exactly this feeling of insufficiency which most stimulates the search for new questions and answers.3) For the same reason, a modest attitude with respect to the scientific achievements of economics would seem to be very productive for its further progress.

It follows from these considerations that the most important part of this study consists in the attempt to elaborate those aspects of the present situation of the world economy which narrow the possible range for future developments. A prerequisite for such an orientation is a reconstruction of some features of the recent history of the world economy. Two aspects of this need to be stressed. First, the interaction of the real and the financial world (with special emphasis on the role of the interest rate and the exchange rate of the dollar as the world currency) and second, the consequences of the fact that the world has become more and more a closed, interdependent but not sufficiently integrated economic system.

Some Evidence about Structure and Development of the World Economy

The following tables and figures provide some basic information about the "real" interdependencies of the world economy.

Table 1 shows the distribution of production and population across country groups and thus the dimension of the inequality in the level of income.4) The discrepancies in economic development indicate at the same time the different levels of potential demand. This aspect is crucial for the valuation of how an international redistribution of income or financial restrictions affect the growth of world trade and production.

Table 2 shows the structure of international trade.5) A comparison of both tables gives a crude picture of the international interdependence measured by the ratio of exports/imports to output: it is far above average in the case of the oil exporting countries and far below in the case of the eastern countries (CMEA and China).

Table 3 summarizes some data about the long-term trends of the world economy. Two significant breaks can be identified. The first occurred around 1973 and affected primarily the industrial countries. The second slow-down started in 1979 and spread all over the world. Economic growth dropped first in the US (1979), then in the European countries (1980) and Japan (1981). The non-oil developing countries were seized by the slow-down in 1981 and 1982, the OPEC (non-oil sector) in 1982. In the CMEA area economic growth had already slumped in 1979.

The development of international trade corresponds to this pattern of output growth (see table 4 and figure 1). After 1973, world trade was dampened most by the weak demand of the industrial countries (their import growth fell from 9.2 percent between 1964 and 1973 to 2.1 percent thereafter). This slow-down was partly compensated for by the expansion of OPEC imports and the continuous strength of the demand of the non-oil developing countries. This stabilized production and employment in the

Table 1

Structure of the World Economy by Country Groups 1977

	Share in Output	Share in Population	Output per Capita in \$
Industrial countries	64,8	18,4	6.471
United States	24,5	5,2	8.665
Japan	9,0	2,7	6.078
European countries	26,5	8,8	5.542
Developing countries	15,6	49,2	582
Oil exporting countries	4,6	7,4	1.155
Non-oil developing countries	11,0	41,8	481
Eastern countries	19,6	32,4	1.110
CMEA	14,6	8,8	3.035
China	5,0	23,6	390
World	100,0	100,0	1.837

Source: UNCTAD, Handbook of International Trade and Development
Statistics, Supplement 1980.

Table 2

Structure of World Trade 1977

	Industrial countries	Oil exporting countries	Non-oil develo- ping countries	Eastern countries	World
Industrial countries	45,8	6,0	8,9	3,1	64,6
Oil exporting countries	10,1	0,1	2,4	0,2	13,2
Non-oil developing countries	8,2	0,8	2,5	0,8	12,6
Eastern countries	2,7	0,4	0,9	5,2	9,6
World	66,8	7,3	14,7	9,4	100,0

Source: GATT, International Trade 1981/82 and earlier issues.
WIFO data bank.

Table 3

Development of the World Economy in the Long Run

Growth Rates of Real GDP

	1955/1964	1964/1973	1973/1982	1973/1977	1977/1982	1978	1979	1980	1981	1982
Industrial countries	4,1	4,9	2,0	2,2	1,9	4,1	3,4	1,3	1,2	-0,3
USA	3,2	3,9	1,8	2,2	1,5	5,0	2,8	-0,4	1,9	-1,7
Japan	9,8	10,0	3,7	2,9	4,4	5,1	5,2	4,8	3,8	3,0
European Countries	4,7	4,6	1,8	2,0	1,6	3,0	3,4	1,5	-0,2	0,2
Oil exporting countries	-	8,2	2,1	6,4	-1,3	2,0	3,1	-2,3	-4,3	-4,8
Non-oil sector	-	-	8,2	12,9	4,5	6,0	3,0	4,9	5,1	3,6
Non-oil developing countries (excluding People's Republic of China)	-	4,8	4,2	5,0	3,5	5,4	4,6	4,3	2,4	0,9
Eastern countries	-	7,0	4,1	5,6	2,8	4,9	2,2	2,8	1,9	2,2
CMEA	-	7,0	4,1	5,6	2,8	4,9	2,2	2,8	1,9	2,2

Source: IMF, World Economic Outlook 1983.

UNCTAD, Handbook of International Trade and Development Statistics, Supplement 1980.
WIFO data bank.

Table 4

Development of World Trade in the Long Run
Average Growth Rates of Volumes

	Industrial countries	Oil exporting countries	Non-oil exporting countries	Eastern countries	World
	1964/1973				
Industrial countries	9,6	10,2	6,2	11,1	9,2
Oil exporting countries	9,0	9,0	6,9	13,8	8,6
Non-oil developing countries	7,0	15,2	6,2	5,2	6,9
Eastern countries	10,1	17,2	4,4	7,4	8,5
World	9,2	10,9	6,2	8,6	8,8
	1973/1981				
Industrial countries	3,1	16,7	6,8	4,9	4,6
Oil exporting countries	-6,5	3,4	-4,3	-11,4	-6,1
Non-oil developing countries	6,0	18,1	10,8	8,6	7,9
Eastern countries	1,9	16,6	11,3	4,2	4,1
World	2,1	16,6	6,1	4,4	3,7

Source: GATT, International Trade 1981/82 and earlier issues,
WIFO data bank.

industrial countries (they could increase their exports to the LDC's by 9.7 percent per year between 1973 and 1981), but at the same time necessitated an increase in the current account deficit of the non-oil developing countries. This dilemma sharpened by the end of the 1970's due to the coincidence of several factors:

-The second oil price shock in 1979

-The particularly weak demand of the industrial countries in 1980/81/82 (see figure 1).

-The absolute slump of the prices for export goods of the non-oil developing countries in 1981/82 (caused by the recession in the industrial countries and the dollar appreciation).

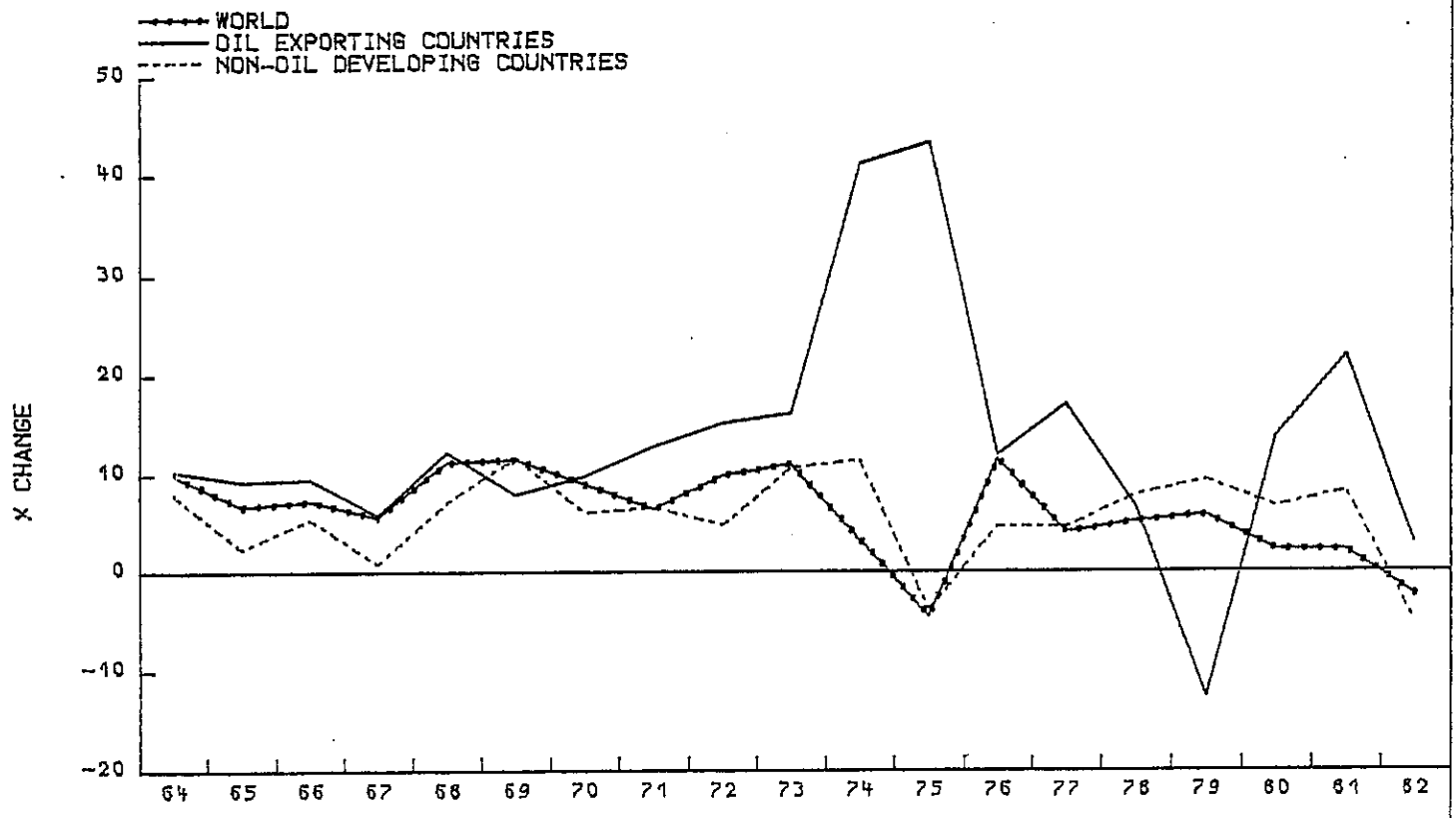
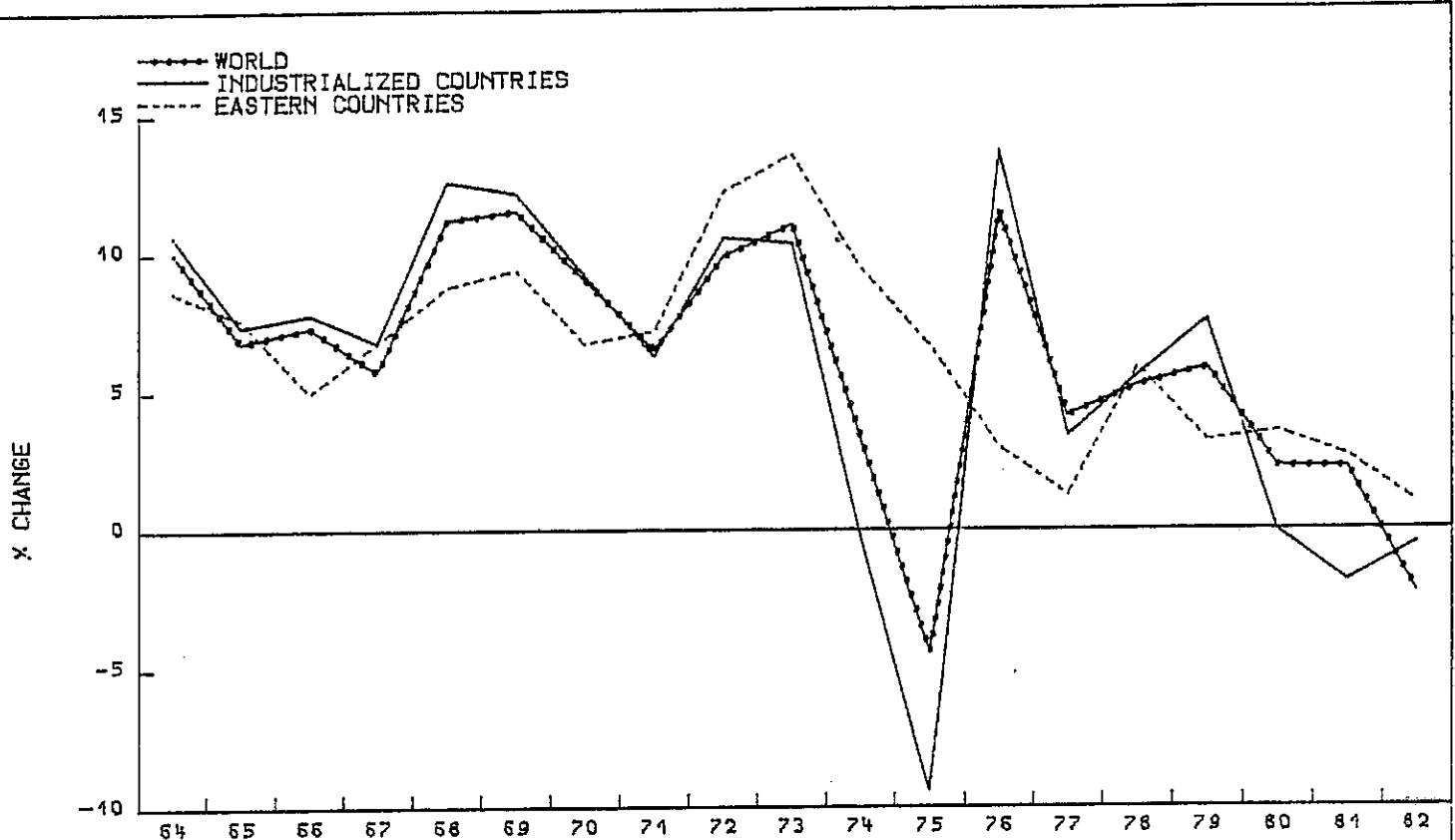
-The explosion of the effective credit costs for developing countries since 1979 (see figure 16).

The non-oil developing countries continued to stimulate international trade and thus production abroad until the credit crunch of 1982 forced them to reduce import demand.

A comparison of the economic development in 1975 and that since 1979 suggests that only the first slow-down can be characterized as a typical recession (the following data concern the seven major industrial countries).⁶ In 1975, production growth dropped sharply (-0.7 percent) and unemployment increased to 5.5 percent. But then followed a strong and relatively long recovery. For four years, output grew by 4.4 percent on the average, and employment expanded even more strongly than in the 1960's (+2.2 percent per year), so that the unemployment rate dropped slightly to 5.0 percent in 1979 (in spite of the extraordinary growth of the labour force). The nature of the slow-down since 1979 remains unclear because it shows a pattern never before experienced in the

Figure 1

LONG-TERM TRENDS IN REAL GROWTH OF WORLD TRADE
IMPORTS AT CONSTANT UNIT VALUES (1975 = 100)



post-war period. Output stagnated for more than three years (1980: +1.3 percent, 1981: +1.2 percent, 1982: -0.3 percent), and the rate of unemployment increased continuously up to 8.1 percent in 1982.

The changes in the structure of final demand might give some hints for a better understanding:

	1977	1978	1979	1980	1981	1982
Consumer expenditure	3.7	4.0	3.5	1.0	0.9	1.1
Government expenditure	2.0	3.2	2.3	2.3	1.9	1.6
Gross fixed investment	6.3	5.7	4.0	-1.2	-0.1	-3.3
Final domestic demand	3.6	4.1	3.4	0.9	0.9	0.3

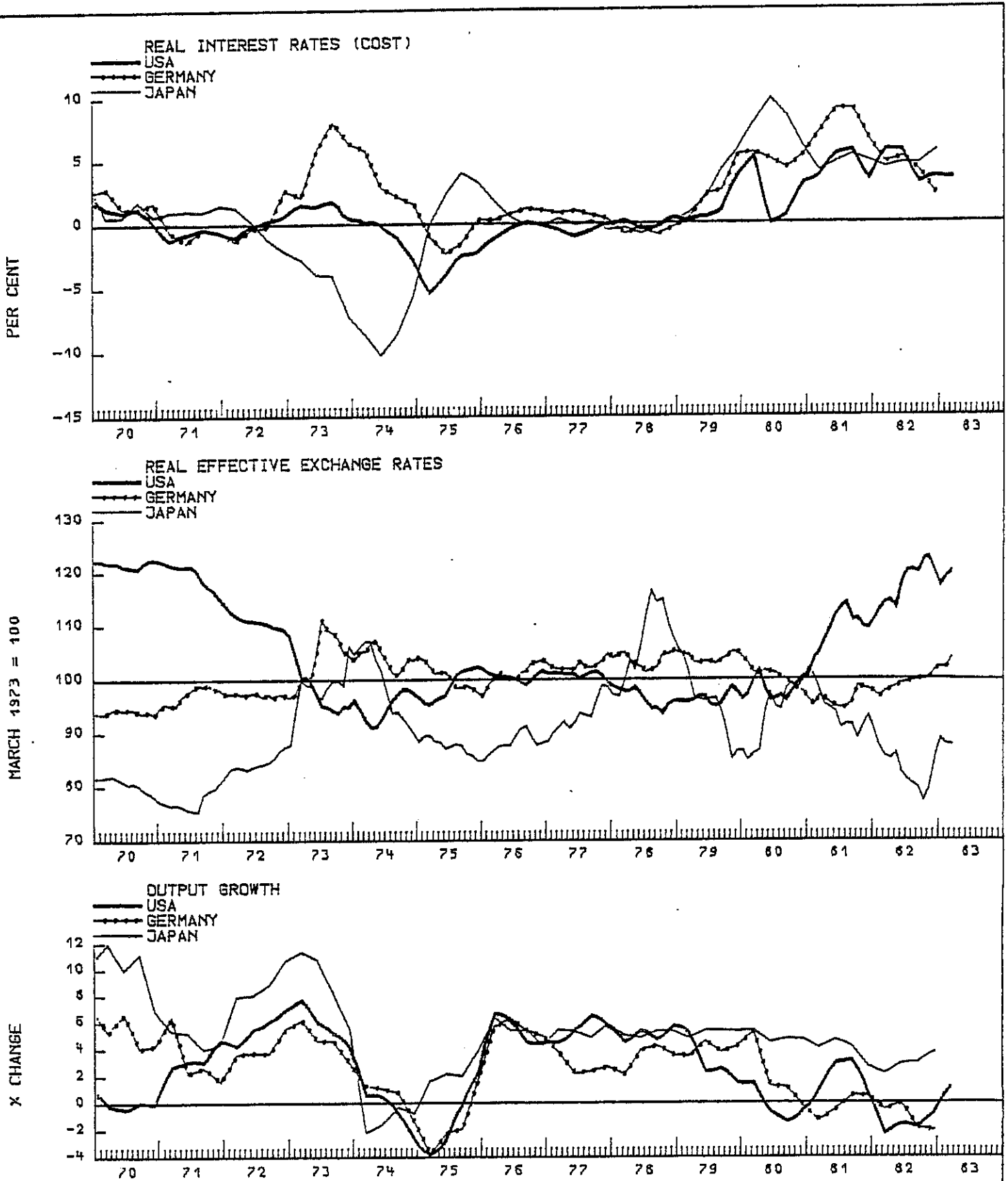
The data suggest that the slow-down of the effective demand was mainly caused by the abrupt slump of investment; it has remained weak ever since.

Some Observations on the Interaction of the Real and the Financial World

The coincidence of the economic slow-downs in the 1970's with the two oil price shocks has suggested the latter as the main cause of the crises. Even though there can be little doubt that these events did exert an important influence on the world economy, it seems as if this factor has been widely overstated. First, the weight of oil production in world output was less than 2 percent in 1973 and still below 5 percent in 1979. Second, the causal relationships might be much more complex, as has been seen in the influence of the dollar exchange rate on the price of oil. Third, only the industrial countries seem to have been heavily affected by the first price increase, whereas the non-oil developing countries have even been able to accelerate economic growth in the following 5 years. Finally, any interpretation which has an interest in finding some external scapegoat has generally to be reviewed with particular care. This raises the further question to what extent

Figure 2

REAL INTEREST RATES, REAL EXCHANGE RATES AND OUTPUT GROWTH



the standard interpretation of the oil price shocks has diverted attention from other, possibly more important, factors. This concerns primarily the international financial instability as represented by the fluctuations of exchange rates and interest rates of the most important currencies.

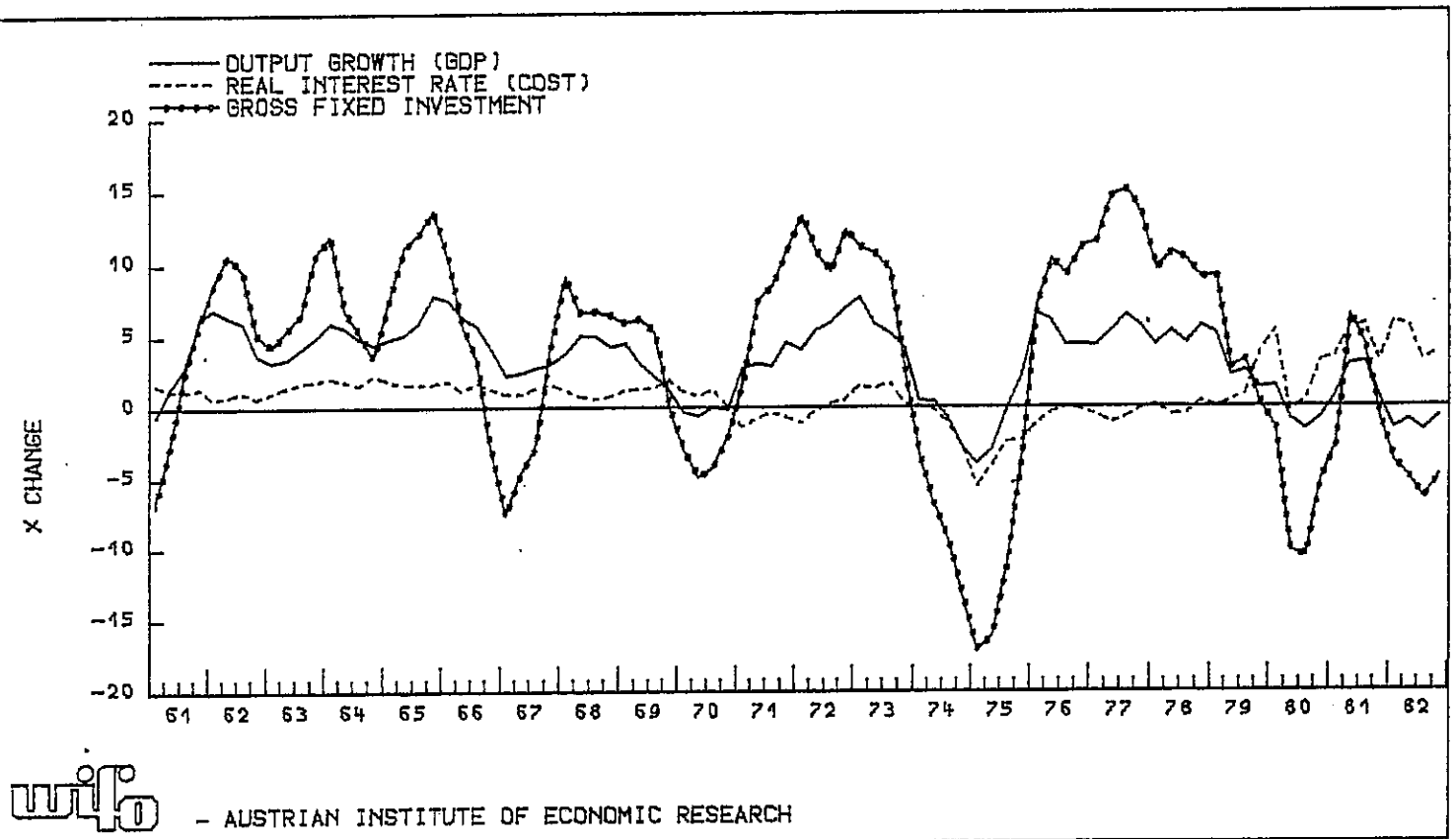
Figure 2 shows that the period of high economic growth coincided with a phase of relative stability in the international financial markets (1976 to 1978). Increasing differentials in the real interest rates had previously induced turmoil in the markets for foreign exchange, and consequently the definite break-down of "Bretton Woods" in March 1973. The period from 1979 on is characterized by increasing turbulences in the world financial system: the level of real interest rates increased strongly and the discrepancies in real exchange rates widened extensively.7)

Our next step will therefore be to collect some observations on the different roles of the interest rate in a decentralized market economy with capital accumulation:

- Cost of financing current excess demand. This concerns primarily the interaction between the interest rate, investment and output growth and the related flow-disequilibria.
- Cost of financing the accumulation of past excess demand. This concerns primarily the interaction between the interest rate and the potential demand for goods and services of structural debtors like entrepreneurs, governments, or developing countries. The restriction of effective demand by interest payments might then cause a sequence of flow- and stock-disequilibria.
- The interest rate as determinant of the distribution of overall profits between entrepreneurs (real asset holder) and rentiers (financial asset holder) and the respective implications for effective demand and economic growth.

Figure 3

INVESTMENT, INTEREST RATE AND OUTPUT GROWTH
U S A



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The Rate of Interest, Investment and Output Growth

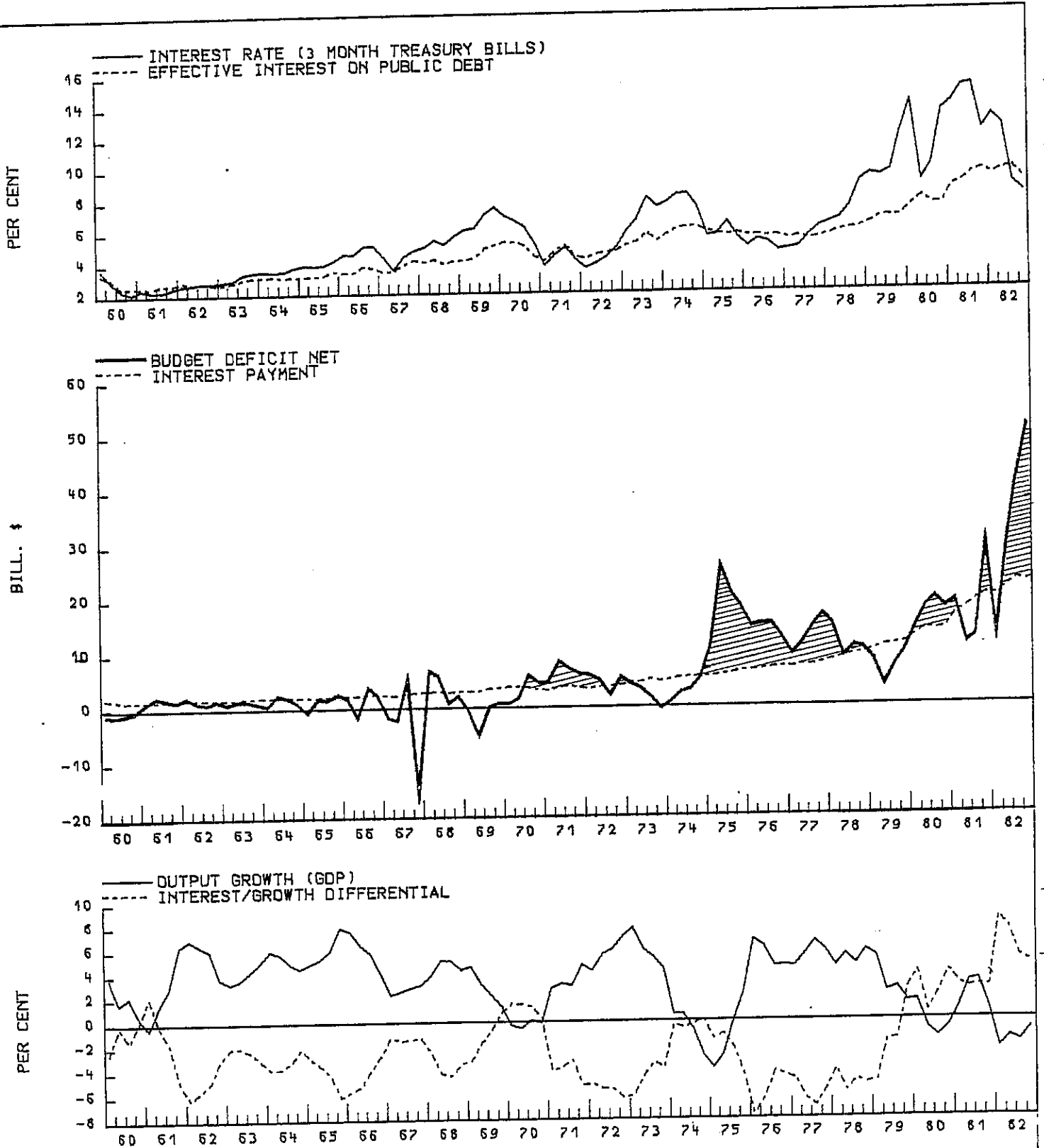
Looking at figure 3, one is reminded almost involuntarily of Keynes ("The theory can be summed up by saying that given the psychology of the public, the level of output and employment as a whole depends upon the amount of investment." - Keynes (1937), p.221). It seems that a stable and low interest level is a necessary but not sufficient condition for investment dynamics. Once the expectations deteriorate strongly, as was the case at the end of 1973 and in mid 1979,8) even a fall in the interest level cannot prevent a slump in investment demand.9) But a comparison of the recessions 1970 and 1974/75 with the economic slow-down since 1979 suggests that a fall in the interest rate is a prerequisite for a pick-up of investment and thus a general recovery.

The Rate of Interest, Debt Financing and Effective Demand

The first diagram of figure 4 shows that the nominal rate of interest has increased almost continuously in the long-run, starting from a level of less than 3 percent in the early 1960's. Therefore, the market rate which is relevant for roll-over credits usually exceeds the effective interest on debts which consist of different loans, each of them at a fixed rate.10)

The second diagram shows that the widening of the budget deficit increased effective demand for goods and services in the recessions of 1970 and 1974/75 (with a lag of approximately one year from the drop of economic growth). Corresponding to the dimension of the recession, this impulse was particularly strong in 1975, so that private demand picks up again by the end of the year. This enabled a stepwise reduction of the deficit down to 27.9 bill. \$ in 1979.) In 1980, by contrast, the widening of the deficit hardly stimulated the economy as the following data show (in bill. \$, otherwise indicated):

INTEREST RATE, PUBLIC FINANCE AND EFFECTIVE DEMAND
US FEDERAL GOVERNMENT



	1974	1975	1976	1979	1980	1981	1982
Output growth in %	-0.7	-0.7	4.9	2.4	-0.3	2.3	-1.7
Budget deficit	10.9	75.4	56.6	27.9	68.7	72.6	130.7
Interest payments	20.7	23.1	26.8	42.4	53.1	71.9	84.8
Effective excess demand	-9.8	+52.3	+29.8	-14.5	+15.6	+0.7	+45.9
		+82.1			+16.3		

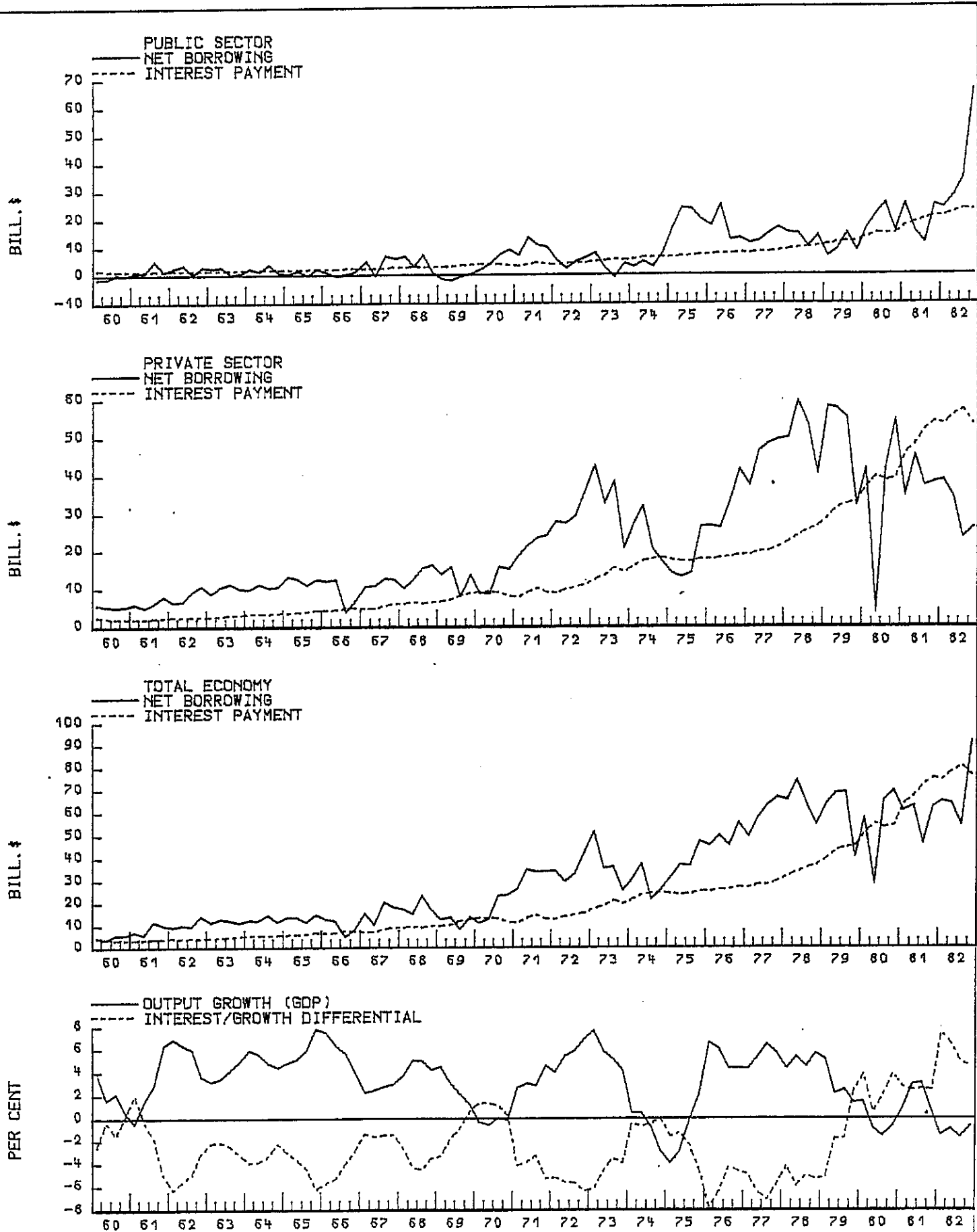
The additional demand for goods and services in 1980 (+15.6 bill. \$) is negligible compared to the strong impulse in 1975 (+52.3 bill. \$), particularly if one takes the changes in the price level into account. In 1981, interest payments had already absorbed the whole deficit. The impulse in 1982 came rather late, since the expectations of entrepreneurs had already been extremely dampened by that time. Thus, the huge deficits of 1982 and 1983 had primarily stimulated consumer demand, whereas private investment remained sluggish. At the same time, the effective interest for the public debt still increases even if the market rate falls. In 1983, the government will have to pay almost 100 bill. \$ in interest. Since the propensity to effective demand of financial assets holders is comparatively low (rentiers are seldom entrepreneurs at the same time), this continuous redistribution necessarily dampens economic growth. If inflation remains low, public households will get into serious trouble with their debt services (we will discuss this implication of the Domar debt model later on). Therefore, further resources will be unavailable to increase effective demand. But such a stimulation might then be necessary to compensate for the dampening effects caused by exactly this continuous redistribution in favour of the rentiers.

Figure 5 demonstrates these relationships for the total economy.¹¹⁾ Whenever net borrowing significantly exceeds the interest payments for the outstanding debt, aggregate demand (output) grows. Otherwise, no funds are available to increase excessive demand, and economic growth slumps. The chart also shows the relation of private to public borrowing.¹²⁾

Figure 5

INTEREST RATE, NET BORROWING AND OUTPUT GROWTH

U S A



Usually a drop in private demand is partly compensated by additional public borrowing, which reflects the expansionary impulses of fiscal policy (with some time lag). This interaction is particularly significant in the period between 1974 and 1978.¹³⁾ Since 1980, the total interest payments increasingly exceed net borrowing because the public sector no longer compensated for the weakness of private demand.¹⁴⁾

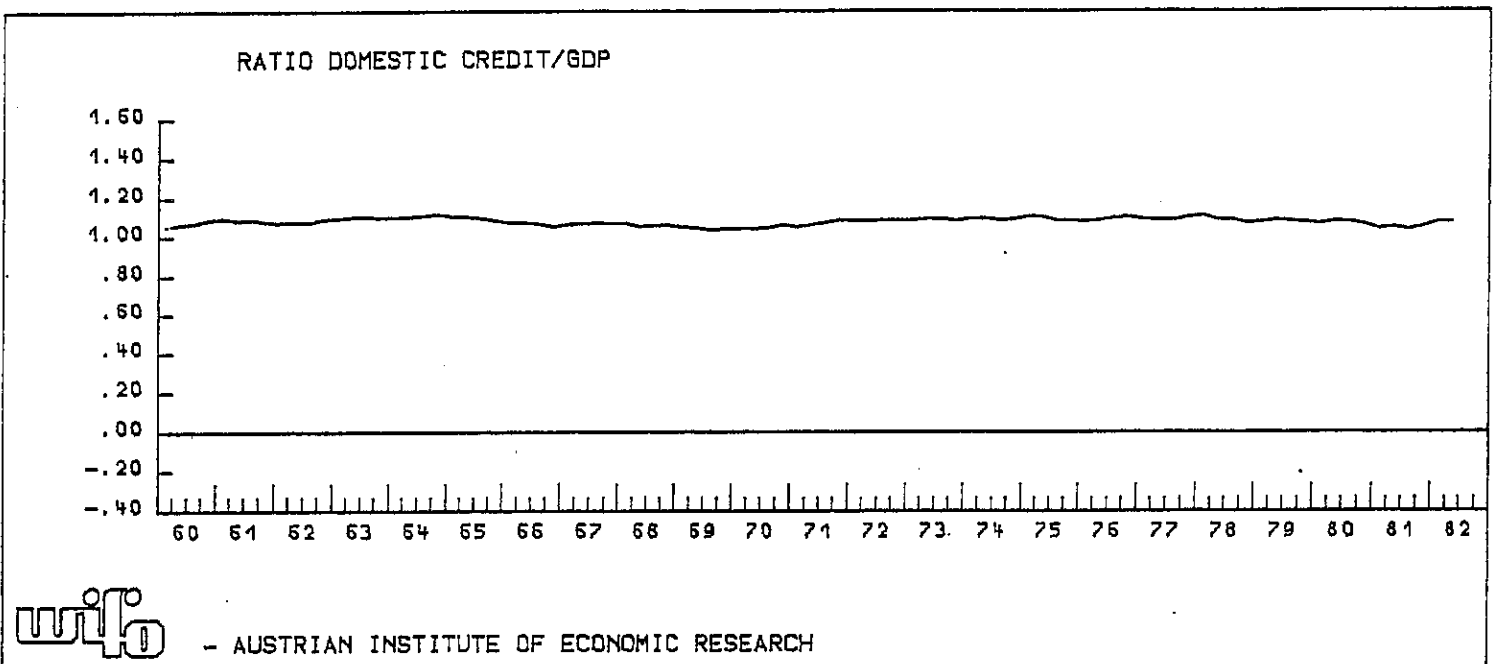
As long as net borrowing exceeds interest payments, the above data can be roughly interpreted as a reflection of the planned activities in the real world (especially at times of less importance of interest payments). Otherwise the relative slow-down in net borrowing, relative to interest payments, may be due either to the reduction of plans in the real world which are independent of the credit conditions or to restrictions exerted by the financial world. The latter is more probable if the interest rate increases at the same time, since this variable has already influenced the planning process for real world activities. In the extreme case, the borrowing reflects only the interest of the financial world, for example, when a debtor is illiquid and the creditor borrows the unpaid interest in order to avoid a default.

These considerations reflect basically two simple facts. Firstly, the financial world can only facilitate but never create additional activities in the real world, whereas it can restrict them.¹⁵⁾ Secondly, a strong and persistent restriction of the real world by tight credit conditions feeds back to the financial world including possible defaults (by taking advantage of the fear of this event, the real world can then restrict the financial one in some peculiar way).¹⁶⁾

Since net borrowing and output growth are closely related, it seems promising to examine the ratio between the level of output and the stock of domestic credit (figure 6). The stability of this "financial capital coefficient" is striking. It reflects the necessity of financial intermediation in an economy where the savings of the employees are of

Figure 6

FINANCIAL CAPITAL COEFFICIENT
U S A



great quantitative importance and where the profits of entrepreneurs cannot always be reinvested in the same enterprise due to the permanent process of structural change.17)

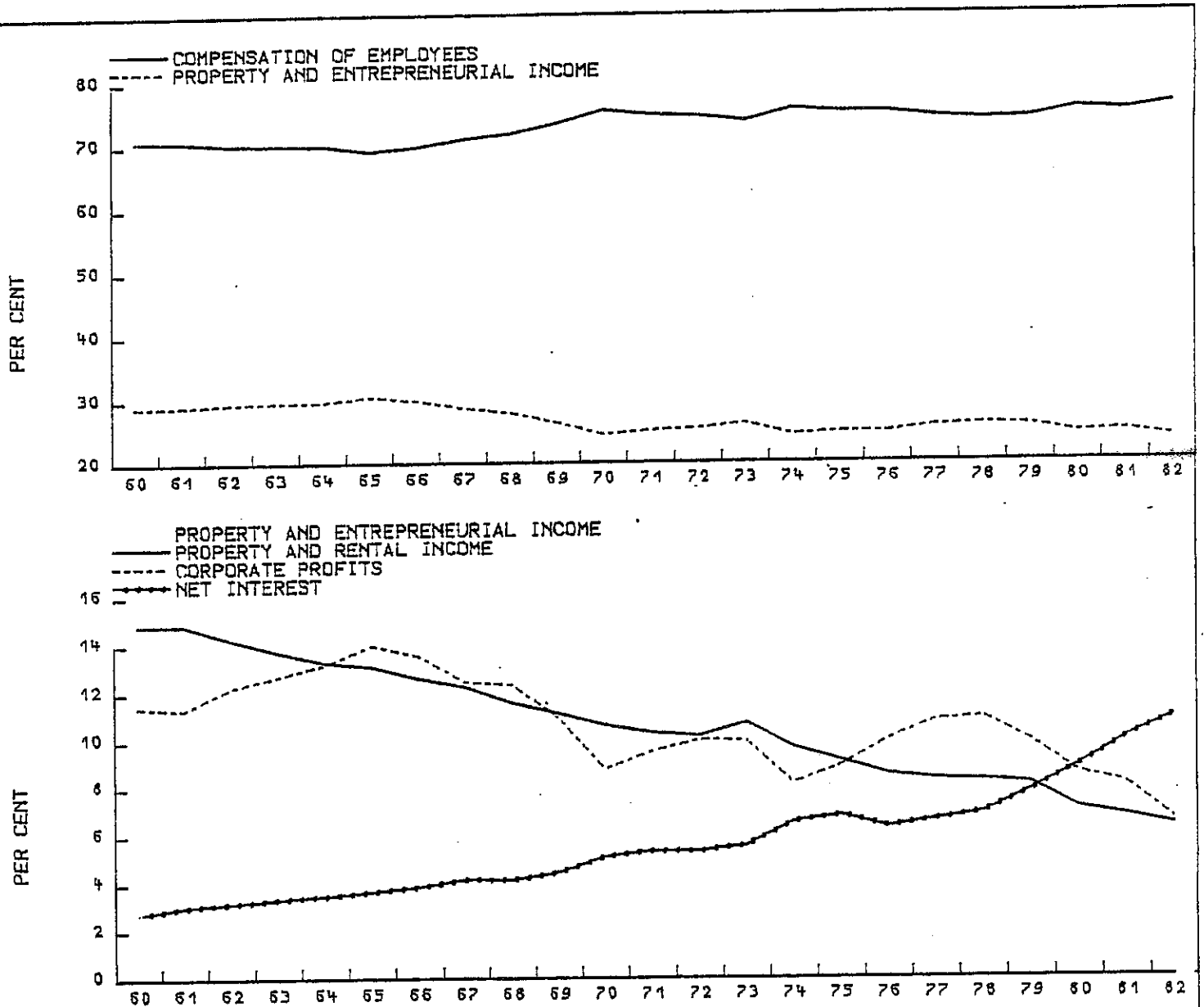
Whatever the reason for the quantitative stability of the financial capital coefficient, its consequences are clear-cut: any increase in output has to be accompanied/prefinanced by additional credits as a necessary condition which becomes sufficient if the net borrowing exceeds interest payments.

Figure 5 confirms indirectly that the propensity to effective demand out of rentier income (interest payments) lies far below average. Otherwise the fluctuations of overall net borrowing should match the changes in output better than the excess demand of the debtors (net borrowing minus interest payments). This is evidently not the case.

The last diagrams of figures 4 and 5 show that the difference between the rate of interest (cost) and the rate of growth has been generally negative in the past. When production slumped as in 1970 or 1974/75, the interest level also fell. The rate of growth exceeded the rate of interest, continuously favouring the entrepreneurs (striving for profits through the accumulation of real assets = investment) over the rentiers (striving for profits through the accumulation of financial assets = saving). This permanent stimulation of real world activities then feeds back to economic expansion, thus preserving a negative interest/growth-differential. This interpretation suggests that any "tilt" in the relation of interest rate and growth rate will cause an analogous cumulative process in the interaction of the real and the financial world, but in the opposite direction. The developments in the US since 1979 seem to confirm this hypothesis which we will discuss in greater detail later on.

Figure 7

DISTRIBUTION OF NATIONAL INCOME IN THE USA
INCOME SHARES



The Rate of Interest, Income Distribution and Effective Demand

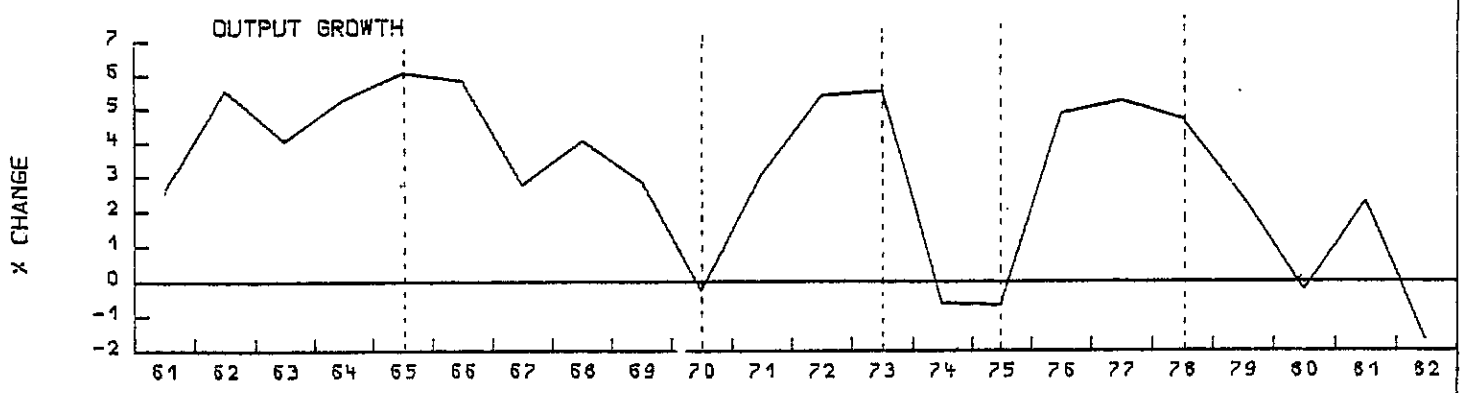
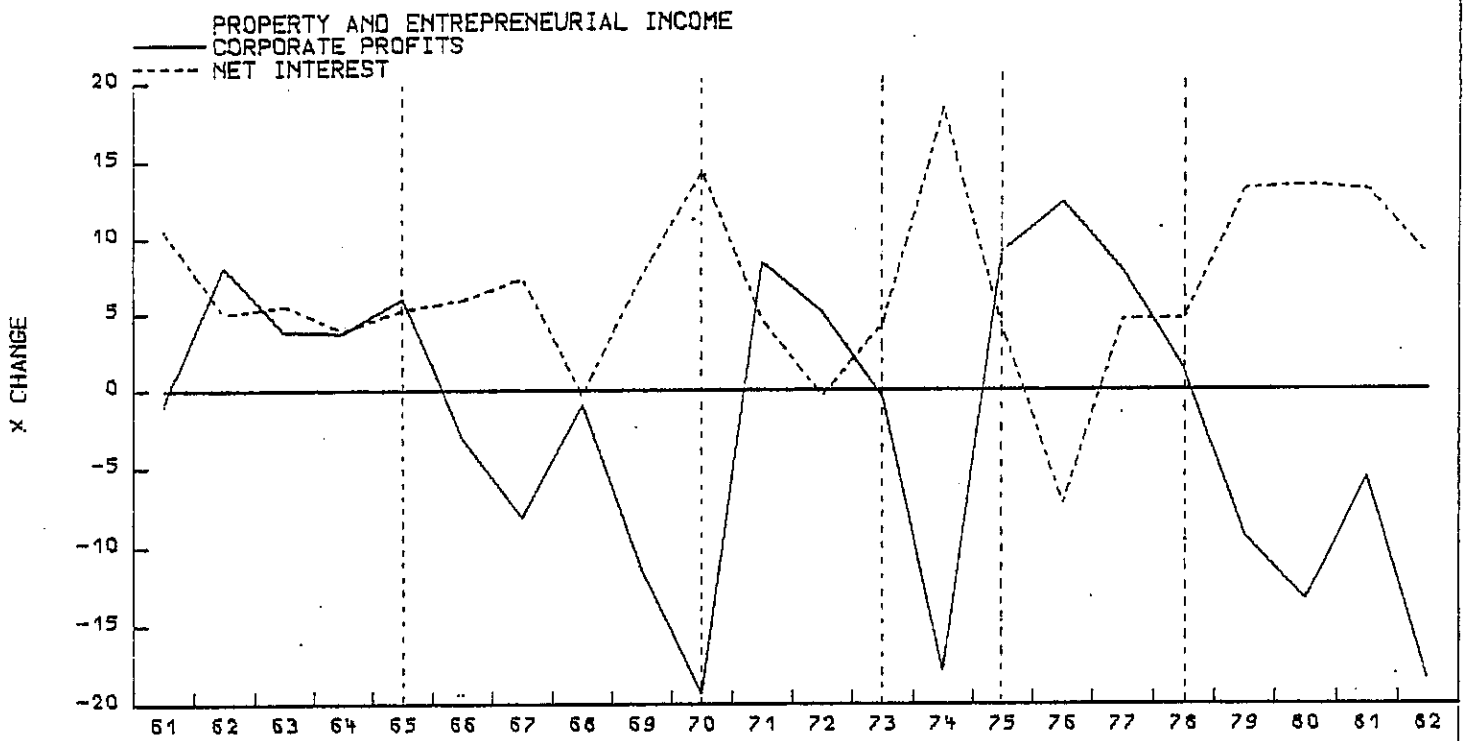
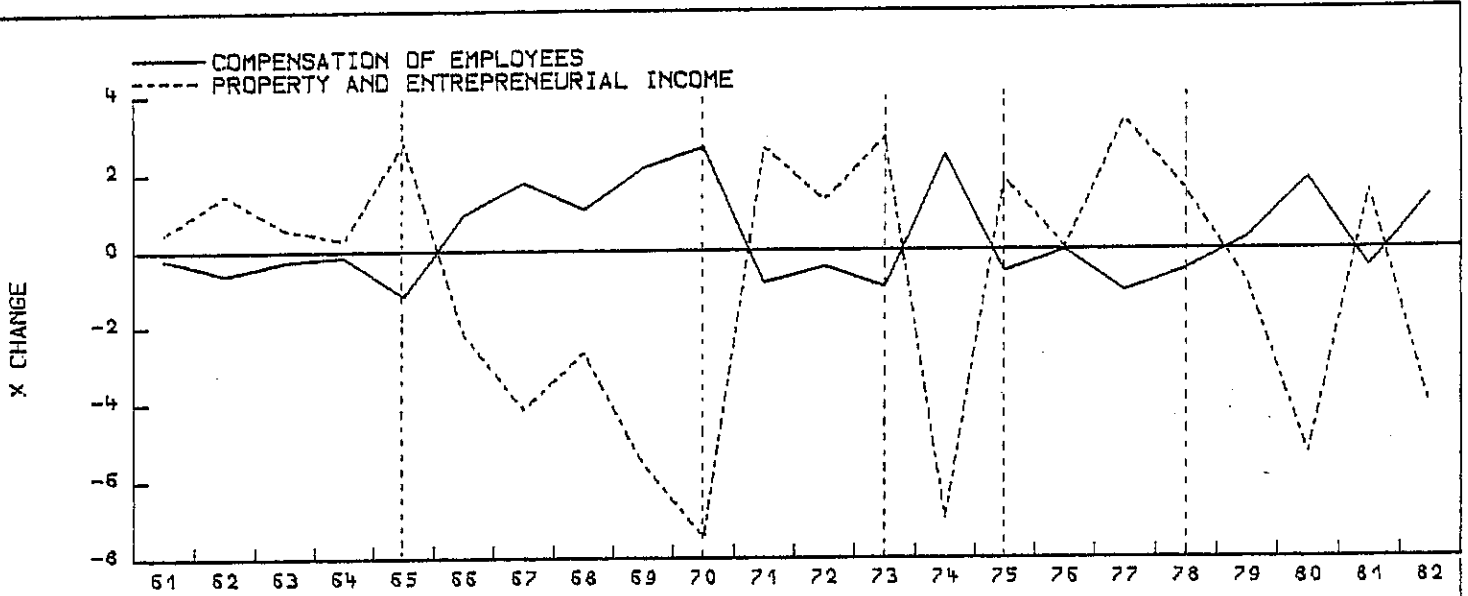
Figure 7 shows that the distribution between wages and overall profits has remained relatively stable in the long-run.¹⁸) But within the income of the self-employed, huge shifts have taken place. The share of property and rental income has fallen continuously. Since this is a rather inhomogeneous income category, we shall focus on corporate profits as typical entrepreneurial income and interest payments as typical rentier income. The latter has grown continuously from less than 3 percent to almost 11 percent. Both this development and the level of the share of interest income are similar to that of the effective interest rate itself (see figure 4), since the financial capital coefficient is almost constant and close to one.

Figure 8 provides some empirical evidence about the fluctuations of the income shares in the business cycle. A comparison of the first and the third diagram confirms the conventional wisdom: whenever economic growth picks up, overall profits increase above average (1961 to 1965, 1970 to 1973, 1975 to 1978), and whenever economic growth slumps, wages catch up (1965 to 1970, 1973 to 1975, 1978 to 1982). The second diagram shows an important fact: whenever the share of overall profits falls, the interest income grows at an above average rate, so that corporate profits are all the more depressed. The main reason is the simple fact that interest is a cost factor for the real world and an income component for the financial world. To demonstrate this relation for the recent past, between 1978 and 1982 the interest income surged by 118.0 percent, whereas total corporate profits fell by 16.2 percent - at the same time, the interest costs of the non-financial corporations increased by 96.5 percent.

These observations confirm the hypothesis about the cumulative downward process, once the conditions in the financial markets tilt so that the interest rate exceeds the growth rate for some time. Then the income redistribution in favour of the rentiers induces a substitution of

Figure 8

DISTRIBUTION OF NATIONAL INCOME IN THE USA
 CHANGES OF INCOME SHARES AGAINST PREVIOUS YEAR



financial accumulation for real accumulation (planned saving exceeds planned investment). Such a shift reduces economic growth inevitably, so that the interest/growth-differential widens further. If there is no strong expansionary impulse (the later it comes the stronger it must be), all profits hoped for by those who shifted from real to financial activities remain figures in the computer - the real assets necessary to finally satisfy the financial claims will not have been produced.19)

The Rate of Interest, International Debt Financing and World Trade

The interaction between the rate of interest, debt financing and effective demand has increasingly determined also the real and financial relations of the world economy. This can be demonstrated best by the example of the non-oil developing countries (all data in bill. \$):20)

	1977	1978	1979	1980	1981	1982	1983
							(forecast)
Current account deficit	28.9	41.3	61.0	89.0	107.7	86.8	67.8
Interest payments	13.6	19.4	28.0	40.4	55.1	59.2	55.1
Effective excess demand	15.3	21.9	33.0	48.6	52.6	27.6	12.7
Net borrowing	27.0	40.8	49.7	69.3	81.8	54.6	50.8
Oil payments	18.4	18.6	25.2	38.7	37.3	30.0	25.1
Interest and oil payments	32.0	38.0	53.2	79.1	92.4	89.2	80.2

Between 1977 and 1981 developing countries increased excess import demand from 15.3 bill. \$ to 52.6 bill. \$. In the same period interest payments quadrupled to 55.1 bill. \$ so that the current account deficit necessarily widened from 28.9 bill. \$ to 107.7 bill. \$. When prices and real demand for their exports also fell, these countries got into trouble with their debt service. This induced the financial sector in industrial countries to reduce lending drastically: it fell to a level below the owed interest, which meant a net outflow of private funds. This forced the non-oil developing countries to reduce their import

demand, which hit the real sector in the industrial countries hardest. In 1982, their deficit in non-oil trade fell by 21.1 bill. \$, which contributed most to the drop of the respective surplus of the industrial countries by 35.0 bill. \$. Thus the financial world in the industrial countries not only restricts production directly, but also indirectly through the interdependencies of international trade.

There is still another rentier which absorbs a great part of the earnings of developing countries, the OPEC.²¹) The above data show that the oil account represents a major source of their overall deficit. Nevertheless, the interest payments have increasingly exceeded the cost for oil imports since 1978. In 1982, the interest payments amounted to 59.2 bill. \$ compared to the 30.0 bill. \$ of the oil bill. There remains a second difference between these two types of rentiers: whenever OPEC increased its earnings (mainly from oil exports but also from interest payments), it also increased demand for the products of the other developing countries. The opposite is true when the industrial countries increase their interest earnings: only the financial sector flourishes while the real sector is depressed.

One final interesting fact is that each year, the sum of the interest payments to the modern rentiers and of the oil payments to the classical rentiers has almost completely absorbed the whole deficit of the non-oil developing country.

Some First Generalizations

A Simple Accounting System for the Economy

In order to draw some general conclusions from these observations, it is necessary to modify the traditional classification system of economic activities. This should enable us to describe in a general way the

relations between real and financial flows and stocks. One way would be to complete the System of National Accounts by stock accounts following the basic concept of general accounting.

Two types of sectors are distinguished:

- Productive sector (entrepreneurs)
- Consumptive sector (households)

Two types of households are distinguished:

- Private households
- Public households

In the case of the latter, all government expenditures are treated as consumption. The reason is that the public capital stock usually serves as a public good, and thus yields no profit. If one tries to elaborate on the stock/flow relations, one has to take into account this particularity. The above assumption (convention) is admittedly the simplest way.

Four forms of participation in the production process are distinguished:

- Employees earn wages, net (after taxes): W
- Entrepreneurs (industrialists) earn entrepreneurial income, net: EI
- Rentiers earn interest payments, net: IP
- Entrepreneurial and interest income constitute overall profits P (income of the self-employed)
- The government earns tax "income": T (aggregate of direct and indirect taxes).

Investment is accounted net (gross investment minus depreciation).

Earnings from abroad consist of two flows:

-Exports, net (X - M)

-Factor income from abroad: FI (it also represents the difference between net domestic product and national income). For simplicity, it is assumed that this flow consists only of interest payments for foreign assets (FA) (where the latter are negative in the case of a debtor country). The aggregate of both flows constitutes the current account balance (CA) and thus the change in foreign assets (dFA).

The stock of productive capital = real assets (K) is financed by equity (E) or financial liabilities (F) which represent financial assets for the rentiers, counterbalanced by equity of the respective households (EH).

The flow accounts represent a simplified, and in some respect slightly modified, version of accounts 1, 3 and 5 of the consolidated accounts for the nation (UN (1968), p.152f).

The accounting system can be presented as follows:

Flow Accounts

Production and Expenditure

(Consolidated income statement of the productive sector)

W (wage bill, net)	G (government consumption)
EI (entrepreneurial income, net)	C (private consumption)
IP (interest payment, net)	I (net investment)
T (taxes)	X-M (net exports)
<hr/>	
Y (net domestic product)	Y (expenditure on net domestic product)

National Income and its Appropriation

(Consolidated income statement of the household sector)

G (government consumption)	W (wage bill, net)
C (private consumption)	EI (entrepreneurial income, net)
S (saving)	IP (interest payment, net)
	T (taxes)
	FI (factor income from the rest of the world)
<hr/>	
NI (appropriation of national income)	NI (national income)

Capital Finance

I (net investment)	S (saving)
X-M (net exports)	
FI (factor income from the rest of the world)	
<hr/>	
Net accumulation	Net accumulation

Stock Accounts

Real and Financial Wealth

(Consolidated balance sheet of the productive sector)

K (capital stock = real assets)	E (equities)
	F (financial liabilities)
FA (foreign assets)	FA (foreign assets)
<hr/>	<hr/>
K+FA (real wealth and foreign assets)	E+F+FA (financial assets)

Financial Wealth of Households

(Consolidated balance sheet of the household sector)

F (financial assets)	EH (equities)
----------------------	---------------

Like the SNA, these accounts classify the different sectors/actors by type of economic activity, rather than by institutional criteria. Households, for example, never invest but appropriate their income for only two purposes, consumption and saving (if an institutional unit "household" invests, it acts as an entrepreneur by definition), whereas an entrepreneur never saves (if he does so he acts as a household).²² This classification is also crucial for an understanding of the terms "entrepreneur" and "rentier" as used in this essay.

Entrepreneurs and rentiers cannot be identified as certain individuals or social groups but are distinguished by their kind of participation in the production process. This implies that one can be an entrepreneur and a rentier (and also employee) at the same time, and that changes in the relative importance of these different roles are crucial for a macroeconomic analysis. If, for example, a multinational corporation shifts its activity from investment in the real world to "investment" in the financial world (which actually represents saving), induced by high

interest compared to the prospects for economic growth, then the institutional unit "corporation" acts more and more as rentier and less and less as entrepreneur. This inevitably reduces effective demand, production and employment. The same is true if the institutional unit "household" reduces the accumulation of real assets (acquisition of durables) and increases saving.²³⁾

This simple accounting system enables us to represent the above observations on the interaction of the real and the financial world in a more general way. The relations between the type of property as stocks and the corresponding income as flows are represented by three rates (for simplicity, we assume that all credits are continuously rolled over):

- $p = P/K = P/(E+F)$ rate of profit
- $i = IP/F$ rate of return on financial assets =
rate of interest
- $r = EI/E$ rate of return on real assets

The most important relationships are summarized in appendix B. They are all in principle accounting identities, but most of them seem to be crucial even in the planning process of economic activities (for example, the profit distribution for the decision to invest or save, the indebtedness for the willingness to borrow or lend, etc.). In some cases, the causal directions seem rather unambiguous. It is usually suggested, for example, that the rentier income is a dependent variable of the current rate of interest and the amount of financial assets:²⁴⁾

$$IP = i F$$

But given the overall profits and the rate of interest, the income of entrepreneurs has to be interpreted as the remainder:

$$EI = P - IP$$

so that the rate of return on real assets is best represented as

$$r = EI/E$$

It should be easy to identify those relationships which correspond to the above observations (see appendix B).

The following section will discuss some relationships between the rate of interest, the rate of profit and the rate of economic growth and thus the interaction between the real and the financial world.

The Rate of Interest, the Rate of Profit, Investment and the Rate of Growth

First, a basic relation:

$$\begin{aligned} I &= S - (X + FI - M) \\ &= s_e W + s_s P - (G - T) - (X + FI - M) \end{aligned} \quad (1)$$

Then, after some rearrangement:

$$P = (1/s_s) \left[I - s_e W + (G - T) + (X + FI - M) \right] \quad (2)$$

We can now distinguish three cases (case 1 and 2 refer to a closed economy without government):

-Classical case (case 1):	$s_e = 0$
	$s_s = 1$
	$P = I$

-Kalecki's simplified model (case 2): $s_e = 0$
 $s_s > 0$
 $P = (1/s_s) I$

In this case the employees spend what they earn and the self-employed earn what they spend - Kalecki (1954b)

-The general case: $s_e > 0$
 $s_s > 0$

Two sub-cases can still be distinguished:

-Case 3: $(G - T) = (X + FI - M)$

This case does not seem unrealistic, since an increase in excess demand of public households often coincides with a deficit of the current account.²⁵ Moreover, the aggregate of $(G - T)$ and $(X + FI - M)$ is of little quantitative importance in the case of large economies (in the US it amounted to less than 1 percent of gross output in the last 10 years, with the exception of 1975).

Now (2) becomes

$$P = (1/s_s) [I - s_e W] \quad (3)$$

The saving of the employees (=demand deficit) will necessarily dampen overall profits, if not compensated by additional investment (=demand surplus).

-Case 4: $(G - T) \neq (X + FI - M)$

The higher the public excess demand and the current account surplus, the higher are ceteris paribus overall profits.

One fact has to be particularly stressed in this context: $(G - T)$ does not represent the budget deficit (BD) which is defined as

$$BD = G + iD - T$$

where D is the public debt. The higher the absorption of interest payments to the rentiers, the less remains for the stabilization of output growth and overall profits.26)

We now try to express the relation between the rate of profit, the rate of growth and income distribution. From (2) we get

$$P/K = p = (1/s_s) \left[I/K - s_e W/K + (G - T)/K + (X + FI - M)/K \right] \quad (4)$$

We assume that $K/Y = v = \text{const.}$ so that

$$I/K = dK/K = dY/Y = g \dots\dots\dots \text{rate of growth.}$$

After some rearrangements where we substitute $p(W/P)$ for W/K and $(1/Y)(1/v)$ for $1/K$ we get

$$p = \left[g + (1/v) \left\{ (G - T)/Y + (X + FI - M)/Y \right\} \right] / \left[s_s + s_e W/P \right] \quad (5)$$

-Case 1: $p = g$ (in the case of neoclassical theory we would have $p = g = i$)

-Case 2: $p = g/s_s$

-Case 3: $p = g/(s_s + s_e W/P)$ (6)

Thus, under the sufficiently realistic assumption that the aggregate of $(G - T)$ and $(X + FI - M)$ is quantitatively negligible, the rate of profit will deviate from the rate of growth by a certain factor. This factor is positively related to the propensity to consume of both employees and self-employed and is negatively related to the share of wages in total income.27)

-In the general case 4, the rate of profit also correlates positively with the share of government excess demand and the share of the current account surplus in overall output.

The relation between the rate of profit and its components is defined as

$$p = r(E/K) + i(F/K) \quad (7)$$

Thus, we get an expression of the rate of return for entrepreneurs

$$r = p(K/E) - i(F/E) \quad (8)$$

For simplicity, we assume the conditions of case 3. Then we get

$$r = \left[\frac{g}{s_s + s_e W/P} \right] (K/E) - i(F/E) \quad (9)$$

Thus, the profit rate of entrepreneurs is positively related to the rate of growth and the propensity to consume and negatively to the income absorbed by the employees and rentiers.

So far, some identities have just been manipulated. To get an impression about possible causalities we concentrate on g , r and i , since these variables seem to fluctuate much more in reality than the other arguments of (9), which are therefore assumed to be stable. I will express the possible causalities only in a qualitative manner in order to avoid any impression of mechanical exactness.

$$r = f(+g, -i) \quad (10)$$

Such a relation seems plausible, at least insofar as entrepreneurs are price takers with respect to i (given the degree of indebtedness F/K).28)

It is furthermore supported by the observation that the interest/growth-differential was generally low (even negative) until 1979. Its development can therefore be interpreted as reflecting the changes in the profit rate for entrepreneurs. A high profit rate induces investment and thus ensures economic growth, preserves a high interest/growth-differential and thereby stimulates further expansion. This feed-back mechanism can be represented as follows:

$$r = f(+g, -i) \quad (11)$$

$$I = f(+r) \quad (12)$$

$$g = f(+I) \quad (13)$$

The general considerations about the interest/growth-differential show that the first interpretation of the empirical observations was somewhat misleading, i.e., a negative differential is a necessary condition for investment and growth. There is no absolute level of the interest/growth-differential which can be pointed out as a necessary or sufficient condition for economic expansion. But any change in this relation indicates a change in the relative attractiveness of real or financial accumulation, which can potentially trigger a tilt in the upward or downward feed-back process.²⁹⁾

Later on it will be shown that there are actual reasons why the economy cannot be characterized by a positive interest/growth-differential for a longer period of time. But this is derived from stock/flow relations of debt financing rather than from flow relations between investment and output.

A more realistic analysis must also take into account expectations, uncertainty (the state of confidence = conf) and the importance of credit rationing (on the supply and demand side) for investment financing (approximated by the degree of indebtedness and the share of profits in income distribution):³⁰⁾

$$I = f \left[\overline{+(e)g, -(e)i}, (F/K, EI/Y), (\text{conf}) \right] \quad (14)$$

Entrepreneurs do not know about the future rate of interest with certainty. This greatly increases the uncertainty of any investment decision and thus depresses the willingness to invest (increases the risk/illiquidity premium). This dampening effect has widened in the last 15 years since more and more credits have been rolled over. Before that time, an entrepreneur could at least be confident in the financing conditions of each investment project. But nowadays, there is no reason to conclude that a fall in the current rate of interest reduces the financing cost of investment. This might have contributed to the sluggishness of demand in the early 1980's, since entrepreneurs had recently experienced this ex post increase of investment costs (strongly sharpened by disinflation). This roll-over innovation (floating interest rates) hits long-term projects hardest and thus hampers particularly the process of real innovation and structural change. The relation between financial and real innovation seems therefore to confirm the general perception of the contradictory interaction of both worlds.³¹)

For simplicity, it is assumed that there is not credit rationing and that the confidence in the future is stable. Then we get

$$\begin{aligned} I &= f \left[\overline{+(e)r} \right] \\ &= f \left[\overline{+(e)g, -(e)i} \right] \end{aligned} \quad (15)$$

Since

$$g = f(+I)$$

it follows

$$g = f \left[+ (e)g, - (e)i \right] \quad (16)$$

Whenever the actors in the real world are "bullish" and investment financing is cheap and stable, production grows through the feed-back of investment, output and expectation formation;32)

whenever the actors of the financial world are "bullish", production declines through the same feed-back, now working in the opposite direction.

The Rate of Interest, the Distribution of Profits and Investment Financing

Now some basic relations between the rate of interest and investment financing of productive units like enterprises or debtor countries 33) will be demonstrated. Productive units use part of the total return on past investment (P) to pay interest (IP) and the remaining internal funds (EI) together with net borrowing (dF) to finance further investment. Given a certain degree of indebtedness, the distribution of total profits is determined by the configurations of p, r and i:

$$\begin{aligned} P &= EI + IP \\ &= rE + iF \end{aligned}$$

We shall now see how different configurations of p, r and i determine the conditions of investment financing:

	Configuration of profit rates	Funds for investment
Case 1:	$r > p > i > 0$	$dF + EI$
Case 2:	$r = p = i > 0$	$dF + EI, d(dF/EI) > 1$
Case 3:	$0 < r < p < i$	$dF + EI, d(dF/EI) > 1$

At the latest when configuration 3 is reached, entrepreneurs shift funds from real investment to financial "investment" (they themselves become rentiers). But debtor countries, with their need for modernization, continue real investment and net borrowing. As long as

$$p > (F/K)i \implies r > 0, EI > 0$$

some internal funds still remain (but they diminish the more the interest rate increases).

Case 4:	$r = 0 < p < i$	Funds for investment
	\implies	
	$EI = 0, P = IP$	dF

In this case, the interest payments have already absorbed the total profits.

Case 5:	$r < 0 < p < i$	Funds for investment
	\implies	
	$EI < 0, P < IP$	$dF - /EI/$

From now on, the process of net borrowing most probably becomes self-feeding, since the profitability of new projects (p') must to a significant degree exceed the average profit rate. The condition of avoidance of additional losses can be written as

$$p'(dF - /EI/) > idF \qquad p' > \left[\frac{dF}{(dF - /EI/)} \right] i$$

Case 6:	$r < 0 = p < i$	Funds for investment
	\implies	
	$EI < 0, P = 0, IP = dF$	0

This case reflects roughly the situation of non-oil developing countries nowadays: no additional funds are available, since the net borrowing just offsets the interest which can no longer be paid.

"Thus, indebtedness becomes a self-feeding process, which after a certain point cannot be reversed, but gains speed, like an avalanche, at a compound rate, since a large and growing part of the net borrowing is practically nothing else but the capitalization of interest payments which otherwise could not have been made. How far can this process go? In direct lending the process cannot go too far. ... But, when borrowing is effected through the international banking system, the process can go much further. Theoretically, it could go on indefinitely. In so far as the banks have the confidence of their depositors, they could go on indefinitely extending bogus credit to the debtor countries, so that these can appear to be honouring their interest payments. At the same time, the banks pay interest to their depositors by crediting their accounts. And the more the banking system is interconnected and integrated the longer this process can expand without complications, since no large need of actual cash is involved. Accounts may be shifting from bank to bank, but, for the international banking system considered as a whole, assets will always match liabilities: only, while bank assets are to an increasing extent only paper entries without any real backing, bank liabilities are, as long as the banking system is solvent, real spendable money. In practice, banking intermediation in medium and long-term borrowing creates money out of sham, non-existing assets."34)

Finally, it has to be emphasized that any "explosive" accumulation of debt is generally caused by the instability of the financial world, since real world variables never change so drastically. This is confirmed by the current debt crisis of the developing countries and its lenders, which was primarily caused by the surge of the dollar interest rate, the dollar exchange rate and the related effect of a dollar deflation in international trade.35)

The Rate of Interest, the Rate of Growth and Debt Financing

These relationships concern households which finance the excess of current expenditure over current receipts by continuous net borrowing (like the government or debtor countries, insofar as they use credits for consumptive purposes).³⁶⁾

Government finance is used as an example of these relationships.³⁷⁾

The budget deficit which has to be financed by net borrowing (D) is defined as follows (D denotes the stock of outstanding debt):

$$\dot{D}(t) = G(t) - T(t) + iD(t) \quad (17)$$

The share of taxes in national income is presumed to be constant in the long run:³⁸⁾

$$T(t) = T(o)\exp(gt) \quad (18)$$

The condition of debt financing is now analyzed under the assumption that the budget deficit is kept in a constant ratio (a) to tax revenues:

$$\dot{D}(t) = aT(t) \quad (19)$$

where a is the rate of dissaving of the government ($a = -s_g$). Solving the differential equation

$$\dot{D}(t) = aT(o)\exp(gt) \quad (20)$$

gives the time path of the debt

$$D(t) = aT(o)/g [\exp(gt) - 1] \quad (21)$$

Using (18) we get the time path of that part of tax revenues which has to be spent as interest payments:

$$iD(t)/T(t) = i a/g [1 - \exp(-gt)] \quad (22)$$

This share approaches the following expression:

$$\lim_{t \rightarrow \infty} iD(t)/T(t) = a i/g \quad (23)$$

Under this condition the share of interest payments in the budget deficit becomes

$$iD/\dot{D} = i/g \quad (24)$$

so that the share of excess demand ($G - T$) becomes

$$(G - T)/\dot{D} = 1 - i/g \quad (25)$$

It can therefore be concluded that:

- As long as $i < g$, budget deficits directly stimulate effective demand since $(G - T) > 0$.
- A tilt in the relation between the rate of interest and the rate of growth into $i > g$ has different consequences. The interest the government has to pay exceeds the budget deficit so that $(G - T) < 0$.
- Since the propensity to consumption of the rentiers is far less than that of the government ($s_g < 0 < s_r$), any persistently positive interest/growth-differential exerts a contractive influence on the economy.
- This effect is stronger, the higher the economic importance of the public sector in terms of flows (G/Y) and stocks (D/K).
- If the interest rate exceeds the growth rate, then the profit rate on real assets is not only directly depressed through equation (9), but

also through the channel described in equations (5) and (8): A negative (G -T) reduces overall profits and ceteris paribus also the profit rate for entrepreneurs (this can be seen if one substitutes (5) into (8)).

These relationships also serve to give a better understanding of the role of inflation in economic development. As tendencies towards a stagnation strengthen (for whatever reason), a basic but stable inflation is even more necessary to prevent a self-feeding contraction process caused by a tilt in the relation of interest and growth rate. One reason for this is that the nominal rate of interest is a price which becomes generally sticky at a certain margin: it cannot fall below zero which, in the case of deflation, would be necessary (whereas the real rate of interest actually can become negative as the empirical evidence shows).

I shall now discuss the case in which the government attempts to stabilize the economy by maintaining a positive excess demand (G -T) at a constant ratio (b) to tax revenues (thus it grows at the same rate as the total economy):

$$G(t) - T(t) = bT(t) \quad (26)$$

Then we get as limits of the share of interest payments and of the total deficit in tax revenues (for the derivation see Walther (1980)):

$$\lim_{t \rightarrow \infty} iD(t)/T(t) = ib/g-i \quad (27)$$

$$\lim_{t \rightarrow \infty} D(t)/T(t) = gb/g-i \quad (28)$$

Only if $g > i$ does the system of debt financing have stable limits; if $i > g$ it explodes, since the debt itself and therefore also the respective interest payments grow faster than production and income.

One can conclude from these relations that there are in principle only two possible reactions of fiscal policy, once the interest rate exceeds the growth rate for some time: the attempt to stabilize the budget deficit, leading to drops in effective demand, and further increases in the interest/growth-differential which feed back to the budget deficit, - or the attempt to stabilize effective demand ($G - T$), leading to an explosion of the public deficit.

All these relationships can be directly applied to analyze the financing problems of debtor countries if one substitutes X for T , M for G and the growth rate of export earnings for g . Once the latter exceeds the interest rate on foreign debt, again only the two possibilities remain: the debtor countries can try to keep the level of their effective demand, leading to a potential explosion of their debt (in the case of the LDC's this was their first reaction in 1981 and partly still in 1982), - or they try (or are forced) to stabilize the current account, leading to a decline in effective demand and consequently also in production in the industrial countries (this development started in the second half of 1982 - since 1981 the nominal rate of interest has exceeded the nominal export growth of non-oil developing countries by approximately 20 percent each year).

The Rate of Interest, Income Distribution and Effective Demand

The macroeconomic effects of any income redistribution depends on the propensity to effective demand of the favoured group. If one takes only consumption into account, aggregate demand is stimulated whenever the redistribution favours households with a high potential demand which is restricted due to the households' low purchasing power (low income, therefore no access to credits etc.). If the redistribution favours wealthy groups whose potential demand is low because they have much fewer unsatisfied needs, aggregate demand will be dampened.³⁹⁾

Applying these considerations to the functional income distribution, one may conclude that a redistribution in favour of the employees will stimulate effective demand, since their per capita income is much lower than that of the self-employed.

The relationship becomes more complex if one takes investment demand into account. If entrepreneurs are willing to invest due to optimistic expectations about the future growth and a reasonably low interest level, but their access to credits is hampered (high degree of indebtedness, credit crunches), then a redistribution to their favour will stimulate the economy (in such an extreme situation the combined propensity of entrepreneurs to consume and invest will be higher than the propensity to consume on the part of the employees).

Only one situation seems rather clear-cut: a redistribution in favour of the rentiers will certainly dampen effective demand, since an additional interest income is mainly reinvested in financial assets. There is a simple reason for this: being creditors, rentiers don't suffer from financial restrictions in their consumption decisions.

The differences in effective demand propensity between entrepreneurs and rentiers represent therefore the distribution channel through which the interest/growth-differential affects the economy (any increase in this relation favours the rentiers and thus dampens effective demand, as is particularly evident in the period since 1979).

A Brief Summary of the Theoretical Considerations

Any configuration between the nominal rate of growth (the real rate of growth and the rate of inflation⁴⁰), the rate of profit, the rate of interest and the rate of return on real assets is related to a certain distribution of income (given a certain distribution of wealth). Given

the state of confidence and the state of finance, the income distribution is linked to the structure and growth of effective demand, which feeds back to the rate of economic growth.

Given the consumption behaviour, the profit rate is the result of the distribution process (W/P) and the dynamic of economic growth (see equ.6). The determination of W/P cannot be explained exclusively on economic grounds. With respect to economic relations, the rate of inflation and the rate of interest are the most important strategic variables for the self-employed. For the employees, the degree of organization seems to be most important, since they lack any property on real or financial assets as a basis for economic power.

The distribution of profits operates from the interaction of two variables, the rate of inflation (strategic variable of the entrepreneurs) and the rate of interest (strategic variable of the rentiers), with the real rate of interest as the outcome (see equ.(9) and footnote (28)). A specific problem in this respect is the lack of an institutional framework for bargaining between entrepreneurs and rentiers (as, for example, in the case of wage agreements). This can easily lead to disproportionalities. The extremely low real interest rate of the 1970's can be interpreted as an overly strong redistribution to the disadvantage of the rentiers, which succeeded in provoking their "revenge" by the end of the decade. This type of hidden struggle over distribution represents an usually neglected factor in the escalation of inflation and interest rates.41)

The importance of these stock/flow relations has increased significantly since the quantitative shifts took place, due to changes in p , r and i depending on the size of the respective stocks.

The interest/growth-differential represents only one important relationship in the whole system of interdependencies between flows, stocks and the different intermediating "rates". It has been

particularly emphasized for two reasons. First, this relation covers both types of interdependencies, the flow relation between investment planning and effective demand, and the stock/flow relation between debt financing and effective demand. Second, it makes possible an empirical demonstration of this approach (reliable stock data and therefore profit rates are difficult to acquire).

The relation between the rate of growth and the rate of interest is seldom analyzed in recent economic studies. It is, however, discussed in an article by Fusfeld (1980) on the "impending financial collapse" which is interesting because it contains some qualitative forecasts which meanwhile proved to be accurate.⁴²) In a theoretical study, Weizsäcker (1979) has shown that any positive interest/growth-differential would inevitably lead to a financial collapse. He concludes in a somewhat Panglossian way that the rate of interest on international financial assets can therefore never exceed the rate of growth of world output (both calculated in the same currency). After a discussion of the role of exchange rates, I will examine this proposition empirically.

Some Empirical Evidence on the Interest/Growth-Differential

Figure 9 shows the development of interest rates and economic growth for the US. The strong increase in the real interest rate at the end of 1979, and again from mid 1980 on, coincided with the slump in economic growth. Since then the interest/growth-differential has remained far above the level which was usual, not only in the 1970's, but also in the 1960's (figure 10). In the long run this relation amounted to -2.8 percent (average 1960 to 1979), which reflects the risk/illiquidity premium demanded by entrepreneurs for the accumulation of real assets (investment). Since 1979 it amounted to +3.8 percent - a strong incentive to accumulate financial assets (saving).

Figure 10 and 11 confirm that the interest/growth-differential was significantly negative in all important countries up to 1979.

Figure 9

INTEREST RATE, INFLATION AND OUTPUT GROWTH
U S A

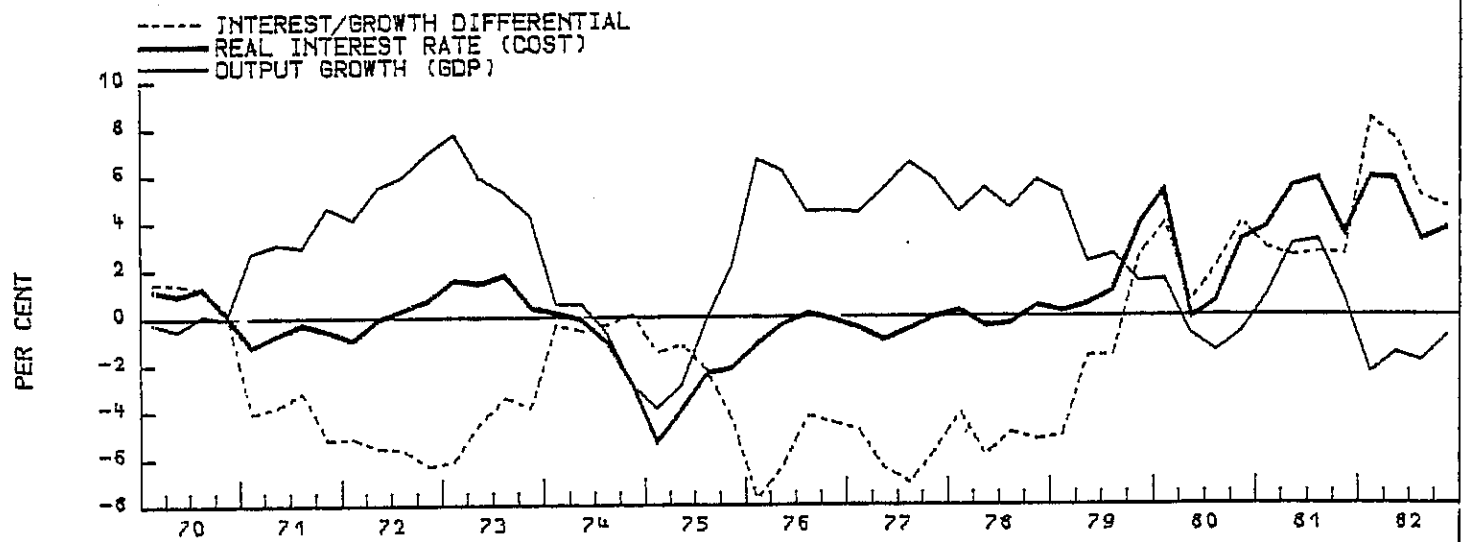
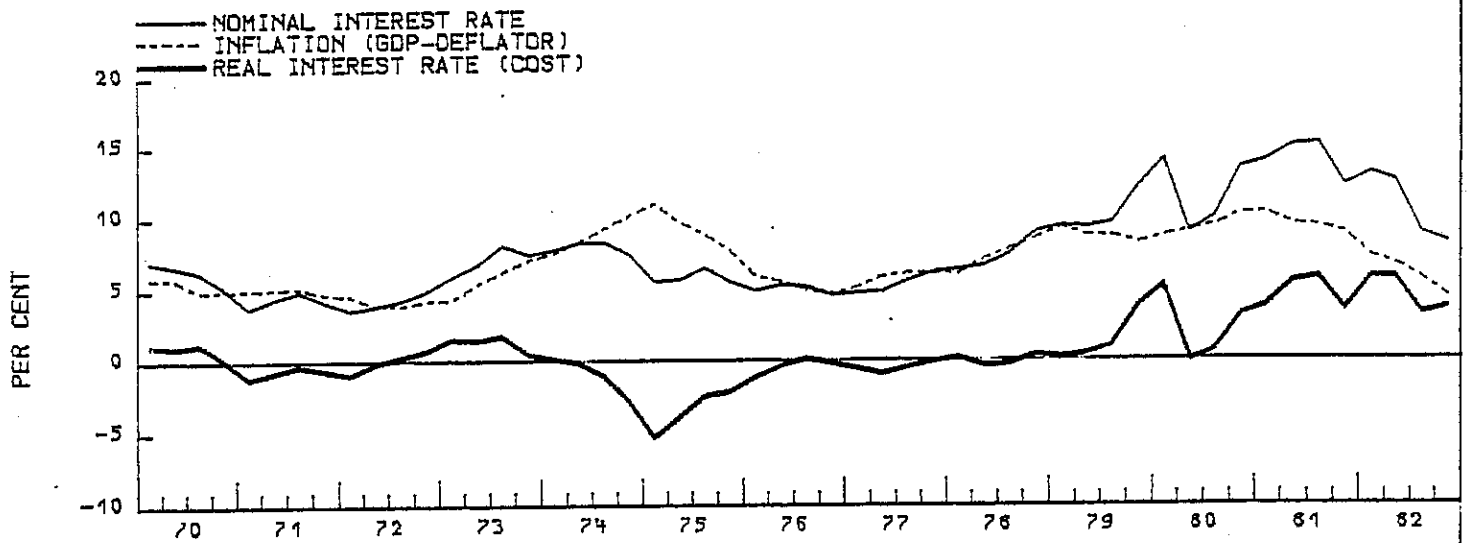
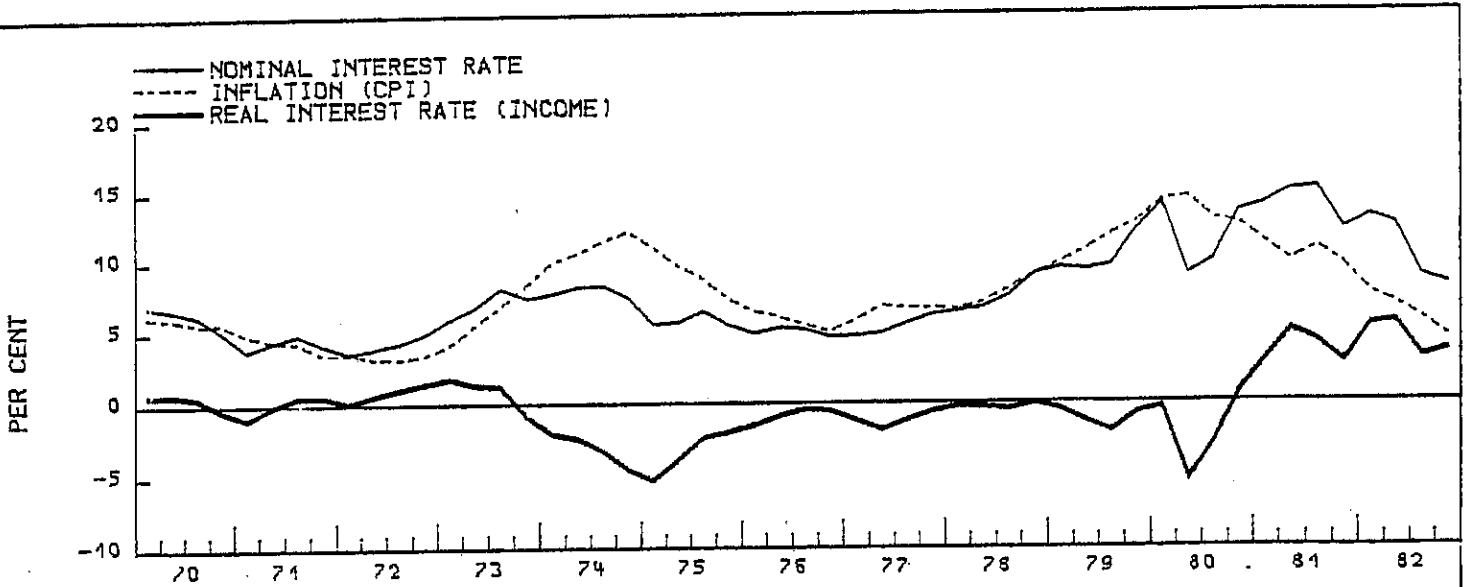
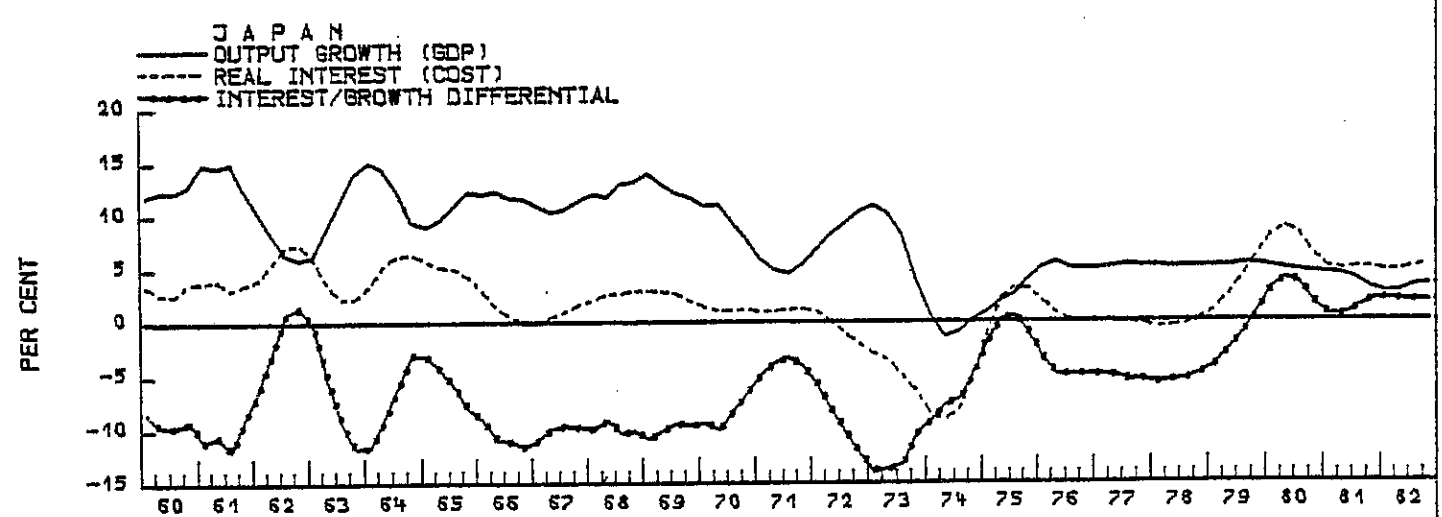
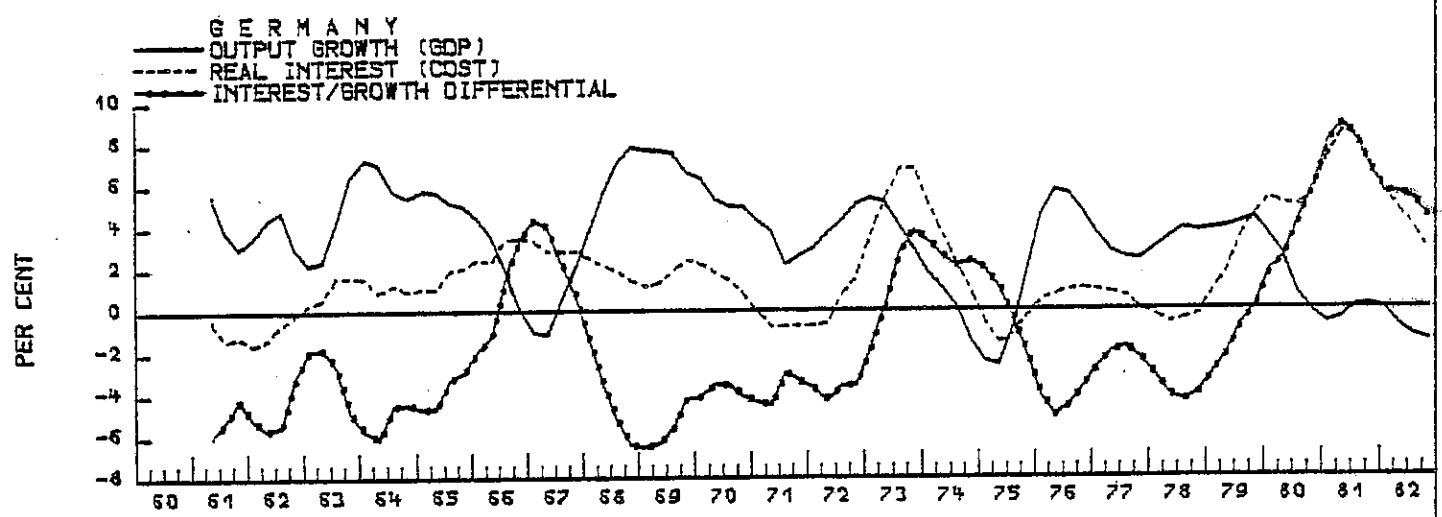
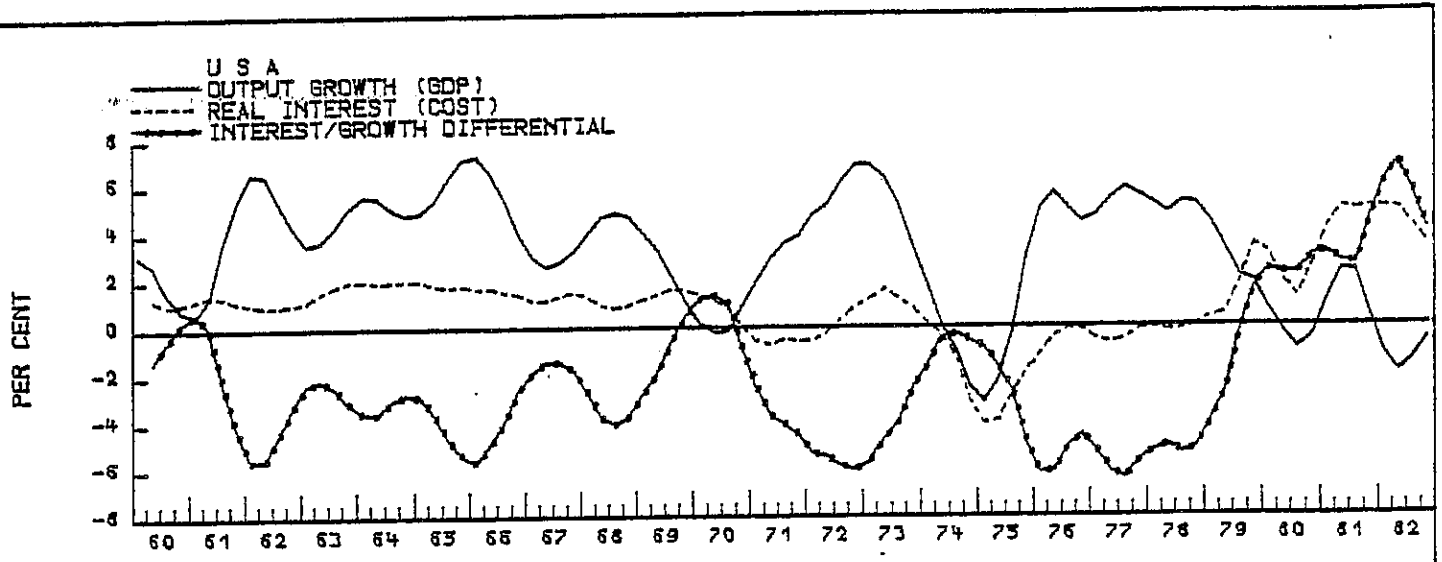
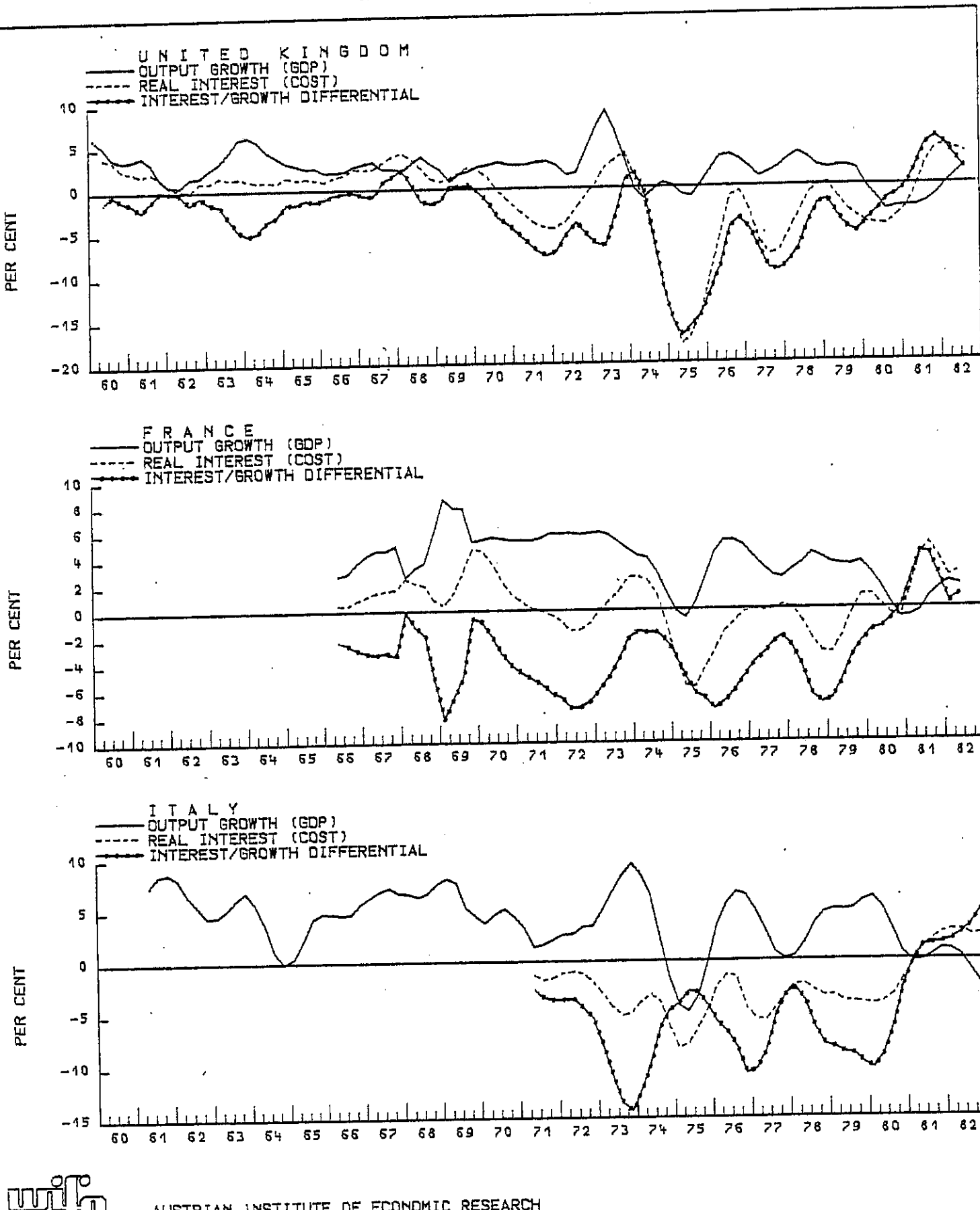


Figure 10

RATE OF INTEREST AND RATE OF GROWTH
INTERNATIONAL COMPARISON



RATE OF INTEREST AND RATE OF GROWTH
INTERNATIONAL COMPARISON



As has already been mentioned, this relation was almost continuously positive during the Great Depression.

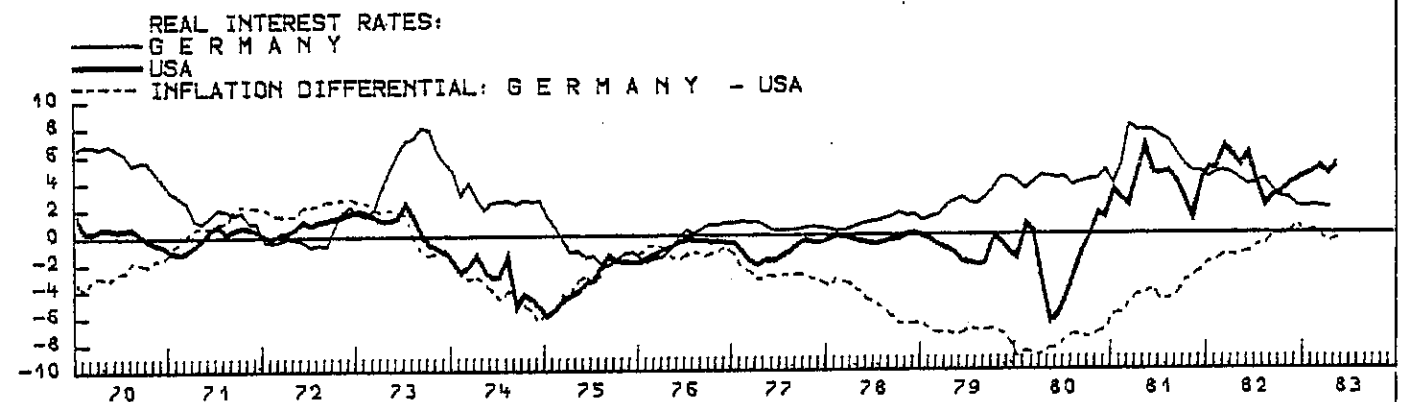
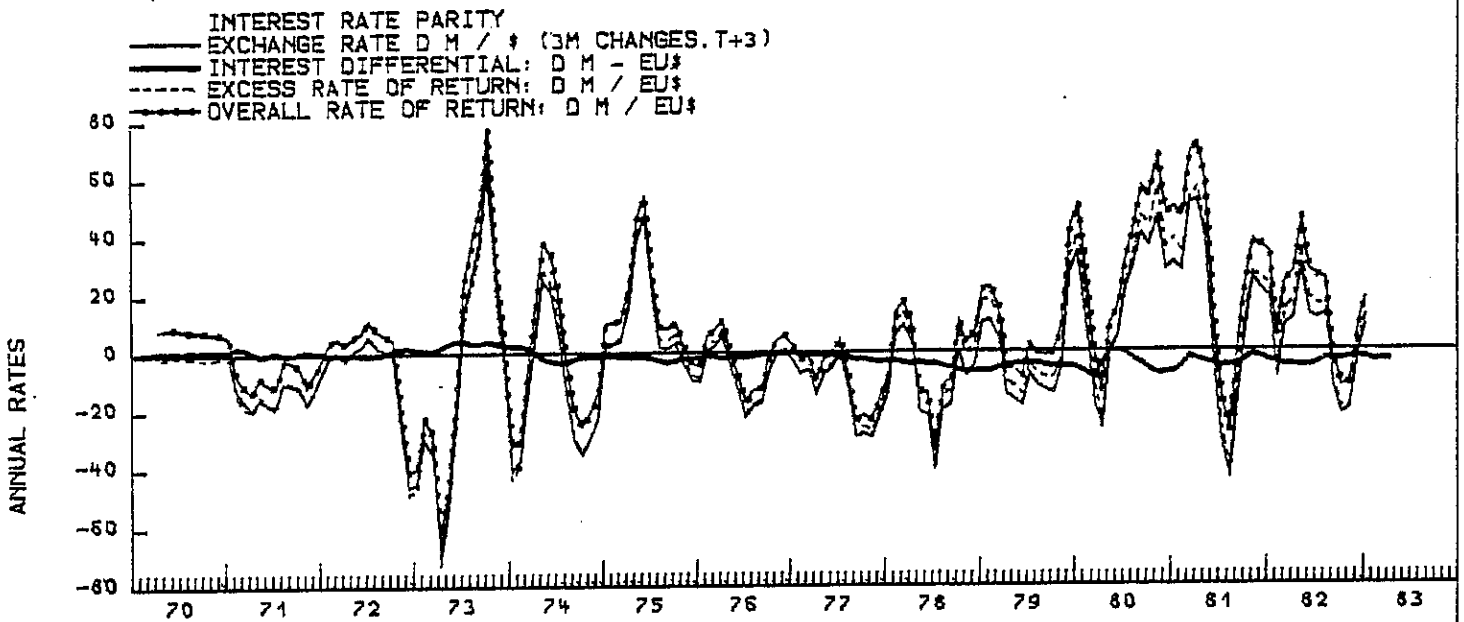
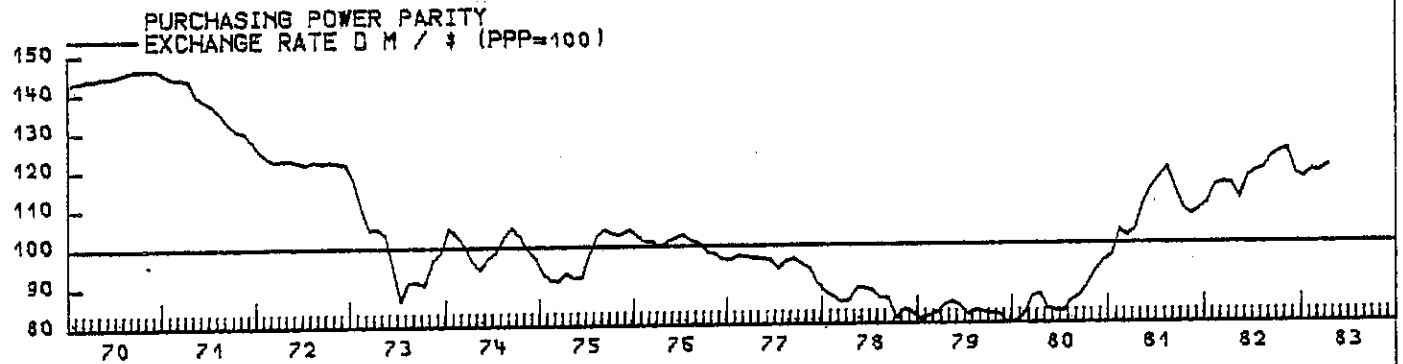
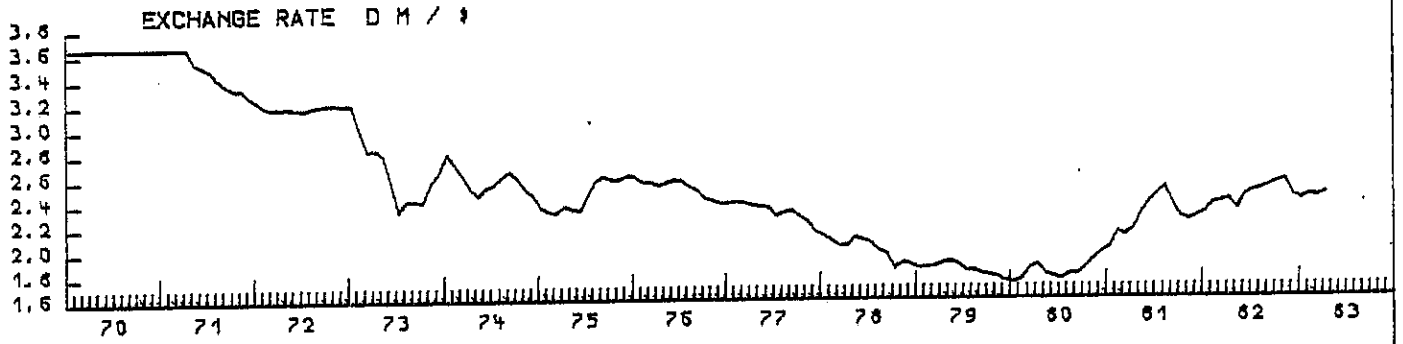
Some Remarks on the Role of the Exchange Rate in the Interaction of the Real and the Financial World

The two most strongly operating variables in the interaction of the real and the financial world are: the (real) rate of interest with respect to relations in time, and the (real) rate of exchange with respect to relations across countries. Also, a high real exchange rate depresses the real sector of an economy (through a decline in export demand) and stimulates the financial world (through the attraction of foreign capital). Thus, a disequilibrium in the goods market (current account deficit) is offset by a disequilibrium in the asset market (capital account surplus) which results in a somewhat precarious equilibrium in the overall market for foreign exchange. The dynamics of exchange rate movements in time are then operated by the interaction of these disequilibria in the goods market (real world) and asset market (financial world).⁴³⁾

As in the case of the interest rate, I shall primarily elaborate on the consequences of exchange rate movements and their various channels of influence.

There are two main functions of a currency in international economic relations; it serves as a means of exchange and as a means of finance. The exchange rate is, therefore, both a flow price and an asset price. As a flow price, it determines the relative prices of traded goods and thus the developments in the goods market (international trade). As an asset price, it determines the relative value of international financial stocks (assets for the creditors, liabilities for the debtors), and thus the developments in the financial markets. The simple fact that one price cannot clear two markets is a fundamental cause of international

EXCHANGE RATE, INTEREST RATE AND THE PRICE LEVEL
THE RELATION · M A R K / D O L L A R



financial instability: free capital movements can take advantage of this open degree of freedom through a process of self-fulfilling currency speculation under certain conditions. (The dollar appreciation between 1980 and 1982 and the mark appreciation in 1978 are the best empirical examples.)44)

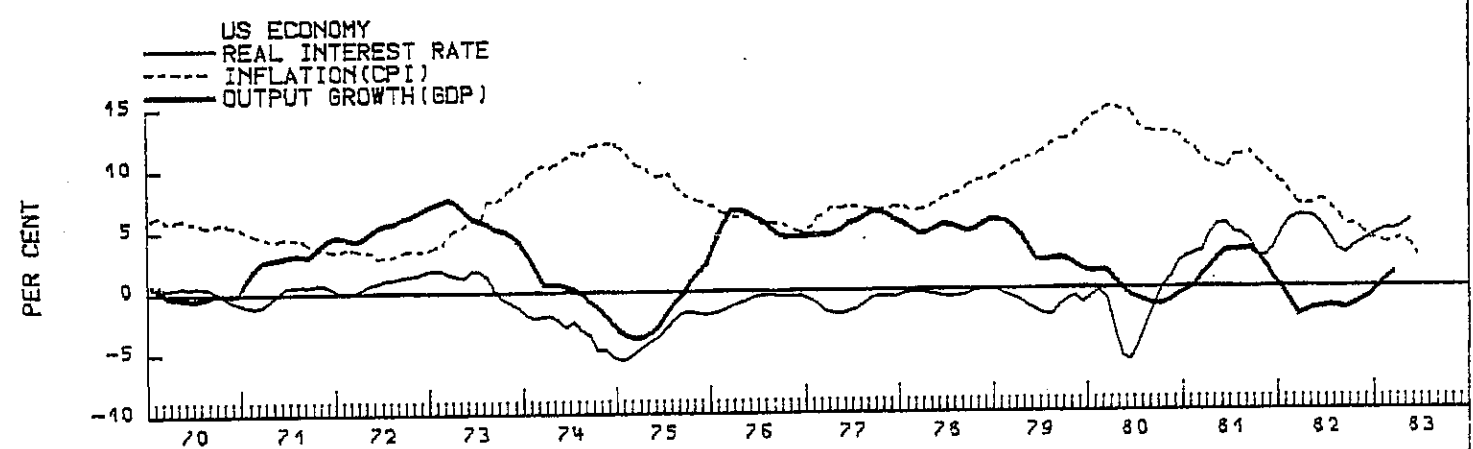
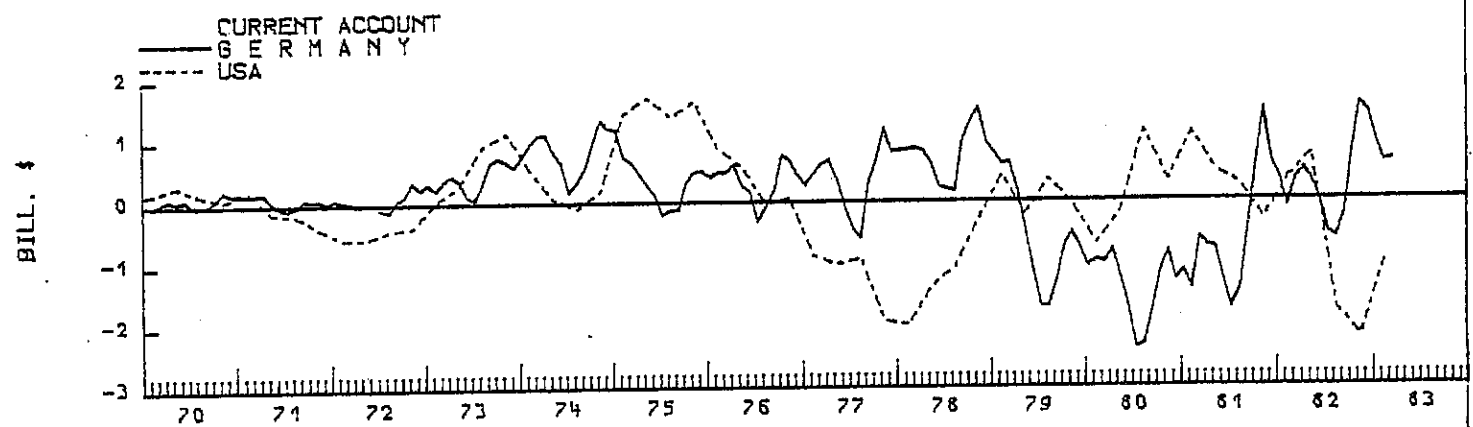
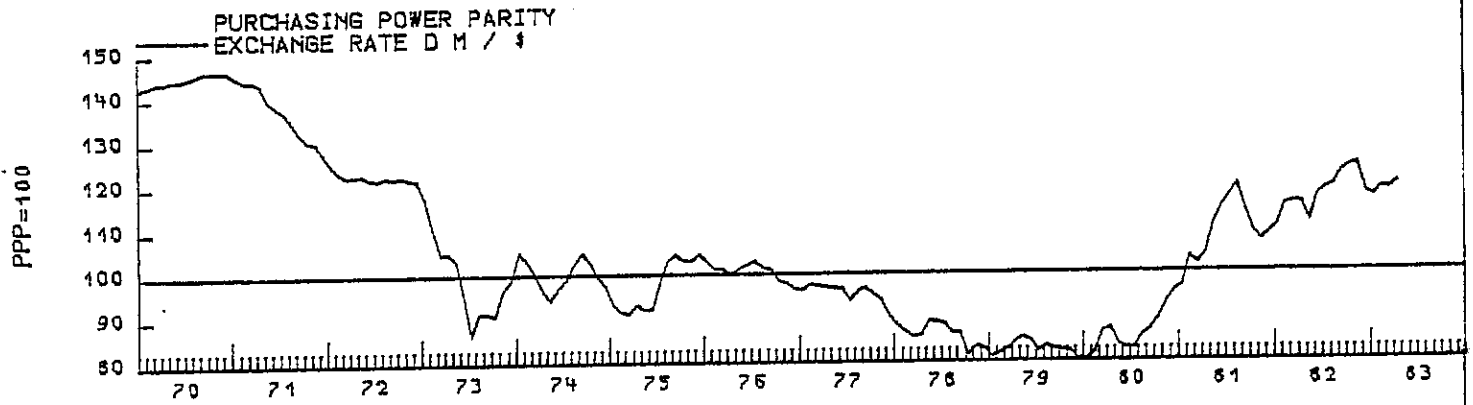
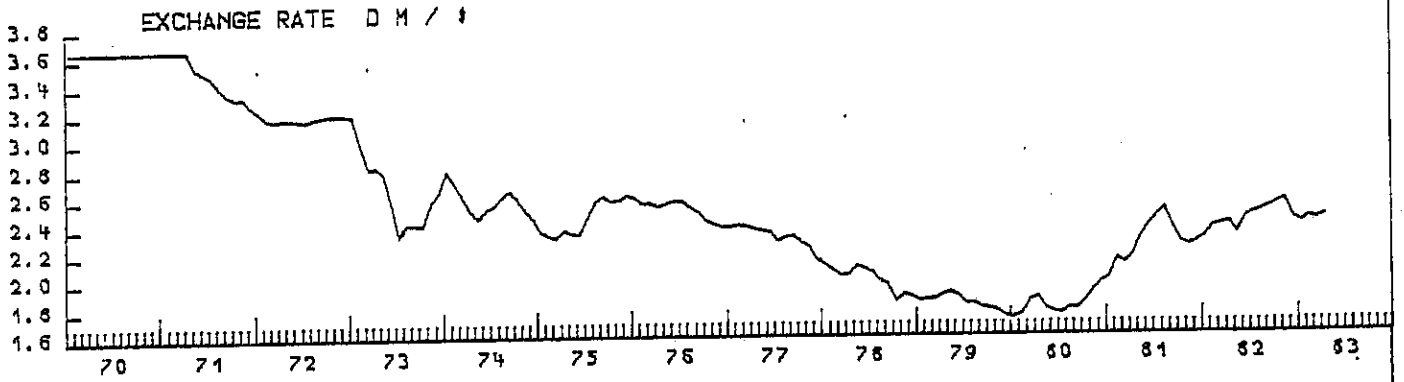
Since any overvaluation of one currency corresponds with an undervaluation of some other, one could conclude that the fluctuations of real exchange rates do not affect the world economy as a whole (besides the effect of the structural instability on the state of confidence and thus expectations formation). This would hold true if a strong symmetry prevailed between all currencies. But this is not the case since one currency, the dollar, has to play two roles, that of a national currency and that of the key currency of the world economy. This asymmetry reflects the basic fact that the world has become a closed interdependent economy without a corresponding supranational financial system (this has favoured the emergence and the growth of the Eurodollar market as a somewhat extranational system, apparently a rather unstable substitute).

Some Observations on the Exchange Rate of the Dollar as National Currency

Figure 12 and 13 provide information about the interaction of the real and the financial world through the channel of exchange rate movements. During the period of high economic growth in the US there existed a low real exchange rate and a low real interest rate. Both factors stimulated real world activities, in particular investment and - with some time lag - also exports, as seen in the continuous improvement of the current account between 1978 and 1980 (figure 13). At that time, the German economy suffered from relatively high real interest rates and a high real exchange rate (figure 12). The drastical narrowing of the interest differential in 1980 triggered large shifts of short-term capital from

Figure 13

EXCHANGE RATE, INTEREST RATE AND THE US ECONOMY



the mark into the dollar. This induced a dollar "bubble" (self-fulfilling speculation), as the high profits from currency shifts show (figure 12, diagram 3). This bandwagon movement lasted until the end of 1982 (with a short interruption in 1981).⁴⁵ Since then, a "precarious" equilibrium has prevailed, where a high real interest rate holds in check a high real exchange rate and vice versa.⁴⁶ This combined effect depresses both investment and exports, so that any expansion stems mainly from consumption pushed by extreme deficit spending at high future costs. Thus, also the exchange rate channel seems to point to contradictions between Wall Street and Detroit, the City and Liverpool.

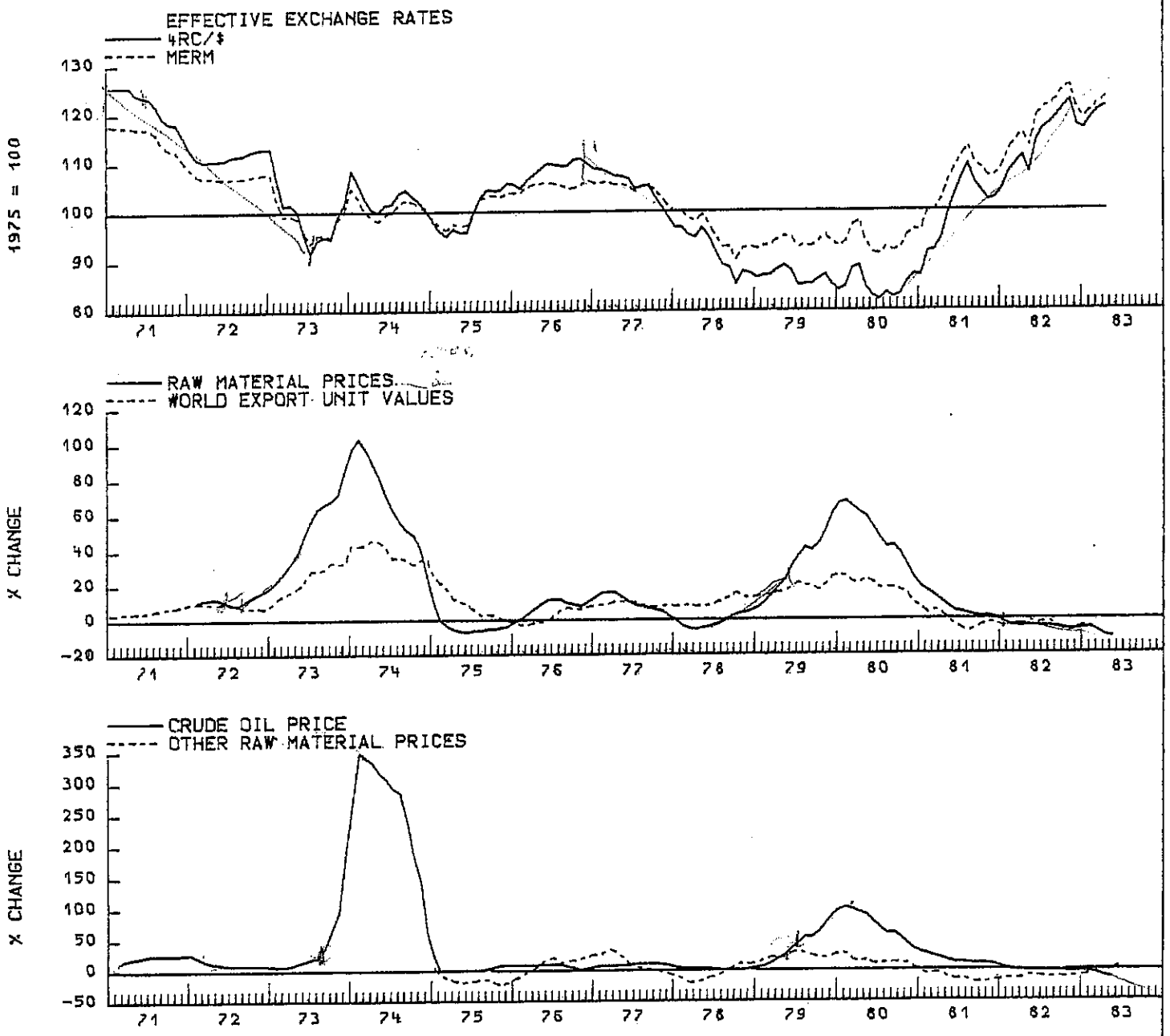
Some Considerations and Observations about the Dollar as World Currency

The most important function of a key currency is to serve as the international unit of account, and thus as the "numeraire" of the world economy. This function concerns the standardized valuation of both flows and stocks. I shall first discuss how the exchange rate between the dollar and the other reserve currencies affects national and international flows in the world economy (the exchange rate as a flow price).

If the dollar depreciates, the value of all flows denominated in other currencies increases respectively when expressed in dollars. In the early 1970's, for example, the income per capita in all countries other than the US went up drastically, if one calculated them in dollars for the purpose of international comparison. Of course, the real value remained unchanged since the income deflator increased (by definition) by the same amount (expressed in dollars). Nevertheless, the fact that everyone outside the US earned a significantly higher income expressed in the most important currency might have favoured some kind of international money illusion. Such a phenomenon does not seem completely unplausible: in the early 1970's many national income comparisons had

Figure 14

THE EXCHANGE RATE OF THE DOLLAR AND THE WORLD PRICE LEVEL



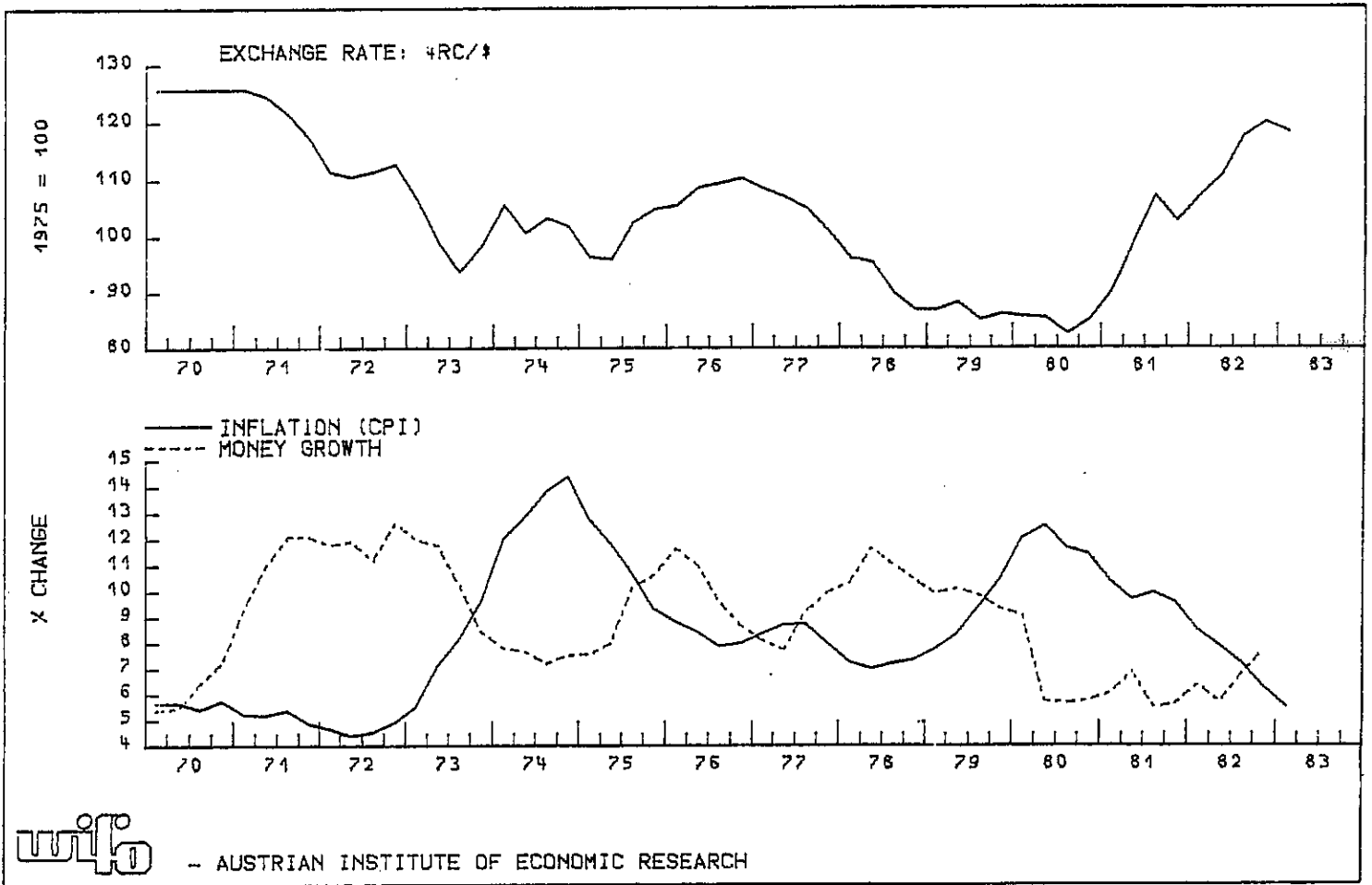
proudly shown how the economy had caught up with the US (at that time, Sweden became the "richest" country in the world and so on). Such a money illusion might then stimulate spending and inflation. With respect to the consumption of commodities prized in dollars (US products and most raw materials), the increase of the dollar income in the rest of the world is of course a real one (terms of trade effect). This effect could be felt in two ways: stable dollar prices of US exports (or raw materials) and increasing dollar prices of US imports from the rest of the world, or a fall in dollar prices of US exports and stable dollar prices of US imports (in the former case the total unit value of world trade expressed in dollars would increase, in the latter case it would decrease). The first way corresponds with an inflationary climate, the second with a deflationary climate. With respect to these possible states, an interesting feed-back might result: any continuous depreciation of the world currency favours an inflationary climate, any continuous appreciation favours a deflationary climate. If this is a valid hypothesis, the world price level expressed in dollars should increase whenever the dollar depreciates, and decrease whenever the dollar appreciates (in the latter case the dollar income of the rest of the world falls absolutely, which might be of some importance with respect to the problem of money illusion). Figure 14 seems to confirm this hypothesis. The continuous dollar depreciation in the early 1970's induced a strong inflationary wave, whereas the continuous dollar appreciation in the early 1980's coincided with the first absolute fall in the dollar price level of the world economy in post-war history.⁴⁷)

The fact that the deflationary effects of a dollar appreciation are much weaker than the inflationary effects of a dollar depreciation shows that a structural tendency towards inflation also exists.

Thus, any persistent decline in the dollar exchange rate depreciates the real income of all exporters whose products are exclusively priced in dollars. This seems to be particularly relevant for those countries (exporters of raw materials) who have to take the dollar as an exogenous

Figure 15

THE EXCHANGE RATE OF THE DOLLAR, INFLATION AND MONEY GROWTH
INDUSTRIAL COUNTRIES



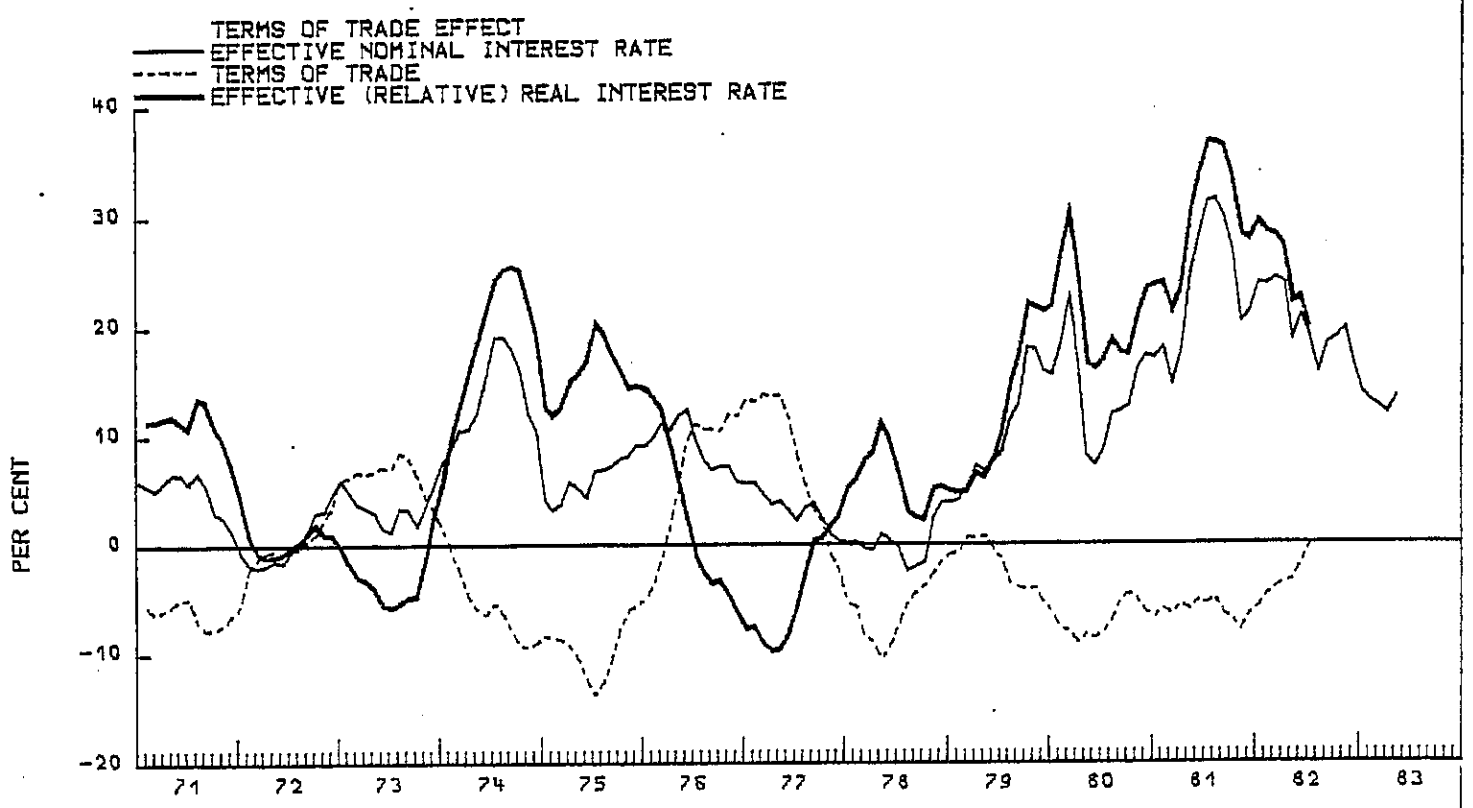
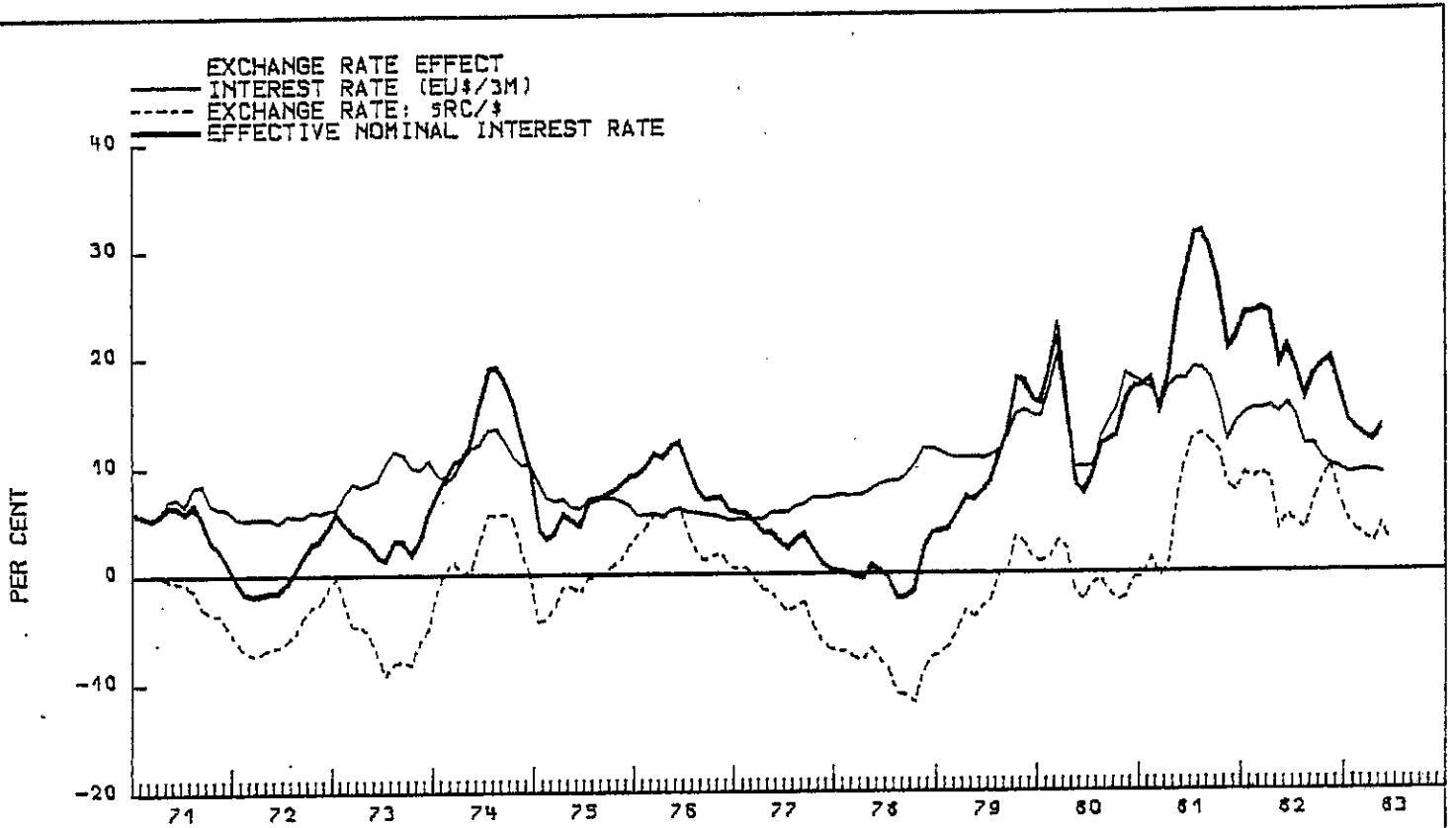
variable, since it is not their national currency (contrary to US exporters). They try therefore to (over)correct this redistribution to their disadvantage by increasing the dollar price of their exports whenever possible. Figure 14 shows clearly how the two price waves of raw materials and in particular of crude oil followed the two strong dollar depreciations.

Figure 15 seems to confirm this hypothesis. Inflation in the industrial countries picked up strongly from mid 1972 on (one year before the first oil price shock) and accelerated until mid 1974. This reflects the strong dollar depreciation between mid 1971 and mid 1973 (it usually takes some time for an inflationary climate to spread out). The dollar recovery until the end of 1976 might have facilitated the international disinflation. The following dollar depreciation induced an inflationary push between 1978 and 1980. Then the extremely strong dollar appreciation exerted an immediate deflationary pressure on the world economy. Figure 15 also confirms the hypothesis of McKinnon (1982) that currency substitution (which of course coincides with significant exchange rate movements) strongly influences the growth of the world money stock. But diagram 2 shows that the fundamental monetarist hypothesis is not confirmed by the data: there is no evident relation between inflation and money growth.

We shall now discuss how the exchange rate of the dollar as an asset price affects the world economy. If the dollar depreciates, all assets denominated in other currencies increase in value when expressed in dollars and vice versa. This is the basic reason for the somewhat oscillating exchange rate movements between the dollar and the other reserve currencies (figure 14 shows that these almost continuous waves persisted until 1974 when the shocks over the banks defaults occurred which were caused by too bold currency speculation). Once an exchange rate change has persisted for some time, it becomes a movement which feeds on itself, since more and more actors want to participate in the advantages of such a process of asset revaluation. This bandwagon effect

Figure 16

DOLLAR INTEREST RATE, DOLLAR EXCHANGE RATE AND RELATIVE PRICES
CREDIT COSTS FOR NON-OIL DEVELOPING COUNTRIES

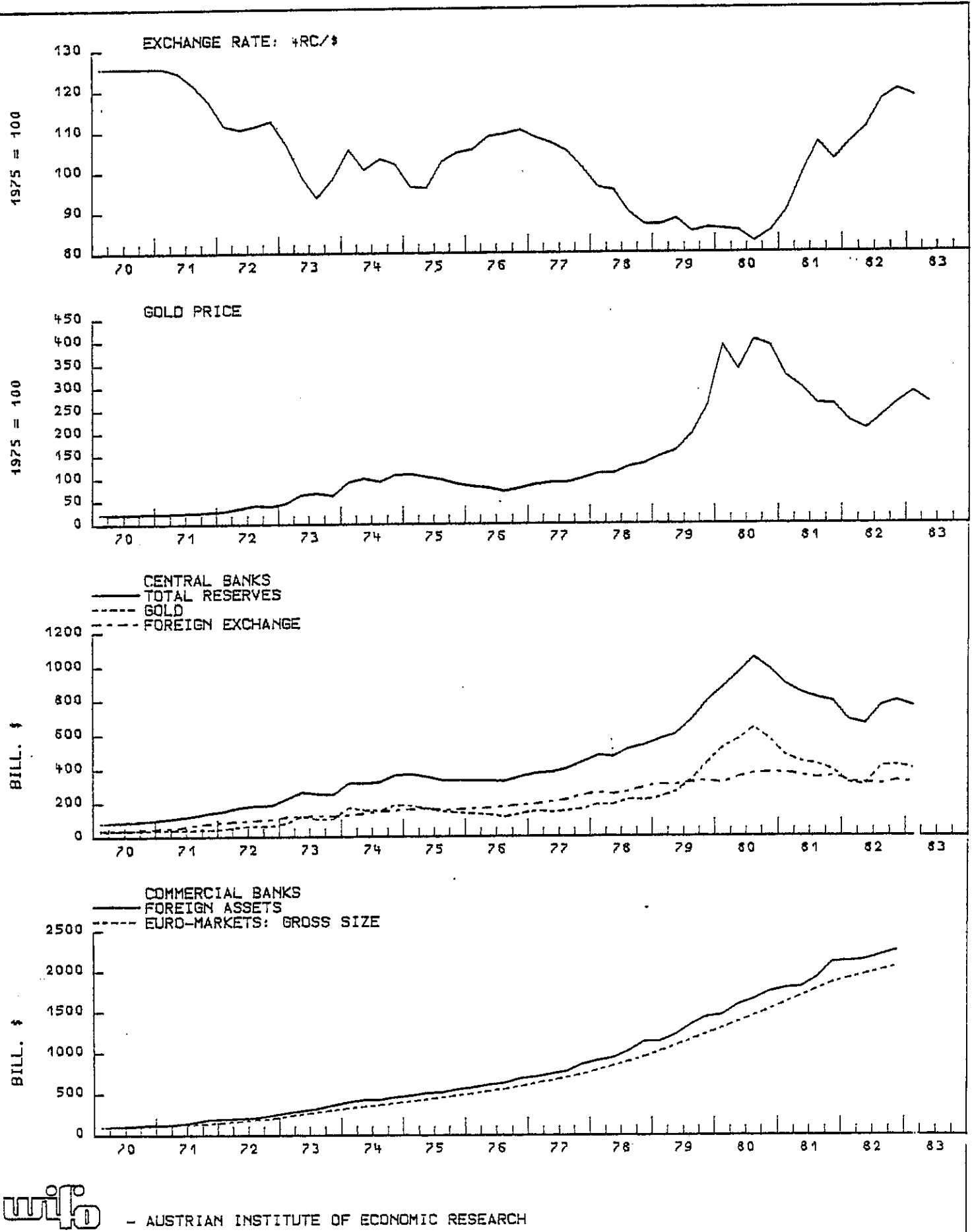


was extremely strong in the early 1980's, since an appreciating world currency attracts capital from other currencies and other kinds of assets like gold (see also figure 17). But any revaluation of dollar assets also revalues the corresponding dollar liabilities. Since more than 80 percent of international financial assets/liabilities are denominated in dollars, the respective exchange rate movements determine the international distribution of income between creditors (international rentiers) and debtors (international entrepreneurs) in a decisive way. This effect on the international income redistribution, and consequently on the effective demand in international trade, is usually not taken into account. It seems to be the most negative aspect of exchange rate instability, since any kind of confidence in international economic relations is thereby destroyed. I would like to illustrate this relationship by a simple, but realistic example. Suppose Mexico had imported machinery for 1.8 bill. DM (1 bill. \$) from Germany in 1980. German banks or their affiliates in the Euromarket provide a dollar credit at the current Euro-rate plus some spread. It is agreed that the debt service should begin at the time of the opening of the new plant, i.e. in 1982. But in the meantime, the value of the debt appreciates continuously and reaches 2.4 bill. DM in 1982. The economic effect is exactly the same as if Germany had ex post increased the price for the machinery by 33 percent. Such a treatment - though not intended consciously by anyone - impedes any kind of serious business relations. It represents the analogy to the ex post increase of the interest rate due to the roll-over "innovation".

Figure 16 demonstrates the combined effect of the dollar interest rate, the dollar exchange rate and the terms of trade on the overall credit costs for non-oil developing countries.⁴⁸) Diagram 1 shows that the exchange rate movements seem to be even more important for the effective credits costs than the interest rate. During the early 1970's, and particularly between 1977 and 1979, the dollar depreciation reduced the credit costs significantly. But these costs exploded, due to the combined effect of an increase in both the dollar interest rate and the

Figure 17

THE EXCHANGE RATE OF THE DOLLAR AND INTERNATIONAL FINANCIAL ASSETS



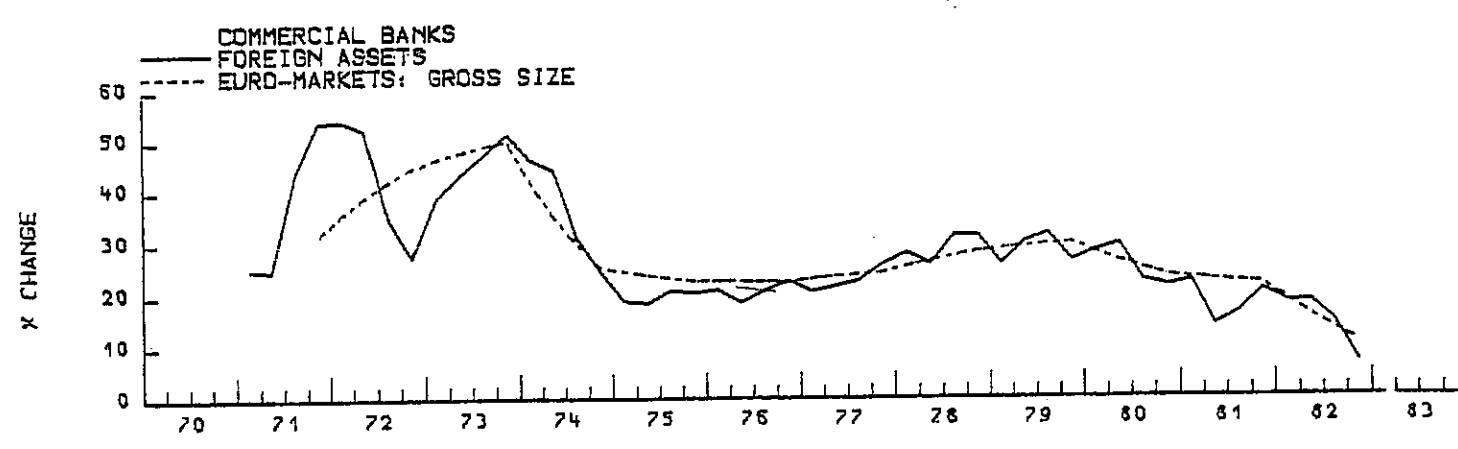
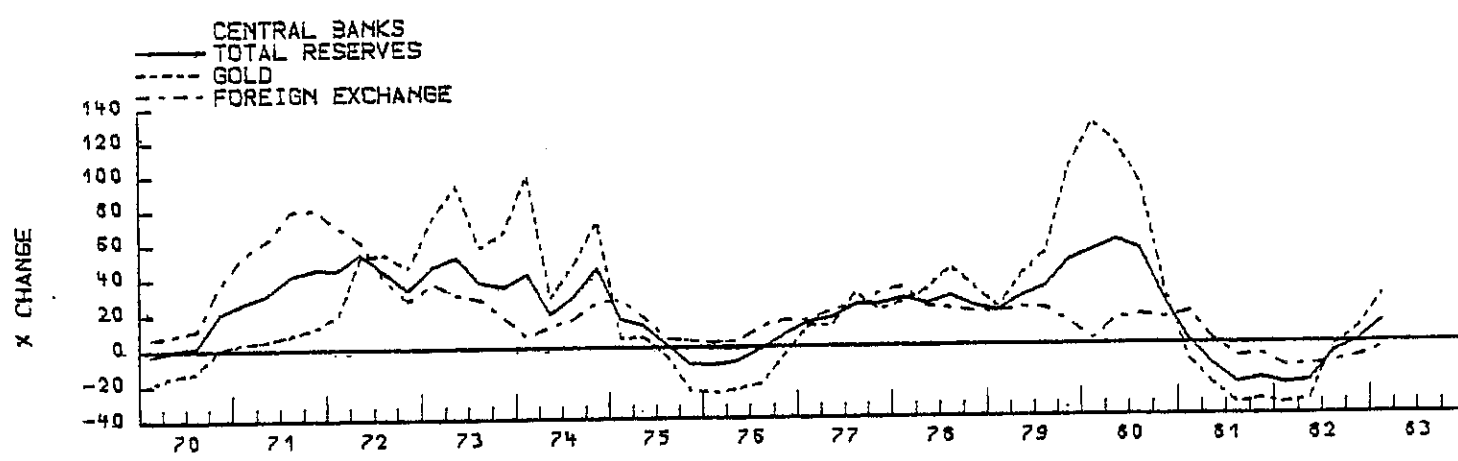
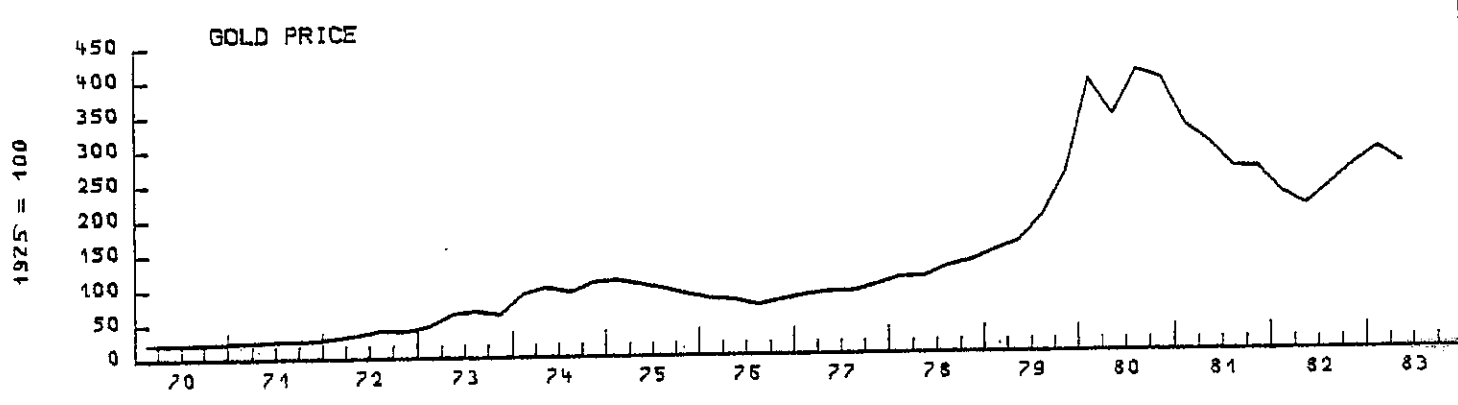
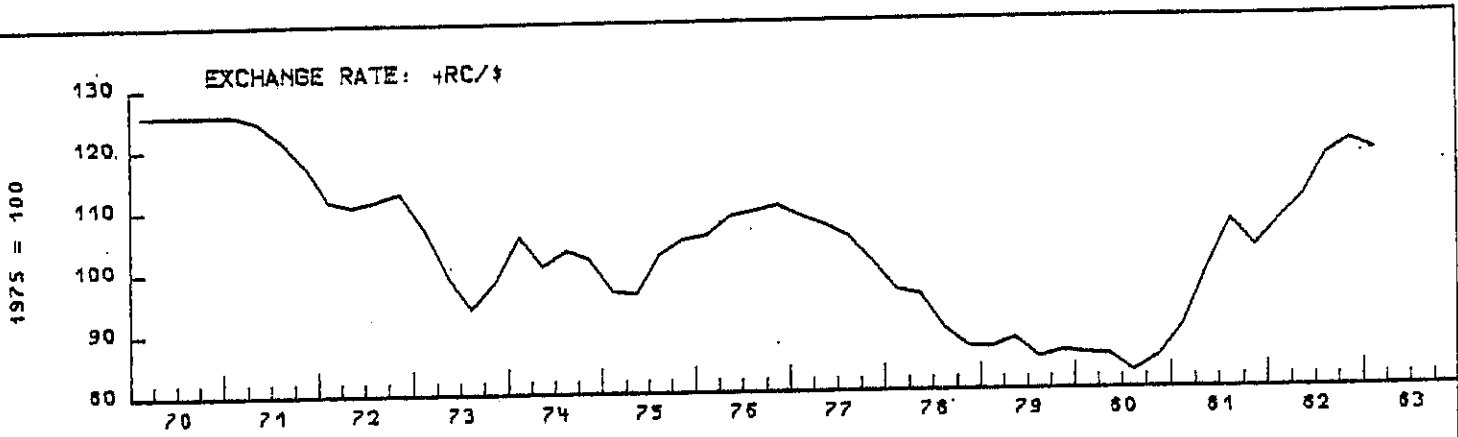
dollar exchange rate. This coincidence reflects the continuous capital movements into the dollar, so that the extra profits for the speculators offset the extra costs for developing countries: the effective interest the LDC's had to pay (or to roll over) reached 13.9 percent (1980), 23.3 percent (1981), and 20.1 percent (1982). This debt burden was extremely sharpened by the continuous decrease in the terms of trade since mid 1979. As a consequence, the (relative) real interest developed as follows (in percent):

1977	-3.5
1978	5.5
1979	9.1
1980	20.3
1981	31.4
1982	22.1 49)

Figure 17 shows the close relationship between the exchange rate of the dollar and the price of gold as an alternative store of speculative wealth.⁵⁰) The strong fluctuations of the gold price directly affect the (market) value of the reserves of central banks (they are almost exclusively determined by the gold price fluctuations). This negative impact of speculative movements on the creation or destruction of money has repeatedly been stressed by Triffin (1982). Even if this relationship does not completely represent "the world monetary scandal" (since, as has just been shown, there seem to exist still some other "candidates"), it has certainly contributed to international financial instability.

The last diagrams of figures 17 and 18 suggest that almost all international relations between commercial banks are interconnected through the Euromarket. The level and development of total foreign assets as reported by the IMF are almost identical to those of the gross size of the Euromarket, as estimated by Morgan Guaranty Trust. The pattern of development confirms the hypothesis about the role of the

THE EXCHANGE RATE OF THE DOLLAR AND INTERNATIONAL FINANCIAL ASSETS
PER CENT CHANGE AGAINST PREVIOUS YEAR



dollar exchange rate as an asset price: the growth of these financial stocks accelerated when the dollar depreciated (1971 to 1973, 1977 to 1979) and slowed down when the dollar appreciated (1974 to 1974, 1980 to 1982).

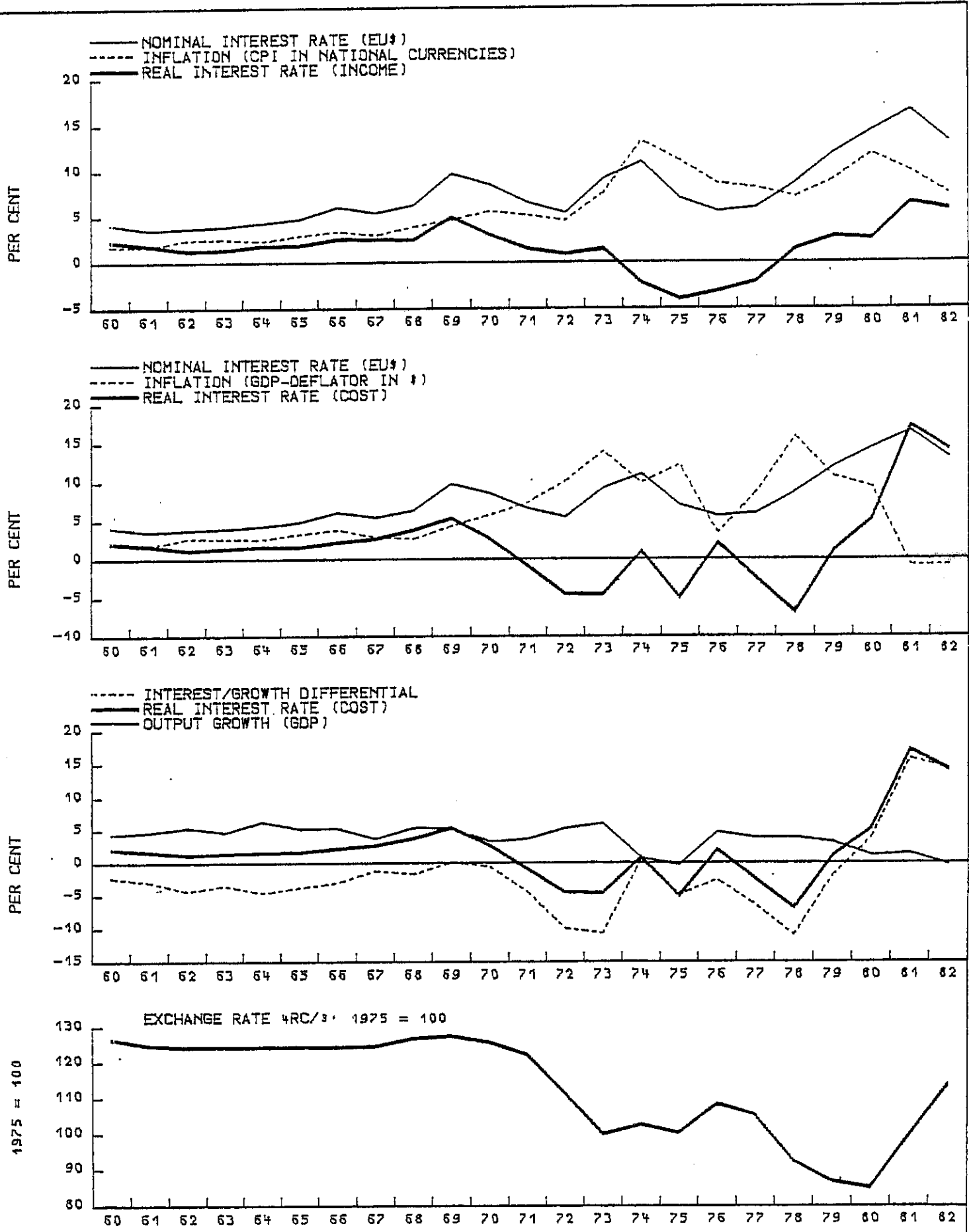
The Interest Rate and Exchange Rate of the World Currency and Economic Growth

Figure 19 shows the development of the dollar interest rate, the dollar exchange rate and output growth in the industrial countries as a proxy for the world economy.

Diagram 1 depicts the Eurodollar rate as some kind of world interest rate as well as inflation expressed by the consumer price index in national currencies. But this comparison is somewhat meaningless, since no common unit of account has been applied (the corresponding real rate of interest has been charted only for illustrative purposes). In diagram 2 the world inflation is expressed in dollars, using the GDP deflator of the industrial countries as a proxy. Most impressive is the strongly disinflationary, and in 1981 and 1982 even slightly deflationary, effect of the dollar appreciation (diagram 4). Thus, the real rate of interest increased as never before: this world rate reached 17.3 percent in 1981 and 14.0 percent in 1982 (in the 1970's it had been negative on the average). Because world output stagnated in these years, the interest/growth-differential reached almost the same values (diagram 3). It is exactly this configuration of the world interest rate and the world economic growth which Weizsäcker (1979) had thought impossible for it must lead to a financial collapse.

Figure 19

INTEREST RATE, EXCHANGE RATE, INFLATION AND OUTPUT GROWTH
INDUSTRIAL COUNTRIES



The Present Situation as Initial Condition for Future Developments

One could say that recently the world economy has fallen into some kind of "interest/growth trap". This expression might bring to mind the Keynesian "liquidity trap". In that situation a monetary expansion cannot lower the interest level, so that only an impulse of effective demand can stimulate output and employment. The "interest/growth trap" tries to explain endogenously the impossibility of an expansion of effective demand once the interest rate exceeds the growth rate for some time. Two feed-back relationships determine this endogenous interdependency:

-Investment planning and effective demand (flow relations between g, i, I, Y)

-Debt financing and effective demand (stock/flow relations between g, i, F, IP, Y)

Since the feed-back mechanism is the most important characteristic of the system, any state must be considered somewhat precarious. The dynamics of development in time can then be best understood as a sequence of flow and stock disequilibria. It is for this reason that any tilt in the relation of the rate of interest and the rate of growth potentially triggers a change in the direction of economic development.⁵¹⁾

The empirical evidence seems to confirm this approach. In the three years of a positive interest/growth-differential, private investment has strongly declined, the budget deficit and consequently the public debt have increased as never before, and the disinflationary tendencies persist. This pattern is not only typical for the US economy, but more or less for all industrial countries.⁵²⁾

In an international context, the exploding debt of developing countries induced a credit crunch which destroyed a great deal of potential demand. This affects particularly the industrial countries other than the US who are less dependent on international trade.53)

The combined effect of disinflation and a depressed economy makes it almost impossible to escape into a negative interest/growth-differential. The main reason is the stickiness of nominal interest rates. A negative real interest rate is possible at an inflation rate of almost 10 percent (as in the period between 1974 and 1979) but not at a rate of 3 percent (as in 1983).

In an international context, the high real exchange rate of the dollar restricts (together with the high interest) world trade and revalues the debt burden for developing countries. Here again, a depreciation of the dollar is not likely to be anticipated since the financial world seeking a safe haven could push its value even higher.54) Thus it renders an international financial collapse more and more probable.

Some Characteristics of the Future Development of the World Economy

From the present economic conditions and the analysis of their development, some qualitative conclusions about the future can be easily drawn. There remain only a few basic alternatives:

-The current state of paralysis in the international financial system continues to prevail, so that the dollar interest rate and the dollar exchange rate remain at their high levels. In this case, a financial collapse is inevitable. It is still possible to delay this break-down, but it does not seem as if one can play "emperor's new clothes" forever when the emperors multiply as do their debts. Of course, such a collapse would be very different from that of the 1930's, since the central banks will certainly accept their responsibility as lender of

last resort (for the Euromarkets, however, this problem remains completely unsolved). On the one hand, it would certainly deteriorate the state of confidence, but on the other hand, it might end the state of paralysis - after a somewhat shocking transition period.

-A very strong dollar depreciation triggers a worldwide inflation process, which reduces real interest rates, devalues the burden of debts, and stimulates effective demand. Since the expectations of the real world actors have deteriorated to such a degree, a highly negative interest/growth-differential is needed to match the increased risk/illiquidity premium of entrepreneurs. Therefore, the real interest must become negative for some time (just a compensation for the overshooting in the years before). This means that economic policy must not hamper the inflationary push, but rather encourage it.

-Economic policy in the most important countries acknowledges the global character of the current crisis. In an act of cooperation by all important partners in the world economic system, two concepts must be developed,

-an emergency plan

-a long-term framework for the coordination of the real and the financial world on an international level.

As a part of the emergency plan, interest rates and exchange rates become stabilized through a flexible regulation, coordinated between commercial banks, central banks and national governments.55)

This alternative still sounds rather utopian. Thus its story has to be left to a future paper.

Concluding Remarks

There might be some readers who remain completely unsatisfied with the disorder of this approach: the causalities have not been elaborated in an unambiguous manner, the thoughts have not been orderly deducted step by step and the presentation is anything else but elegant. Finally, not even quantitative statements about the future development have been worked out which is the least one can expect from a forecasting study.

If those readers cannot accept the excuse that the disorder of thoughts sometimes reflects the disorder in reality (admittedly rather seldom), I would like to offer as a small compensation a conventional forecasting exercise which is prepared for them in appendix A. There they will find a collection of unambiguous predictions.

For the future is already uncertain enough.

Appendix A

An Exercise in Medium-Term Forecasting

The following forecast is insofar conventional as it perceives the future as some kind of extension of the past. It is assumed that the relationships observed over the last three decades will also characterize the future development so that only quantitative changes can enter the forecasting model.

This assumption implies that any kind of financial collapse forms part of the "unthinkable" and is thus excluded. The same is true for a strong acceleration of inflation deliberately promoted by economic policy. This approach assumes therefore a very high capacity of "muddling through" with respect to the financial turmoil of the world economy.

The forecasting procedure runs as follows. First, the growth of final domestic demand of the most important industrial countries is compared for different periods since the mid-1950's (table 5). Then five groups of factors which are the most important determinants of changes in the growth pattern are considered:

- Concepts of economic policy

- Income distribution

- Interest rates

- Quantitative restrictions on deficit financing (budget constraints in the case of governments and debtor countries)

- Institutional conditions of national and international finance (fixed versus floating interest and exchange rates).

If one relates the actual economic performance to the changes in these conditions in the past (particularly in the 1970's and early 1980's) and makes certain assumptions about their state in the next years, one can draw some conclusions about the range of possible future developments. The quantification for each component of final demand represents a highly subjective estimate, but necessary to illustrate the links to international trade.

Table 5 shows that a slight further decline in economic growth is expected. In such a stagnation scenario production is stabilized by consumer demand whereas investment remains sluggish (due to financial instability and pessimistic expectations).

Final demand and the respective import elasticities (table 6) determine the demand of industrial countries in international trade. The corresponding export earnings of the rest of the world set the limit for economic expansion in those countries. Output and demand in oil exporting countries are assumed to grow by 3.0 percent on average, in non-oil developing countries by 2.5 percent and in eastern countries by 2.0 percent. This weakness of demand in turn restricts the contribution of these countries to economic growth in the industrialized part of the world through the channel of international trade (given the financial constraints).

The results are summarized in table 7. Under these assumptions the overall growth of world trade would fall from an average rate of 3.7 percent to 2.4 percent. The respective nominal values are based on the working assumption of an overall inflation rate of 5 percent at constant terms of trade.

Finally, table 8 describes how a small open economy which had done rather well until the early 1980's would be affected by the worldwide stagnation.

Table 6

Import Elasticities with Respect to Final Domestic Demand

	Industrial countries	Oil exporting countries	Non-oil developing countries	Eastern countries
	1964/1973			
Industrial countries	1,98	1,30	1,03	1,61
Oil exporting countries	2,02	1,27	1,37	2,50
Non-oil developing countries	1,39	1,80	1,03	0,70
Eastern countries	2,14	2,22	0,62	0,74
World	1,90	1,40	1,03	1,00
Total final domestic demand (average growth rates)	4,9	8,1	6,0	7,0
	1973/1981			
Industrial countries	1,58	1,36	1,46	1,28
Oil exporting countries	-1,83	0,50	-0,57	-1,87
Non-oil developing countries	2,38	1,57	2,09	1,59
Eastern countries	0,88	1,20	2,07	0,93
World	1,13	1,35	1,26	1,02
Total final domestic demand (average growth rates)	2,4	11,7	4,6	4,6
	1982/1986			
Industrial countries	1,3	1,3	1,2	0,9
Oil exporting countries	0,4	1,0	0,4	0,4
Non-oil developing countries	2,5	1,7	1,8	1,5
Eastern countries	0,8	1,0	1,7	1,0
World	1,3	1,3	1,3	1,0
Total final domestic demand (average growth rates)	1,5	3,0	2,5	2,0

Table 5

Development of Final Domestic Demand and Gross Domestic Product in the Long Run

Average Growth Rates

	1955/1964	1964/1973	1973/1982	1973/1977	1977/1982	1982/1986
Seven major industrial countries						
Final domestic demand	-	-	1,8	1,8	1,9	1,5
GDP	4,1	4,9	2,1	2,3	2,0	
USA						
Consumption expenditure	3,3	4,4	2,5	3,0	2,1	1,5
Government expenditure	3,1	2,6	1,6	1,5	1,6	1,0
Gross fixed investment	3,5	3,9	0,3	0,1	0,5	0,0
Final domestic demand	3,3	3,9	1,7	2,1	1,4	1,2
GDP	3,2	3,9	1,8	2,2	1,5	
Germany (F.R.)						
Consumption expenditure	5,9	4,6	1,8	2,9	0,9	1,0
Government expenditure	5,9	4,1	2,5	2,6	2,4	2,0
Gross fixed investment	6,5	3,7	-0,2	-1,7	1,0	0,0
Final domestic demand	6,1	4,3	1,4	1,6	1,2	1,0
GDP	5,8	4,3	1,7	1,8	1,6	
Japan						
Consumption expenditure	8,7	9,2	3,0	2,6	3,3	3,5
Government expenditure	4,7	5,2	4,3	4,5	4,1	3,0
Gross fixed investment	17,0	13,7	2,0	-0,7	4,3	2,5
Final domestic demand	9,1	9,9	2,7	1,4	3,7	3,1
GDP	9,8	9,3	3,7	2,9	4,4	

Source: OECD, Quarterly National Accounts Bulletin, current issues.
 IMF, World Economic Outlook 1983.
 WIFO data bank.

Table 5 cont.

Development of Final Domestic Demand and Gross Domestic Product in the Long Run

Average Growth Rates

	1955/1964	1964/1973	1973/1982	1973/1977	1977/1982	1982/1986
France						
Consumption expenditure	5,2	5,2	3,4	3,8	3,1	2,0
Government expenditure	3,8	3,7	2,8	3,3	2,3	2,0
Gross fixed investment	8,1	6,7	0,7	0,1	1,2	0,0
Final domestic demand	5,5	5,3	2,6	2,5	2,6	1,6
GDP	5,5	5,4	2,4	2,9	2,0	
United Kingdom						
Consumption expenditure	2,8	2,9	1,0	-0,7	2,4	1,0
Government expenditure	0,9	2,5	1,6	1,7	1,5	0,0
Gross fixed investment	6,1	3,5	-1,0	-1,3	-0,9	-1,0
Final domestic demand	2,8	2,9	0,4	-0,6	1,2	0,5
GDP	2,9	3,0	0,6	0,8	0,5	
Italy						
Consumption expenditure	5,7	5,5	2,3	1,8	2,7	2,0
Government expenditure	4,0	4,0	2,5	2,8	2,2	1,0
Gross fixed investment	6,8	3,7	0,2	-2,1	2,0	0,5
Final domestic demand	5,6	4,8	1,6	0,7	2,4	1,6
GDP	5,6	5,1	2,1	2,0	2,2	
Canada						
Consumption expenditure	4,5	5,6	2,7	4,9	1,0	1,5
Government expenditure	3,2	6,1	1,8	3,1	0,7	0,5
Gross fixed investment	4,6	5,9	1,5	2,7	0,5	1,0
Final domestic demand	4,2	5,8	1,9	3,8	0,4	1,2
GDP	4,6	5,7	1,9	3,1	1,0	

Table 7

Development of World Trade in the Medium Run
Average Growth Rates

	Industrial countries	Oil exporting countries	Non-oil developing countries	Eastern countries	World
	Volumes 1973/1981				
Industrial countries	3,1	16,7	6,8	4,9	4,6
Oil exporting countries	-6,5	3,4	-4,3	-11,4	-6,1
Non-oil developing countries	6,0	18,1	10,8	8,6	7,9
Eastern countries	1,9	16,6	11,3	4,2	4,1
World	2,1	16,6	6,1	4,4	3,7
	1982/1986				
Industrial countries	2,0	3,9	3,0	1,8	2,4
Oil exporting countries	0,6	3,9	1,0	0,8	1,0
Non-oil developing countries	3,8	5,1	4,5	3,0	4,0
Eastern countries	1,2	3,0	4,3	2,0	2,2
World	2,0	4,0	3,0	2,0	2,4
	Values 1973/1981				
Industrial countries	13,4	28,3	17,4	15,3	15,0
Oil exporting countries	25,8	39,0	28,8	19,1	26,2
Non-oil developing countries	16,6	29,8	21,8	19,4	18,7
Eastern countries	17,6	26,4	20,8	13,9	15,6
World	15,3	28,6	19,8	15,0	16,7
	1982/1986				
Industrial countries	7,1	9,1	8,2	6,9	7,5
Oil exporting countries	5,6	9,1	7,1	7,1	6,0
Non-oil developing countries	9,0	10,4	9,7	8,2	9,2
Eastern countries	6,3	8,2	9,5	7,1	7,3
World	7,1	9,2	8,2	7,1	7,5

Table 8

Development of a Small Open Economy in the Medium RunThe Case of Austria

Average Growth Rates

	Gross Domestic Product and Final Domestic Demand				
	1973/1982	1973/1977	1977/1982	1982/1986	
				real	nominal
Consumption expenditure	2,4	4,1	1,1	1,4	5,5
Government expenditure	3,4	4,4	2,6	2,0	6,1
Gross fixed investment	0,2	1,9	-1,1	0,5	4,5
Exports of goods and services	6,1	5,9	6,2	2,9	7,0
Imports of goods and services	4,4	6,6	2,6	2,4	7,0
Gross Domestic Product	2,4	3,1	1,8	1,5	5,4
Final Domestic Demand	1,8	3,4	0,5	1,3	5,4
Employment, Productivity and Unemployment					
Labor Supply					
Total	0,5	0,6	0,4		0,2
Self-employed	-2,3	-3,0	-1,7		-1,6
Employees	1,0	1,4	0,7		0,5
Labor Productivity (Employees)					
Labor Productivity (Employees)	1,4	1,7	1,1		1,5
Employment	0,7	1,2	0,3		-0,1
Unemployment					
Growth of the unemployed	14,4	13,1	15,5		13,7
	1973	1977	1982		1986
Unemployment rate	1,2	1,8	3,7		6,0
Current account					
absolut (in Bill.AS)	-5,3	-30,1	7,9		10,5
in % of GDP	-1,0	-3,8	0,7		0,7

Appendix B

Some Relationships between Flows, Stocks and Profit (Interest) Rates

Domestic production of goods and services

$$Y = C + I + G + (X - M)$$

Income distribution

Flows:

$$\begin{aligned} Y &= W + P + T \\ &= W + EI + IP + T \\ P &= EI + IP \end{aligned}$$

Stock/flow relationships:

$$\begin{aligned} IP &= iF \\ EI &= P - IP \\ r &= EI/E \\ p &= P/K \\ &= r(E/K) + i(F/K) \end{aligned}$$

National income

$$NI = Y + FI$$

Consumption and saving⁵⁶⁾

$$\begin{aligned} C &= C_e + C_s \\ &= c_e W + c_s P \end{aligned}$$

c_e, c_s ... average propensity to
consume out of wages (employees)
and overall profits
(self-employed)⁵⁷⁾

$$\begin{aligned}
 S &= S_e + S_s + S_g \\
 &= (W - C_e) + (P - C_s) + (T - G) \\
 &= s_e W + s_s P + (T - G) \quad s_e, s_s \dots \text{average propensity to save}
 \end{aligned}$$

External sector

Flows:

$$CA = (X - M) + FI$$

Stock/flow relationships:

$$FI = iFA$$

$$CA = dFA$$

Capital accumulation and its finance

Flows:

$$I = S - (X - M) - FI$$

$$= S - (X + FI - M)$$

$$= S - CA$$

$$S = I + CA$$

Stock/flow relationships:

Real world

$$I = K_t - K_{t-1} = dK$$

Financial world

$$\begin{aligned}
 S &= (E + F + FA)_t - (E + F + FA)_{t-1} = d(E + F + FA) \\
 &= dK + dFA
 \end{aligned}$$

Stock relationships:

Real world

$K/Y = v$ capital coefficient

$$K = E + F$$

Financial world

$F/Y = f$ financial capital coefficient

$F/K = d$ degree of indebtedness

$$F/Y = (K/Y)(F/K)$$

$$f = v \cdot d$$

Thus the rate of profit can be rewritten as

$$p = r(E/K) + i(F/K)$$

$$= r(1-d) + i \cdot d$$

Appendix C

The Data Basis

Two tapes provided the statistical basis:

-International Financial Statistics (IMF)

-Main Economic Indicators (OECD)

Both tapes form part of the WIFO data base which includes some other data sets used in this study (for example the matrix of world trade). In case of WIFO series the original source is indicated in parenthesis. The source of data presented is also indicated at the bottom of the tables.

List of the time series:

Exchange rates

Nominell rates	IMF (lines rf)
Exchange rate 4RC/\$	Index of the exchange rates between the dollar and the mark, pound, yen and franc using SDR weights
Real effective rates	World Financial Markets (Morgan)
Purchasing power parity	Statistisches Bundesamt Wiesbaden, Fachserie 17, Verbrauchergeldparität nach deutschem Schema

Interest rates:

Treasury bill (3 months) OECD

For the dollar, two interest rates were used, the US treasury bill (dollar as national currency) and the Eurodollar rate (dollar as world currency)

Eurodollar IMF (line 112/60d)

Real interest rates were calculated as the difference between the nominal rate and the percentage change of the deflator (CPI or GDP-deflator)

Gross domestic/national IMF (lines 99b/99a.r)
product

Current Account OECD
Investment (private) in Economic Report of the President (ERP),
the US table B-2

US budget deficit IMF (line 80)
Interest payments of ERP (table B-76)
the federal government

Outstanding debt/credit:

Federal government IMF (line 88)
Public sector IMF (line 88+52b+52b's/1000-88ad)
Private sector IMF (lines 52d+42d's)

Net borrowing is calculated as first differences of outstanding debt

Income distribution	ERP (table B-21)
World export unit values	IMF (line 001/74d)
Raw material prices	WIFO (HWWA)
Crude oil price	WIFO (HWWA)
Other raw material prices	WIFO (HWWA)

Industrial countries

Inflation (CPI)	IMF (line 110/64)
Money growth	IMF (line 110/34x)
GDP	WIFO (OECD)

Gold price	WIFO (SHARP)
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Central banks

Foreign exchange	IMF (line 010/1ds)
Gold reserves	IMF (line 010/1ad)

Both series have been converted into dollars, the latter at the current gold price.

Commercial banks

Foreign assets	IMF (line 010/7xd)
Euromarket (gross size)	World Financial Markets (Morgan)

The weights used to calculate the effective exchange rate index of the dollar (geometric mean) as a component of the credit costs for non-oil developing countries were taken from IMF/Directions of trade (1977) and are as follows:

dollar	0.4463
mark	0.1533
franc	0.0901
yen	0.2056
pound	0.1047

The definition of country groups follows the classification of the IMF.

FOOTNOTES

1) It is interesting to note that the theory of voluntary unemployment became particularly fashionable in economics in the 1930's when more and more people were looking for a job. A similar contradiction emerged in the 1970's: the theory of rational expectations (preferably under perfect foresight) became popular in the academic field exactly at a time period when the expectations of the actors in reality became more and more uncertain.

2) The best example of this "lifting" of old ideas is of course the "new classical macroeconomics" (most impressive in this respect seems to be the term itself, since it is not easy to characterize something by three labels of which none holds true).

3) The general importance of such "crises" for the change of a "paradigm" and thus the revolutionary progress of science is extensively discussed by Kuhn (1962). This concept was already applied by Keynes to economics in the introduction to his "General Theory": "The classical theorists resemble Euclidean geometers in a non-Euclidean world who, discovering that in experience straight lines apparently parallel often meet, rebuke the lines for not keeping straight - as the only remedy for the unfortunate collisions which are occurring. Yet, in truth, there is no remedy except to throw over the axiom of parallels and to work out a non-Euclidean geometry. Something similar is required today in economics." - Keynes (1936, p.16). If we substitute for "classical theorists" "neo-classical synthetists", the quotation sounds fresher today than almost 50 year ago. But there remains one fundamentally weak point: it seems as if Keynes himself believed in the "true" theory, and that it was he himself who had discovered it in the field of economics (hence the title of his book, which seems to have been chosen a bit too ambitiously).

4) The differences are somewhat overstated since the UNCTAD used the current exchange rates rather than data on the purchasing power to convert the national figures into a common price base. This is irrelevant for our purposes, given the dimensions of the discrepancies. For a more accurate international comparison of production and income see Kravis, Heston and Summers (1982).

5) The values in the rows (exports) do not total 100.0 due to a column representing errors and omissions which is not shown in the table.

6) These data stem from IMF (1983), tables 1, 4 and 5 of appendix B.

7) In this study two types of real interest rates are distinguished:

-The real interest rates as cost factor: this is the relevant variable for entrepreneurs (actors in the real world), the corresponding price index is the GDP-deflator.

-The real interest rate as income component: this is the relevant variable for rentiers (actors in the financial world), the corresponding deflator is the CPI.

Entrepreneurs and rentiers are distinguished by their kind of participation in the production process: entrepreneurs are holders of real assets which they accumulate through investment, rentiers are holders of financial assets which they accumulate through saving. This type of classification uses the kind of economic activity (flows) and the corresponding type of property (stocks) as criteria, rather than institutional units. Clearly one can be an entrepreneur and a rentier at the same time. Later on we will discuss the related problems in greater detail.

If not indicated otherwise, the rate of 3 months treasury bills is used as a proxy for the level of nominal interest rates.

8) It seems as if the psychological effects of both oil price increases on effective demand nationally and internationally were by far more important than the direct effects through the acceleration of inflation and the international redistribution of income (even though both channels are interrelated). Given the political tensions at that time, sharpened in both cases by wars in the Middle East and the corresponding social-psychological environment, both events were truly perceived as "shocks" (in the first case even the use of private cars was restricted for some weeks in most European countries).

9) "There are not two separate factors affecting the rate of investment, namely, the schedule of the marginal efficiency of capital and the state of confidence. The state of confidence is relevant because it is one of the major factors determining the former, which is the same thing as the investment demand-schedule." - Keynes (1936), p.149.

10) The effective interest is calculated as the ratio of interest payments to outstanding debt.

11) Since data on the effective rate of interest for the private debt were not available, the corresponding rate of the public debt was used as proxy. This procedure underestimates both the fluctuations of the interest payments and their absolute level.

12) The public sector also includes the states and local governments (intergovernmental credits/debts have been cancelled out - for further details see appendix C).

13) It is obvious that the additional impulse of public spending/borrowing around 1977/78 was rather superfluous (see also figure 4). It is interesting to note that inflation picked up again exactly at that time (1976: 5.7 percent, 1977: 6.5 percent, 1978: 7.7 percent).

14) It seems somewhat astonishing that the rate of interest remained so high and increased even further in a period of exceptionally weak credit demand.

15) In two articles following the publication of the "General Theory", Keynes put (again) particular emphasis upon this asymmetry - Keynes (1937b, 1937c). I owe this hint to P. Mooslechner.

16) It seems as if the international banking community was not sufficiently aware of this basic interdependency.

17) The stability of this ratio can therefore be interpreted as the outcome of a constant real capital coefficient and a stable relationship in the financial structure between equity and liabilities.

18) These data stem from the Economic Report of the President (1983), table B-21 (B-12 for the interest payments of the non-financial corporate business).

19) It is interesting to note that the interest/growth-differential remained positive during most of the Great Depression and only ended with the expansionary impulse of World War II - doubtless a somewhat ambiguous beginning of a recovery.

20) These data stem from IMF (1883), tables 10, 21, 25 and 35 of appendix B.

21) This is a classical (feudal) rentier in the sense of Ricardo; the financial asset holder, on the other hand, represents the modern type. The emergence and increasing importance of the latter results from the fact that the employees do not consume all their wage earnings as assumed in classical economics.

22) For the same reason, a household by definition does not hold real assets. If someone occupies his own house, for example, he is considered an entrepreneur (real asset holder) who produces rental services for himself as a consumer (household). This concept is also generally used in consumption theory with respect to durable goods (there are still other important reasons to consider the acquisition of durables an investment, in particular the time horizon of the decision, the importance of expectations and the relevance of financing problems).

23) It therefore seems useful to think simultaneously in an institutional classification (as applied in the system of flow of funds) and in a classification by the kind of economic activity (like in the consolidated accounts of the SNA). Both systems are necessary due to changes in reality - for classical economists it was justified to categorize institutions and activities into the three classes of rentiers, capitalists and workers.

24) Even though it might be interesting to analyze the rate of interest as the outcome of a struggle for the distribution of overall profits between entrepreneurs and rentiers so that $i = IP/F$.

25) This coincidence has led some economists to the conclusion that a budget deficit causes a current account deficit. Such an interpretation neglects the complexity of economic interdependencies. In many cases, for example, a slump in export demand induces compensating government spending.

26) This basic fact is usually neglected in economic theorizing; but this can no longer be justified when interest payments absorb almost the whole budget deficit.

In this context, one should also keep in mind that interest payments between public and private households do not form part of GDP or overall profits, but transfers. Of course, for any individual household,

outgoing interest payments form part of outlays and incoming interest part of income (and they are so treated by the tax system). But they are cancelled out when aggregated to the consolidated account for the nation.

27) Under reasonable assumptions this factor will be higher than 1, so that the rate of profit exceeds the rate of growth. The conditions for $p=g$ are

$$s_s + s_e W/P = 1$$

$$c_s = s_e W/P$$

$$\text{If } c_s > s_e W/P \rightarrow p > g$$

28) It is important to note that I have deliberately not touched upon the problem of income distribution between overall profits and wages and the related question of inflation. At least in the case of Hicksian fix-price goods, the entrepreneurs can use the pricing of their products as a variable to increase the rate of return through inflation as equation (6) shows: nominal growth picks up and W/P falls (the real rate of interest for rentiers and real wages are relatively diminished). This relation is the basic element in the theory of inflation and distribution as developed by Kalecki (1954a).

29) To illustrate these relationships by a concrete (but partly fictive) example, we assume $s_e = 0.1$, $s_s = 0.5$ and $F/K = 0.5$ and take the US data between 1960 and 1979 for the other relevant variables (roughly rounded at constant prices):

$$i = 0.5 \text{ percent (real interest rate as cost factor)}$$

$$g = 3.5 \text{ percent}$$

$$W/P = 3$$

Through equation (6) we get

$$p = 1.25 \quad g = 4.4 \text{ percent}$$

and (8) gives us

$$r = 2.5 \quad g - i = 8.3 \text{ percent}$$

The great difference between r and i (7.8 percent) can be interpreted as the overall premium which the entrepreneurs had implicitly demanded in order to invest in physical assets rather than in financial wealth. It compensates primarily for the higher risk and the illiquidity. Any change in the relationship between g and i directly affects r . If the risk/illiquidity premium remains unchanged, investment will be adapted, which then feeds back to g .

In the early 1980's, the risk/illiquidity premium might have increased because uncertainty about the future prospects seemed generally higher. This might have further depressed investment demand which was already weakened by the fall of r (=the increase in the interest/growth-differential).

30) It is this channel of financing which suggests that, at least in certain periods of credit crunches or in cases of a very high (F/K) , investment will be stimulated by a redistribution in favour of the entrepreneurs. Therefore, the implications of the distribution model as developed by Kaldor (1955) that the causality runs only from I to P but not also in the reverse direction is not convincing (what seems to be necessary is some kind of reconciliation of Keynesian and classical thought).

31) In Japan, for example, the financial world is much less innovative than the real world is. The former has only to provide the latter with stable financial conditions to facilitate long-term investment projects, including research and development (banks are strongly dependent on the industrial sector, which is an institutional peculiarity of the Japanese economic system).

32) In this case (16) becomes

$$g = f \left[+ (e) \underline{g} \right]$$

33) Insofar as a debtor country acts as a productive unit in its external relations, the following considerations explain the dynamics of debt accumulation; insofar as it acts as a consumptive unit, the Domar model is applicable.

34) Manes (1982), p.113. I have adapted his presentation to the terminology and the structure of the accounting system as used in this study.

35) Interestingly, there remain in principle only two ways to deal with an excessive debt burden, the "implosive" solution through defaults in the case of stable or even falling prices, and the "smooth" solution through inflation. Both ways imply an inevitable redistribution to the disadvantage of the rentiers, but most probably less in the latter case. Also the experience of the Great Depression would point to the merit of the inflationary solution. Of course, an even better way still exists, namely, the renegotiation of the total debt by simulating reasonable credit conditions for the past. But, there remain strong objections from advocates of the equilibrium theory, since such a solution undeniably means an interference in the free market process.

36) In an empirical analysis it seems more appropriate to treat a debtor country as a household for two reasons: first, because the profits from debt-financed investments cannot be identified, and second, because the cash-flow for the debt service has to come from current export earnings anyway - or from net borrowing).

37) The pioneering study in this field was carried out by Domar (1944). I repeat his basic arguments in discussing the case ($i > g$). No reference to this configuration can be found in his article.

38) In the case of the US this holds more or less true. The share of tax revenue of the federal government in overall output developed as follows (in percent):

1959	19.0
1964	18.3
1973	18.9
1982	19.9

39) The distribution effects of the fiscal policy of the Reagan administration might therefore have contributed to the weak performance of the US economy in the early 1980's.

40) The rate of inflation is, of course, the third variable which intermediates between the real and the financial world (besides the rate of interest and the rate of exchange). It influences the interaction of both worlds in time and across countries. Like the two other rates of intermediation, it represents both a flow price and an asset price. The respective stock/flow relations are extremely important for an understanding of the valuation process of real and financial assets (outstanding debt) caused by changes in the general price level: *ceteris paribus*, inflation devalues debts in real terms, deflation revalues them. But in an economy with a basic inflationary trend, what matters might be the acceleration or deceleration of the inflationary process (all prices may adapt perfectly to a continuous inflation but might still be somewhat sticky with respect to changes in the inflationary speed). Thus any acceleration of inflation favours entrepreneurs (F/K decreases), but also other creditors like the government or developing countries through a corresponding reduction of the real debt burden. The contrary is true for disinflation or even deflation. The importance of this mechanism was particularly stressed by Fisher (1933) in his study on "The Debt-Deflation Theory of Great Depressions." I shall later discuss this mechanism of debt revaluation with regard to developing countries - including the effects of the interest rate and the exchange rate.

For the sake of simplicity the problem of inflation has not been treated explicitly (but see also footnote 28).

41) This kind of escalation process did not emerge as long as the financial world was held in check by interest regulations and pegged exchange rates. But in the 1960's, it escaped the interest ceilings by piling up financial assets in the Euromarket. This highly mobile capital then contributed to the collapse of Bretton Woods. Thus, the financial world was finally freed. This caused increasing restrictions for the real world through the instability of interest rates and exchange rates. Such a process normally results in regulations in the real world, for example, protectionist measures.

42) To give a concrete example, "Interest rates on long-term loans can be expected to remain high even if the rate of inflation is reduced, creating the conditions for a large decline in employment and output." (p.501).

43) For a detailed presentation of this disequilibrium approach to exchange rate determination, see Schulmeister (1983).

44) By shifting a 3 months deposit from mark into dollar, one could earn an effective yearly interest rate of 53.3 percent between July 1980 and May 1981 and again of 28.1 percent between October 1981 and August 1982 (see figure 12, diagram 3). Capital movements out of the other reserve currencies yielded a similar profit. Such "bubbles" depress the real world in the countries concerned. This negative feedback effect then causes the inevitable break of such a bandwagon movement after a certain period of time. For further empirical evidence, see Schulmeister (1983).

45) It seems somewhat astonishing that interest rates remained so high in a period when a declining demand for credits coincided with an increasing supply of funds.

46) To put it concretely, all holders of financial assets (symbolized by Wall Street) must be strongly interested in high interest rates, since any significant decline would probably lead to a "bubble" out of the dollar and consequently to heavy windfall losses. This precarious situation becomes even more acute when the banks attempt to take precautions for possible debt defaults by increasing their profits as much as possible (see the respective data). This keeps the interest rate and consequently the exchange rate extremely high. The financial needs of the government (budget deficit) facilitates this strategy for two reasons: it hampers possible countermeasures and serves at the same time as some kind of plausible excuse (the budget deficit as such cannot be the reason for such high interest rates as long as there is excess liquidity in the banking system, which is obviously the case - due to a weak private credit demand mainly caused by the high interest level). What the banking community seems to overlook in this context is the fact that the interest and the exchange rate form part of the credit costs of their debtors, so that the willingness to default is strengthened by this precautionary strategy against defaults.

Good examples of how Wall Street formulates its interests can usually be found in the editorials of "World Financial Markets" edited by the Morgan Guaranty Trust. In this context two articles are particularly interesting. In June 1983, a global scenario is presented to explain how the international debt crisis could be overcome in the long run. The most important role is assigned to the real world in the industrial countries: an economic recovery, increased imports of products from LDC's and further direct investment should make the most important contributions, whereas the role of the dollar interest rate and the dollar exchange rate are shown to be of relatively less importance. The scenario therefore assumes that the two financial variables remain at a relative high level (compared to the 1970's). That a recovery in the industrial countries is not possible under these conditions seems to be overlooked.

In July 1983, the editorial asserts that the dollar is far less overvalued than is generally believed (Morgan is convinced that the real world actors strongly overvalue the overvaluation). Therefore, any intervention in the free markets is firmly rejected. But with respect to the debt crisis, even Morgan seems to have some doubts about the problem solving capacity of free market forces. In June the editorial had concluded, "For while the international debt situation is manageable, it will not manage itself." Since the dollar exchange rate is one of the most important reasons for the debt crisis, there seems to be a contradiction here.

In his "Essays in Persuasion" Keynes remarks: "Banks and bankers are by nature blind" (p.156) and "The present signs suggest that the bankers of the world are bent on suicide." (p.157). Of course, these comments refer only to a period long ago, the beginning of the Great Depression. I found both quotations in a recent article by J. Steindl (1983).

47) Some would argue that this was mainly a consequence of the world recession rather than of the dollar appreciation. But the combined effects of a high dollar interest rate and a high dollar exchange rate are themselves the most important causes of this recession/minor depression.

48) To demonstrate the exchange rate effect, I have calculated the value of the dollar expressed in terms of a currency basket which represents the share of the most important currencies in the overall export earnings of the LDC's (including the dollar itself). This gives an appropriate measure of how the value of the dollar debt has changed. The fact that many raw material exports are generally priced in dollars does not necessarily bias the calculations since this does not mean that the actual payment was made in dollars. The index overestimates the exchange rate effect since it implies that all the debt of LDC's is denominated in dollars. On the other side the overall credit costs are underestimated since its components were just summed up (instead of

multiplying the respective factors) and since the spreads over LIBOR are not included. The fact that more than 80 percent of the international assets and liabilities are denominated in dollars so that the currency structure of the capital market does not represent the accumulation of past current account surpluses/deficits is a basic element of the international financial instability. This discrepancy seems to be the long-term outcome of US seignorage and the expanding activity in the Euromarkets. This asymmetry between the importance of the dollar in the goods market and in the asset market can be interpreted as a consequence of its double role as a national currency and the key currency for the world economy.

49) The contradiction between the real and the financial world within the industrial countries became particularly clear in the case of the international debt crisis. It is touching to see how Wall Street cares for the welfare of the developing world in recent times. Not only are higher imports from the industrial countries urged, but also further shifts of production through direct investment. Both go unappreciated by the actors in the real world (entrepreneurs and also trade unionists) who reveal an increasingly preference for protectionist measures.

50) The gold price increased between 1971 and 1974 at roughly the same rate as between 1977 and 1981. This is not sufficiently illustrated in the chart, due to the low initial level (a semi-logarithmic scale would have been a better representation).

51) When I presented an earlier version of this approach, the concept was criticized as a typical example of circular reasoning. But this might be more praise than blame considering that circular feed-backs prevail in economic reality. For the same reason the notion of "tilts" is of great importance.

52) The attempt of some countries to reduce the budget deficit significantly aggravates the situation. This seems to be the main reason for the difference in economic performance of the US and most European countries in 1983.

53) This is the second important reason for the growth differences in 1983.

54) Here once again, the interest of the classical and modern rentiers coincide: for OPEC, the recent dollar appreciation has at least partly offset the reduction of oil-prices.

55) There are two reasons why even the commercial banks could become interested in such a regulation in the near future: first, because it would stabilize their profits/losses (compared to the extreme fluctuations in the past and future), and second, because it might put them in a safer position with respect to the Euromarkets (without international regulations the lender of last resort problem cannot be solved).

56) It is important to note that saving, as defined in the consolidated accounts of the SNA and in this simplified version, represents the aggregate of private and public saving (where the latter is usually negative). It therefore also serves as a balancing item of real capital formation (if we exclude external transactions): $I = dK = S$. In the US, by contrast, where the SNA is not yet applied, saving is usually defined as private saving, so that it greatly exceeds the accumulation of financial and real assets in the economy as a whole. Though this is just a question of conventions, it might have facilitated some misunderstandings about the "real" wealth of government bonds and the "real" burden of public debt.

57) It is assumed that there are no significant differences between entrepreneurs and rentiers regarding consumption.

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