Currency Cycles
and the International Economy*

1. Introduction

The object of this study is to analyse the intrinsic factors which cause a key currency to move persistently in one direction,¹ and those phenomena which develop as an endogenous consequence of the process of appreciation or depreciation changing the characteristics and ultimately the direction of the process.

We shall refer essentially to the relationship of the Mark to the dollar between 1975 and the present time, as the axis around which the whole world economy has been revolving. As Fig. 1 shows, the nominal Mark-dollar relationship, allowing for the day-to-day oscillations, can be interpolated with a cycle which has oscillated between a maximum of $3.4/DM and a minimum of $1.7/DM.

It would be difficult to describe this cyclic behaviour of the exchange rate as a single episode of rationality, guided by agents' long-term orientations and based on exogenous events which have pushed the exchange rate first one way and then another. This would be the conclusion implicit in any version of the models of the Asset Market Approach.² In that perspective, it would make no sense to speak of currency cycles. Cycles are only accidental.

We claim, however, that these cycles are an endemic feature of the market, determined by the type of reactions, perceptions and signals which have a good chance to come into play, and which produce a sequence and interplay of currency episodes in which the agents'...

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¹ Here we deal with the trends in exchange rates rather than with their short-term volatility which, however, comes into the analytical picture as one of the factors producing uncertainty.

² We assume a certain knowledge of the literature on the Asset Market Approach. For an overall view of which see ISARD (1978), J. SIMMERS-LOOFE (1983), and KRESSIG (1983).
short-to-medium term outlook prevails. This "myopia" arises from the uncertainty and incompleteness of information.

Moreover, we claim that most factors which the theory sees as "disturbances" of a self-regulating mechanism are institutional and structural features of the market that should be analysed within the theory of exchange rates and not as exogenous shocks. In addition, the "other conditions" which are supposed to be "given" in the analysis of exchange-rate behaviour (first of all the production structure) vary with that behaviour. Movements of the actual exchange rate, fixed in one direction and then in another, leave lasting traces.

This paper aims to focus on a stylized succession of causal relationships that can serve as an analytical and conceptual framework for understanding the forces that act on a key currency in periods of widespread fluctuation. We do not, however, dwell on the descriptive-statistical basis of each assertion.

2. Portfolio adjustments

The starting point of the Asset Market Approach is that the exchange market moves according to the logic of the assets market. This leads to a financial interpretation of the determination of the exchange rate; which assigns to capital movements the main role in the short-term behaviour of this rate.

This initial approach is then developed with an analytical framework whose three main premises are as follows.

First, it is a fundamental idea of the Asset Market Approach that the exchange rate is always in equilibrium with the value assumed by the other real and monetary variables of the economy, and therefore that rational agents can rely on the "fundamentals" as a basis for their currency choices. These "fundamentals" may change in value as new information about exogenous variables is embodied in the agents' model of the economy. These changes imply a new underlying long-term equilibrium for the exchange rate. Continual shocks of disturbances and new information create continual financial adjustments; but errors do not accumulate in these adjustments. Delays in adjustment in some real markets cause the short-run equilibrium to diverge from that of the long period; but the two equilibria are connected by a path along which there are no opportunities for profitable speculation. Rational-expectations economists, even when they do not see the adjustment path as heading straight for a new equilibrium situation (as is the case with overshooting), consider that agents cannot be mistaken about the "dynamics" and the exchange-rate value on which the path converges.

The second central idea in the analytical structure of the Asset Market Approach is the exogeneity of monetary and fiscal policies. It is the values of variables, which directly depend on these policies, to which the values of all the other variables are ultimately anchored. The current exchange rate reflects, not only the current value of the exogenous variables, but also all anticipated (exogenous) values which they will take. Accordingly, the Asset Market Approach emphasizes only unexpected changes in economic policy, because these are the only ones that cause variations in the current exchange rate and the final equilibrium values.

The third idea underlying the Asset Market Approach is still more important, as it underlies the first. It states that the financial adjustment...
always takes place in conditions of continuous stock equilibrium. In other words, at any given moment, all agents fully recognize the equilibrium price of the existing assets which is reached instantaneously. Along the whole path followed by financial variables, the discrepancy between desired and existing portfolios is instantaneously eliminated when the relevant data vary.

The analytical approach of this paper does not diverge from the initial viewpoint of the Asset Market Approach, i.e. the emphasis on stocks of financial assets, the speculative nature of exchange markets, and the different speeds of financial and real markets’ reactions. This approach, however, must be distinguished from the analytical premises within which the Asset Market Approach is developed and be placed within other premises regarded as more suited to filter the referential data, and produce a more articulated picture of the processes.

a) If all the available information is not conveyed through prices, the financial adjustment is gradual rather than instantaneous, and the currency market does not reflect a continuous stock equilibrium.

In the Asset Market Approach, the assumption of instantaneous adjustment accords with the presupposition that the market shows a complete knowledge of the basic trends and of the future adjustment path, corresponding to all the information available at each moment. In that context, it is meaningless to categorize agents according to the time horizon of their choices, or by other criteria. Where there is no stock equilibrium, however, the value of information conveyed by prices is slight and may become more so with choices made at those prices. At least one distinction should therefore be made between choices of assets implying a change of currency habitat (a change assumed to be for a longer period, at least in the agents’ intention) and those implying capital movements aimed at very short-term speculative gains.

b) If, as is the case in the real world, portfolio adjustments come about not only through prices but also through quantities, the price of foreign exchange will be determined by transactions that produce equal and opposite alterations in the positions of two agents, which presupposes heterogeneous expectations and behaviour.

c) In the real world, moreover, heterogeneous expectations arise not only from asymmetry of information, but also from the different ways in which information is perceived and processed by individual agents, or from the advisability of using such information or not.

The world postulated in this essay refers to a penetrating observation by Tobin (1982): “The major alternatives to models of financial and asset markets that assume rational expectations and efficient use of information are models that assume slow adjustment periods and disequilibrium. Disequilibrium need not mean that markets are failing to clear, though it may take that form; it may be simply that portfolio investors are off their desired portfolios.”

This context makes it methodologically legitimate to focus on phenomena which endogenously change the macroeconomic features of the path followed by the economy. Dornbusch himself (1982) recognizes the existence of such phenomena when he asserts, for example, that an indeterminacy of the exchange rate may arise where “the monetary policies, which presumably anchor the system, are actually endogenous and can be substantially caused by exchange-rate movements”. Obviously this is not the only channel of indeterminacy.

In the context in which the prevalent theory of exchange rates is formulated, there is no point in a methodological focus on reversals in the adjustment path; attention is concentrated on those phenomena which lead to a new stable position for the economy. This is bound to be all that can happen from within the processes at work.

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9 Rational expectations theorists admit heterogeneity of expectations only insofar as these are produced by asymmetry of information and are corrected by the market process.

10 Speculation is the informational counterpart to rational expectations, arises only from variations in agents’ propensity to take risks; it is a way of shifting the risk from less to more risk-averse agents. This view of speculation goes back to Hicks (1946). For a more recent formulation in terms of rational expectations, see Mcfabe (1982). For a different approach, in terms of divergent beliefs in the market, see Flaherty (1979, 1977).

11 See the important essay by Heilbronn (1983), which shows that below certain thresholds that define the risk of an action agents benefit from ignoring information. This risk is defined by the gap between the competence in evaluating a new situation and the difficulty in making a choice. See also Heilbronn (1980) and Conroy (1980).

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3. A stylized sequence

The differences between the above analytical premises and those of the Asset Market Approach imply a different nature and logical order of the relationships and sequential events within which we can filter and decipher the facts.

The conceptual structure of the Asset Market Approach may be represented in the following way: a) pre-existing equilibrium; b) rupture of the equilibrium; c) rational expectations and perfect information leading the short-term situation onto a financial equilibrium path, characterized by a rigidity in certain markets which constrains the values of the rest of the variables of the economy; d) progressive removal of that rigidity (i.e. of some delay in adjustment along the path); e) new equilibrium.

If, as happens in an arm of the currency cycle, the exchange rate moves in a seemingly non-convergent trend towards a new equilibrium, the reason is that (unexpected) shocks operating in the same direction as the original one may occur before the equilibrium corresponding to the preceding shock is reached. It is the path itself that changes; as a result, the apparent divergence should be explained in terms of short-term equilibrium positions that cross different paths, implying different long-term equilibria.12

A disequilibrium sequence in accord with the above alternative approach has a fundamentally different logical structure.

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12 For example, in models of perfect substitutability of assets, a positive interest-rate differential in favour of a currency indicates the expectation of a devaluation. If a revaluation follows, it is because the monetary policy has prevented the differentials from being spontaneously cancelled (or may even have increased them), and because it may have increased the extent of the expected devaluation. In the concrete case of the dollar in the first half of the eighties, the recurrence of exchange movements in the same direction would be explained by the policy mix and by autonomous changes in portfolio choices. See for example FOSTER (1985) and DOOLEY-JASSE (1985).

It is difficult to give credit to economic tests on phenomena characterized by irregular responses, disequilibrium and decisions as regards expected values when these tests confirm a theory. In this case, we do not even obtain this result, but a weak economic performance for the dollar, as for other currencies. See, for example, METALOGUIK (1984a), (1984b) and HAGGEE-TORREB (1981). Results unfavorable to the Asset Market Approach are generally attributed to insufficient statistical specification and to chronic structural disequilibrium. DOOLHY-JASSE (1982) notes this discrepancy between theory and concrete experience, and attributes exchange-rate movements diverging from theoretical predictions to anticipation of the behaviour of authorities, speculative "bid-ask", and belief that are "external", i.e. to the "real" functioning of the economy. These problems will be considered later in this paper in a different context.

13 Here we always imply a desired portfolio adjustment as regards quantities, an adjustment subsequently satisfied ex post, by variations partly in prices and partly in quantities. Since transactions in the currency market make two portfolio vary equally in opposite directions, when we speak of the direction of portfolio changes, we are referring to the prevailing ex ante situation.
4. Phase I of the currency cycle

Let us rerun the sequence from a) to d), taking as our point of reference the developments in the Mark-dollar relationship.

The initial phase of the trend towards revaluation, the ensuing consolidation of maximum values (with a possibility of further increase), and the phase in which the revaluation ends and the trend begins to reverse, all these call for different explanations. Since these phases are repeated, anyone of them could serve as the point of departure for the analysis; the initial conditions will not be equilibrium ones, but will reflect the whole of the previous history. For convenience of exposition — and perhaps also for chronological reasons — we shall start with the beginning of a trend towards revaluation.\footnote{The terms “strengthening”, “rising exchange rate”, “appreciation” or such are used as synonyms for “revaluation”; and vice versa for “devaluation”.

\footnote{The process of devaluation should be seen as having exactly symmetrical bases. Sector I corresponds to sector V, sector II to sector VI, and so on. The denotation between sectors I and VIII does not appear in Figure 2, because it is not very sharp, and, depending on the circumstances, may lie below or above the x axis.}

\footnote{In the following analysis, there is no need, unlike in the Asset Market Approach, to refer to the net stock of assets; we refer essentially to the gross stock. Moreover the possibility is extraneous to the Asset Market Approach that an additional flow of assets may be created through financial intermediation, and that the response of the productive structure may be sufficiently rapid. In what follows we do not have to make these restrictive assumptions. For a study of the limitations implicit in the Asset Market Approach, see Benigni (1983).}

Figure 2 may help to simplify and clarify the main lines of the argument of paragraphs 4-6. The x axis indicates the direction and intensity of the opinions which agents will most probably derive from signals regarding the behaviour of the real sector; the y axis indicates the direction and intensity of opinions most probably derived from signals regarding the monetary sector (which includes the monetary authorities). Positive signals favour buying the currency in question, and hence its revaluation; the reverse happens with negative signals. As we are concerned here only with revaluation processes,\footnote{This caution takes the form of different opinions on the market regarding the continuation of the rise.} the cycle will be examined at certain points, such as A, where the situation is evolving from sector VIII to sector I.

Agents’ views about the future strength or weakness of a currency — views that stimulate international portfolio changes and pressures on the exchange rates — may be influenced by a number of factors (interest-rate differentials, anticipated behaviour on the part of the authorities, political developments, perceptions of other agents’ reactions to specific events, etc.). There is little to add to what has been said in the economic literature about the importance of these factors.\footnote{In the following analysis, there is no need, unlike in the Asset Market Approach, to refer to the net stock of assets; we refer essentially to the gross stock. Moreover the possibility is extraneous to the Asset Market Approach that an additional flow of assets may be created through financial intermediation, and that the response of the productive structure may be sufficiently rapid. In what follows we do not have to make these restrictive assumptions. For a study of the limitations implicit in the Asset Market Approach, see Benigni (1983).}
A behavioural paradigm centred on the agents’ difficulty in distinguishing between the permanent and transitory aspects of a phenomenon is pertinent to an explanation of exchange rates. In these circumstances, agents tend to base their judgement on the duration of the phenomenon itself. As a consequence, the very persistence of high and rising exchange rates leads in this phase to a persistence of *ex ante* portfolio changes, and increases the amount of assets held in the strong currency. Such purchases make the dips in the oscillations resistant downwards and prolong the trend. Expectations, in these phases, show adaptive aspects and limited rationality; but these are never features of the whole market, in which the main factor is uncertainty.

The confirmations that support and then reinforce the expectations of revaluation are not derived only from the J effect, though its importance in the initial phases of these processes should not be underestimated. Other confirmations may be generated by economic policy reactions. The policies in force will generally be inherited from the period when the situation was in section VIII of Fig. 2, and will therefore be restrictive. The policy remains in force in the new situation brought about by revaluation because it cannot be quickly reversed if its aims take long to be effected; besides, no need is seen to reverse it if the reactions of the real sector give positive signals to the authorities as well as to private agents.

These reactions on the part of the real sector are very important. An economy whose currency is persistently appreciating — such as that of Germany in 1977-80 or of the United States in 1981-85 — is under pressure to adapt its productive structure in order to get by with a higher exchange rate; moreover, it exhibits a drop in the inflation rate, which tends to become structural and to prolong its influence on the behaviour of public and private agents even after the currency has stopped appreciating.

In Section 7, we shall deal separately with the modifications of the productive structure which arise during an entire revaluation-devaluation cycle. For now, we only wish to make the point that, for a certain period of time, the upward movement of the exchange rate is supported and accelerated by signals emanating from these structural changes.

The relative speed with which the productive structure adjusts to trends in the exchange rate is a process which was previously unknown and which emerged during these years of fluctuation. There are

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19. As long as we are in sector I of Fig. 2, this is also compatible with the rational-expectations assumption of asymmetrical information. An interpretation of these events in this perspective cannot be extended to the conditions governing the next phase.

20. These aspects of rationality, as understood in this paper, concern predictions based on an elementary system of relations referred to the functioning of the economy. Predictions are not parametrically derived from past errors or current developments. The concept of rationality is much broader and more flexible than the one implied by the theory of rational expectations. Obviously, if the expectations in the market are largely adaptive (or of another nature), a rational investor — endowed (impossibly) with knowledge of this aspect — would have to take account of it. But this should not lead us to confuse the nature of the expectations.

21. This relative constriction of economic policy cannot be entirely discounted in the expectations; hence, the positive interest rate differentials which it creates always end up playing a positive role in the rise of the exchange rate.
obviously limits to this process, but it is far more pronounced than would previously have been expected. 23

When the impact of the revaluation ends by confirming and reinforcing the exchange rate movement, other aspects are gauged onto the adaptive and rational aspects of expectations prevailing in sector I. Agents who take a short-term view (but not necessarily they alone) may end up basing their expectations on the tendencies already manifest in the exchange rate. They perceive the "strength" of a currency which is being revalued, and the "weakness" of one being devalued. These expectations cause exchange-rate movements that lead to further devaluation or revaluation. An extrapolative facet of expectations emerges especially after the first movements of revaluation (or devaluation), as the situation moves into sector II (or sector V) of Fig. 2, and is guided by signals which have appeared in the meantime. 24

In his study of exchange fluctuations between the two world wars, Nurkse (1944) already showed an understanding of the importance of private capital flows and the presence of extrapolative currents (often short-term) in the persistent movement of the exchange rates.

Nurkse noted that, in the ex post balance of foreign accounts, capital movements were the independent variable, and trade payments the dependent one. 25 In other words, if capital is flowing towards a currency thanks to expectations induced by a revaluation already in progress — which is thus reinforced — the compensating flow is that of trade, in the sense that a deficit in the goods-and-services account appears. In the reverse case of a devaluation, a deficit appears.

23 Perhaps one might be expected to start that such a process would take place in the industrial economies; during the period of fixed exchange rates, these economies had become attuned to their own exchange rate, and not vice versa. Though imbalances did accumulate, they cannot be considered high in relation to the twenty-five years of near stability of the exchange rates. 24 Artis (1976) and Orsoni (1985) find that speculation against the mark (1974-77) and the yen (1987) had an extrapolative component. The possibility of speculative bubbles can even be incorporated within the context of rational expectations. See Blackard (1977) and Tracinski (1981). In this context, the speculative bubbles are studied as the cumulative divergence from the fundamentals; this divergence is known to exist in real terms because of the existence of speculative bubbles, who are also able to assess the possibility of a collapse. Such a view implies (a) that the fundamentals are independent of the values assumed by the exchange rate during the speculative bubble. Here these conditions are put in doubt. 25 Keynes (1929, 1948) held an opposite view, whereas the dynamics of the exchange rate traded flow was the independent variable, and the capital movement the dependent one. Earlier, however, Keynes (1923) looked to capital movements for the explanation of these dynamics. We agree with Nurkse's thesis — later adopted by the Asset Market Approach — on the primacy of capital movements.

24 In any case, it is never automatic, nor is there one-to-one correspondence between the ex ante disequilibrium of capital account flows and the determination of trade balances. Moreover, many of the real transactions are independent in volume of variations in the exchange rate.

The exchange-rate models which assign a role to the current account are not satisfactory in their presentation of the clearing of the exchange market. The exchange rate is determined in the asset market without any currency transactions between financial agents, and the current-account balance which results for each value of the exchange rate is made equal to the flow of capital merely for reasons of ex post identity. See Bason (1971), Krueger (1975), and Dombrusch (1980). A critical review of this procedure is to be found in Blasco (1985).

25 For the case where the J effect can lead to explosive paths, see Williamson (1971), White (1978) and Linn (1983). The last two of these articles conclude that this occurs only if counter-speculation is insufficient. Concrete evidence has shown that this is by no means a theoretical case. See McMillan (1969) in this connection.

A rise in the exchange rate due to "bundwagen phenomena" can be circumvented within specific aspects of the currency cycle, in which there are favourable conditions for that type of speculation (in Fig. 2 these are represented in sector II). As we shall see later, conditions favouring those limited episodes may arise in other sectors. A good deal of empirical literature is devoted to assessing whether continued extrapolative behaviour might contribute to the explanation of prolonged exchange-rate movements. In this sense, it is easy and plausible to reject the hypothesis.
already attracting them. Monetary policy works in the same direction because — whatever fiscal policies the authorities follow — it can only be restrictive and aimed at limiting the fall in interest rates.

Thus, in a second stage of the revaluation process, the constraints affecting economic policy are different from those which operated in sectors I and II. But the economic policy is still very likely to go on producing positive signals in favour of revaluation.

The reasons why the exchange rate appreciates gradually (through a series of ups and downs) and does not arrive at its potential cumulative revaluation in a single bound do not lie in the rigidities in the system — which, if anything, ought to give rise to quite different dynamics. The point is that agents cannot immediately see what range of the exchange rate is consistent with other economic factors. Even if information were homogeneous and there were agreement about the causal components of the reactions, the fact remains that the parameters can have a wide range of values, and each exchange rate can be compatible, in the short and in the long period, with a very broad spectrum of values of the other variables with which it is linked.

A revaluation process can be attributed to the fact — dear to the New Classical Macroeconomists — that new information is flowing into the market. But this new information covers endogenous responses of the economy — responses which are not therefore known a priori to the agents as relations of the "model", but are evaluated, deciphered and discovered as they gradually take shape.

As the market does not immediately identify the range of exchange-rate values consistent with the changed conditions that lead to revaluation, this identification becomes even more difficult afterwards. The movement of the exchange rate does not leave the background conditions of the real economy unchanged, and this reflects back on the dynamics of the exchange rate.

5. Phase II of the currency cycle

The excessive volatility shown by the exchange rate during this phase is a characteristic feature of the situation. This volatility may in turn further delay portfolio adjustments, particularly when sharp jumps discontinue the trend and are followed by inversions. The time horizons of the economic agents are shortened by this volatility. The range of values encompassing the ups and downs in sector III, however, does not yet interpolate an inversion of the trend, though it may establish a consolidation of existing exchange-rate levels, or a moderate continuation of the rising trend.

In the light of what has been said in Section 4, we can see why the appearance of a negative current account, or a fall in competitiveness, or other repercussions on the real sector, are not sufficient to halt and reverse a process of revaluation.

Changes in expectations do not follow signals mechanically or automatically. Agents with a longer-term view may still not question the opinions about the economy's relative potential for growth which they held at the beginning of the revaluation process. This is especially true if the first negative signals coming from the real sector are contradicted by other signals from the same sector, including judgements as to how that sector has been reacting to the revaluation up till then.

In the case of the appreciating Mark, a number of factors such as: the length of the period during which the German current account remained in surplus, trade specialization, low inflation, and the ability to absorb oil shocks may have been given more weight in deciphering the future than other factors. Less consideration was given to the shrinking of business profits, the weakness of investment, and the gradual reduction of the current account surplus until its sign was reversed. In the case of the appreciating dollar, greater weight was given

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27 In the prevailing theory, the appreciation ought to happen suddenly and later give rise to a gradual devaluation.

28 Actually, the world to which we refer is one in which volatility and strong differences of opinion are components of expectations, and information is spread unequally. The fundamentals are too vague for all the agents to agree on.

29 The literature deals with errors in assessing the fundamentals in terms of beliefs which are "extremos" to the "true" model of the economy. See Dornbusch (1982). No study has ever been made of the case in which extremist beliefs were more than one, and different for various agents. When the information which can be inferred from the prices is not clearly defined because of the extremist beliefs, every price can be an equilibrium price — cf. Heijmans (1980) — or the rational-expectations equilibrium may not exist — cf. Fama (1981). An indeterminacy may arise in informationally efficient markets too — cf. Andersen (1984) — when there are no exogenous (future) prices to which to anchor decisions on the risky assets and, at the same time, spot prices (future) prices to which to anchor decisions. Thus, the determinacy result is tightly related to the problem of defining the information reflected in prices in a precise way in efficient capital markets. The indeterminacy of the asset price implies that any information can be included in the price and thus any price is an equilibrium price — Andersen (1984).

30 We will return to this point in Section 7, especially in footnote 92.
to the ability to manage the economy and to the current growth rate as indicative of future potential. These factors were supported by the decrease in inflation and by the resulting improvement in profitability. An ever-increasing deficit on current account was therefore interpreted by agents as a kind of investment, notwithstanding the evident loss of competitiveness of firms engaged in foreign trade.

In sector III, the assessment of real factors may for a while have a neutral (or even a moderately favourable) influence on investment in the currency in question by agents with a long-term perspective. In that case, monetary factors (including the anticipated short-term behaviour of the authorities) may play a major role in determining exchange rates in the short run. Agents who take a very short-term view, and who keep a close watch on contingent factors, may get the upper hand in the market and be responsible for fluctuations. These agents are akin to those of the rational-expectations type, though "myopic" in their horizon.60

Inertia, however, also enters into the picture: that is to say, past trends and the status of a 'strong' or 'weak' currency remain in the economic agent's memory even when the underlying situation changes. These factors are self-fulfilled and fed on delayed responses to the previous situation.61

For a further period, the exchange rate may stay at the maximum levels reached; it may go above them, and it may even eventually be subject to a "bandwagon effect". It takes time before lasting consequences for the real sector of the economy emerge and are perceived by the agents. Up to then, different ways of deciphering the situation and projecting it balance each other in the currency market more evenly than in the previous stage. One or other interpretation may at times prevail, but they still keep the exchange rates high and thus prolong the consequences of the past revaluation. The inversion of the currency cycle is a process, a phase, rather than a sharp about-turn.

60 Again, limited phenomena of "bandwagon" speculation are possible, not as prolonged features characterizing the phase, but as bubbles which occur continually in the market and which rapidly burst; their existence is admitted by the theorists of the Asset Market Approach (see for example FRANKEL, 1985). These limited bubbles are not control, because they concern agents of the revaluation of the high exchange-rate levels reached during the cumulative revaluation.

61 When it could still be admitted that changes in underlying conditions were registered only slowly in the formation of expectations, studies on interest rates in the presence of inflation indicated substantial delays in adjustment. A review of the literature can be found in EGGERTS (1979). The problem of distinguishing between permanent and transitory variabilities in underlying (1979). The problem of distinguishing between permanent and transitory variabilities in underlying.

62 The inversion of the currency phase is a process, a phase, rather than a sharp about-turn.

63 A certain degree of endogeneity can be imagined for the portfolio balance models, if the price premium depends on the size of the stock of domestic securities owned by foreigners. A pronounced current-account deficit driven by the demand for securities down and increases the supply.

64 In the Asset Market literature, the behaviour of central banks is taken out of the context of reactions and impulses coming from the economy; it is always seen as an exogenous disruptive factor.
advance and, in this particular phase, it can be anticipated by agents — a situation very similar to the one analysed by rational-expectations theorists. The similarity is only partial, however, because neither the size nor the timing of the interventions can be anticipated. For agents with a very short-term horizon, who in this phase occasionally dominate the market, it is not as important to anticipate the direction as the point in time of intervention.

Still, although the reactions of the authorities (or the possibility that they will react) change agents' ideas of exchange-rate behaviour in the immediate future, the previous opinions about the status of a "strong" or "weak" currency change much more slowly. It must be emphasized that these "inertia" factors are an important component in expectations because they are based on objective conditions (and not only on psychological ones). The whole subsequent cycle is conditioned by the inevitable delays in grasping the change of scene.

Objective conditions are inherent in the agents' difficulty in finding their bearings when the cycle is being inverted, as can be seen in the case of the D-Mark in the period from the end of 1979 through 1980.

In the phase of a cycle's reversal, especially for agents adopting a monetaristic point of view, signals are contradictory. When policies aimed at stabilizing exchange rates take a deflationary stance in countries subject to deflation, or moderately expansionist in those subject to revaluation, the result is a pronounced modification of the existing current-account imbalances, since in the real world the effects of relative changes in domestic demand have dominated the effects of changes in relative competitiveness. As long as the current account of a country whose currency has been judged "weak" becomes positive, or that of a country with a strong exchange rate becomes negative, the pre-existing inflation differentials are not immediately corrected. Nor are differentials in money supply growth (because of a certain endogeneity to demand); as a result, even differentials in real interest rates are corrected. When the picture for the agents is blurred, past impressions still prevail, and the previous opinions about the long-run strength or weakness of any currency may be slow to recede. During this phase, then, the range of expectations is at its widest, and the difficulty of detecting the future trend accentuates the volatility of exchange rates, as happened in 1980. The time horizon of speculators becomes increasingly shorter.

Maximum volatility was also registered in the analogous phase (1985) of the dollar cycle. This was not a mere repetition of the phase just described, because there was a difference in the political economy responses which accompanied the cumulative revaluation. In the case of the dollar, there was an expansion of phase II, in which the political economy corrections — which led to a diminution in these differentials in the rates of interest and in growth rates and to a marginal improvement in the trade balance — did not coincide with a complete recognition of the preponderance of the negative signals emanating from the real sector. The expansion of phase II (which means sector III) ended by reducing the inversion phase.

When the inversion of the situation is widely perceived (usually after some delay), the two currencies swap roles. The currency which had previously been weak — the dollar from the beginning of 1981 onwards and the Mark and the yen from the end of 1983 — is driven up by the same sequence of events and expectations which dragged it down at the beginning of the previous cycle.

The complete cycle describes the full circle shown in Fig. 2. For the currency which had appreciated, we enter sector V, and, for the one which had devalued, sector I; both of them, in different sectors, traverse different stages symmetrical with those with which they had gone through in the previous phase.

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34 See ARTIS-Young (1979).
35 Admittedly, the Asset Market Approach does emphasize the expected value of such variables in agents' financial decisions. This is certainly correct, especially in the context of that theory, where agents know the "true" model of the economy's functioning and agree on it. However, when there is no strong consensus on the fundamentals, and the latter are very vague, the current situation certainly has a greater weight in forming expectations, especially if the signals do not converge, and are at odds with the movement of the future exchange rate considered likely.
36 This obviously concerns not only the Mark and the dollar but also other currencies. The case of the Indian lira is interesting. As late as 1976-77, transmission of the past still underpinned the image of a weak currency, despite the change in underlying conditions. This change was reflected mostly in a positive current account and a high rate of production growth, though those were accompanied by high inflation rates and by a growth of money supply higher than in the other countries.
37 There is an interesting analogy with what happens during periods preceding an acceleration or deceleration of inflation. The range of agents' expectations, as shown by surveys, widens enormously, and does not narrow again until the tendencies have manifested themselves (see Chay-Lee, 1980). It is interesting to note how various tests of expectations, as surveyed by polls, fail to confirm the hypothesis of rational expectations. Most authors conclude that the data fit better into a hypothesis of adaptive expectations. A survey of this topic is found in Vano (1984).
38 The effects described for the period 1979-80 are considerably obscured in the period 1981-82 because of the simultaneous fall in the price of oil.
39 The yen is a separate case. Its currency cycle has been continuously disrupted by the authorities who have been able to operate in this direction as long as the Japanese capital market enjoyed a relatively closed position. However, shorter the cycle was in fact, it did exist.
40 By this, we do not mean to imply that history repeats itself mechanically through processes which can be represented in a parametric model.
The country whose currency is headed for revaluation finds itself with a current account in surplus; business firms there are in a healthy financial state, and interest differentials have moved in its favour relatively to the previous situation. This is exactly where we started in analysing the first phase of the exchange-rate cycle, whose conditions we then considered as a legacy of the past.

7. Fluctuations of the exchange rates and productive structure

The productive structure, or the condition of the real sector in general, besides being among the causes of these currency cycles, is also partially an effect thereof. Here we shall take up this point again and look at currency cycles from a different angle.

Insofar as the relative growth potential and the competitive strength of a country bear on the financial choices that lead to a currency revaluation, the strongly competitive sectors within a country interact negatively with the others; the weak sectors are forced to face up to foreign competition which they would not otherwise have encountered, at least not to the same extent.

In the literature which analyses the consequences for an economy of the presence of a strong exporting sector, various channels may govern the interaction between sectors: the nominal revaluation, the labour market, and demand. For the first channel to operate, the nominal change in the rate of exchange should give rise to a change in the economy's short-term competitiveness. Not all Asset Market models admit of this possibility, and those which do have the limitation that they neglect the autonomous reactions of supply in response to the path of the rate of exchange: the sectoral composition of production reflects only variations in demand. These models, in any case, end up by having as the main long-term channel the labour market. This forces the overall demand to return to its starting values, to which the natural rate of unemployment corresponds. As a result, the expansion of one sector (assumed to be permanent) compels the others to contract accordingly.

In other Asset Market Approach models, on the contrary, the autonomous reactions of supply predominate; these are in response to changes in the domestic relative prices. But competitiveness never changes with ups and downs in the nominal rate of exchange (the first channel is not operative); nominal prices in the sectors exposed to foreign competition are fixed internationally, and those in other markets (including the labour force one) are determined by the clearing of demand and supply. The sectoral processes, if they are to be incorporated in an approach in which the rate of exchange is determined in the short run by financial factors, call for a number of hypotheses in addition to those outlined in Section 2 as characteristics of the Asset Market Approach.

a) In the first place, consequences, developments and the time profile of the sectoral changes are perfectly well known to operators. We therefore again have a path of perfect arbitrage between present and future as regards the financial choices by agents, and one which includes this information.

b) An exogenous sectoral change (in general a boom in some sectors) is the occasion giving rise to the process of sectoral interaction. This is generally perceived by agents as a raising of permanent income.

c) The processes are dichotomous; only real shocks have real consequences, whereas monetary shocks have only consequences on nominal values.

d) The sectoral modifications which take place along the path of equilibrium are reversible: with the overshooting of the rate of exchange...
change, there may be an overshooting in the contraction or expansion of a sector, which is later inverted gradually as one moves towards final equilibrium.

In order to escape from a static approach regarding the way sectoral responses occur, it is not enough for this literature to hypothesize continuous variations in sectoral relations along the equilibrium path; the specific changes in demand and supply accompanying the changes in the underlying conditions, and defining the moving general equilibrium, are seen in an analytical framework in which the technical production conditions are unchanged.

The difficulty in using this literature to articulate the phases in which events in the real sector help to make the rate of exchange rise lies in the fact that we are faced with processes of sectoral transformation which have taken place without tensions on the market for labour and goods, and even with an increase in unemployment and unused capacity. The hypothesis that the sectoral interaction is fueled by the rise in real wages or by the increase in demand triggered by the booming sectors is not compatible with the interpretation of this reality.

The point is that the supply side reactions are not of the kind described by the theory, because, even on the hypotheses of the models, they ought to be seen within a set of dynamic processes which modify the sectoral structure. A few sectors may remain immune to the effects of revaluation, and even gain from it. In general, however, revaluation leads to changes in supply conditions, as firms exposed to foreign competition — especially the most vulnerable ones — try to temper its impact by restructuring and affecting cost economies, differentiating their products, switching markets, and accelerating technological improvements.

The greater the share, in a country’s production, of those sectors not seriously hit by price competition, and the more effective, in general, the reaction of the vulnerable sectors to the restoration of profitability and competitiveness, the less will the country be initially affected by revaluation. But this is only part of the story. A rapid change in supply conditions, generated by the very success of the reaction to the exchange-rate movement, becomes in the end a labour of Sisyphus: by pushing the exchange rate higher and higher, it reduces the number of the first (more immune) group of sectors, and prevents many others in the second group from managing to recover their lost profitability and competitiveness. Whole industries or product lines are unable to stay in the market, and are abandoned.

The extent of a potential rise in income is not therefore a piece of information acquired at the start of the process independently of the course followed by the rate of exchange; perception by the agents varies and may extrapolate from contingent situations, both when the transformations in production keep up with (or seem to do so) the cumulative variation in the rate of exchange and when they are unable to do so.

The dichotomic aspect of the models is, in this respect, another obstacle to the understanding of the real situation. Even if the factors that instigate and propel a rise in the exchange rate did not originate in the real economy — they might involve monetary or other considerations — the sectoral dynamics described above would still operate with the same consequences. If the signals thus given then encourage those financial choices, however they originate, the pressures on the exchange rate may be prolonged and take on an explosive intensity. The exchange rate behaviour, when dominated by financial factors, is more a direct cause than a reflection of the productive structure.

For the simple reason that international portfolios are held in (or oriented towards) the currency which at a given moment seems most likely to revalue, the present international monetary system creates phenomena of the type described above, in countries whose currencies are used for investments and international payments. Their currency cycles are inevitable. Trends lasting four or five years are long enough to produce important reallocations of productive capacity. The stronger the supply side reaction of firms, the greater the margins allowed by the J effect or by non-competitive markets in which the firms operate; or, more generally, the greater the competitive capacity which the country demonstrates despite the revaluation, the more unidirectional are the

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*ENDERS (1984) and BROWN (1985) use models with unemployment, but in both cases they involve fixed exchange rates, and lack any supply perspective. In van Wijnbergen (1986), unemployment is just a temporary “inequilibrium” feature caused by delays in the adjustment of real wages.*

*Supply reactions cannot be analyzed as positions along a given supply curve, as occurs on the contrary in the reference literature. In the most easily manageable (and partial) case, they imply a shift in the curve itself and entries and exits of firms into and from the market. The strength of the productive structure’s reaction can be related to four components: a) the magnitude of the actual and expected revaluation; b) the financial situation of the firms; c) the technological possibilities available; and d) the change in real wages. “Real” models completely miss the process, as they assume that firms react only to relative prices of internal inputs.*

*In the models the latter can only modify the value in a country’s currency of a permanent flow of additional income which is given in foreign currency and is a datum of the situation.*
signals given to international financial investors. The economy with the key currency is induced by these phases to equip itself in order to survive with a high exchange rate. Such an economy will move towards sectors less sensitive to the exchange rate, or potentially more profitable, or more technologically advanced — in any case, towards sectors less subject to price competition.56 However, as we have already seen, the very success of this tendency prolongs and amplifies the wave of revaluation, which leaves such countries cut off from a considerable number of sectors and lines of production.

Even when the current account shows a negative balance, the revaluation may continue, reflecting agents' assessment of the country's relative capacity to generate income in the long term. That assessment will not change until new information (or the prolongation of the deficit itself) shows it to be untenable.

Afterwards, as an exogenous consequence of the original portfolio choices, these choices will change, and one key currency may be abandoned in favour of another (Sections 3-6). This oscillation of the exchange rate does not provoke a fluctuation in the productive structure, because the shifts that take place during the period of revaluation are hard to reverse. Transitory events such as a rise in the exchange rate can leave permanent traces afterwards.

This can happen in different circumstances also. Besides the oscillation of key currencies, raw material prices have also fluctuated.

54 If the process leads to a reduction in the growth of real wages, the strain is attenuated. Throughout this discussion, we have been referring to different types of sectors "exposed" to foreign competition, and ignored the "protected" sectors, but it is worth noting that, in a certain sense, this shedding from price competition also involves the economy's tendency to extend the protected sector. This happens especially if the appreciation is accompanied by unemployment and a drop in real wages in terms of domestic output.

The "monetary models" of the Dutch disease help us to understand why the process does not end soon after the appearance of a deficit on current account. In these models, the anticipation of future income causes speculative capital movements and appreciation even before the export income is realized. These monetary models usually deal with the discovery of natural resources. They imply an announcement effect and a price predictability of the dollar, duration and timing of future income. Apart from that particular case, future income is a matter of conjecture, and the economy's capacity to generate it is best stochastic. Agents learn to orient their decisions on the basis of information provided by the exchange rate, the perception of competitive strength, reflected by the behaviour of the current account, has, in these circumstances, the role which acquaintance has in the models. Hence, the role is less marked, but it still leads to deficits in current account.

55 The idea of reversibility is implicit in Dutch disease models in the assumption that there are successive stages of equilibrium (depending on the varying mobility of the factors which may reverse the effects of the preceding equilibrium. This is consistent with the natural way of considering the supply side reactions at different positions along a given curve. In Tarko (1963), these structural changes proceed proportionally, by discontinuous leaps parallel with the discontinuous leaps of domestic relative prices.

56 The influence of the currency cycle on the cycle of relative prices of raw materials diminished in the eighties. The same occurred with the seventies.

57 We refer to Great Britain, Australia, the Netherlands, and Norway.

58 The Switz Franc and the Austrian Schilling can be taken as examples.

59 These aspects have been discussed in the literature with reference to the relationship between relative prices of different markets and the variability and scale of inflation. See especially the "permanent transitory correlation" of CUKERMAN (1982, 1984), already mentioned in Section 4. This correlation affects supply, especially in periods of devaluation, when the dispersion of prices in the same international market generated by the exchange fluctuation gives rise to opportunities for profit which appear to be of uncertain duration.
the new situation begins to be thought of as permanent, the fact remains that profit opportunities that would entail entry into the market in conditions of certainty may not be exploited, the more pronounced are the conditions of uncertainty and of variability in the expected profits.38

This may explain why lines of production abandoned during devaluation are not resumed during devaluation. Furthermore, the necessary investment costs cannot but have risen in the meantime, because the producers (in other countries who remained in the market have increased their share of it and consolidated their position by changing the technology, the marketing practices and even the characteristics of the market.39

Currency cycles may lead to a paradoxical situation. Because of their sectoral ratchet effects, all the advanced countries are induced to shift their specialization towards areas of production which are initially least sensitive to (international) price variations. The more this happens, the more these countries risk creating surplus capacity in those sectors and causing a competitive situation which in the end may make such sectors more akin to the others. However, the alternation of periods of meagre and superprofits takes the edge off competition, and the same result is produced by the diversification of risks through foreign investments.

Another paradox in currency cycles is that those countries that manage to remain within the range of cycles of the most important currencies end by enjoying a privileged place in international trade.

They profit from specialization of production which is apparently weaker, but which benefits from the exit of competitors from the market in those sectors where these countries have a greater hold.40 Moreover, currency cycles and the consequent cycles in relative prices suddenly shift purchasing power from one area to another. This necessitates a flexibility of supply in order to respond to sources of

39 A typology of behaviour along the lines of SPENCE (1977), SALTZ (1979), and DENT (1980) lends itself to the schematization of this case. In this approach, the producers in the market look out potential entrants by overinvestment.
40 Remaining within the range of the cycle also implies a revaluation towards one of the key currencies. Because this is a moderate and partial revaluation, it can generate adequate supply reactions that transform and reinforce the pre-existing sectoral structure. In the perspective of these broad ideas, we can understand why Italy, France, Spain and other similar countries have kept up with the rapid changes on the economic scene and indeed increased their qualitative and quantitative importance in world production.

8. Conclusions

Exchange-rate movements endogenously determine further movements which cannot converge on a unique and recognizable "equilibrium" value, given the number of the reactions they cause and the difficulties of orientation which they create for the agents. The "long-term equilibrium exchange rate" so often referred to by the prevalent theory is a dubious notion, and so are the "long-term equilibrium price of commodities" and the "long-term equilibrium interest rate". The value assumed by the exchange rate at any moment is, within certain limits, broadly conventional.

The devaluation/revaluation sequence for each of the key currencies — which we have called the currency cycle — can be subject to a few generalizations and can be explained within a system with stylized relations, but it is difficult to represent this cycle in a parametric and deterministic form.

The behaviour of the exchange rate cannot be analysed separately from the sectoral dynamics which that behaviour produces. When those dynamics operate in the countries with key currencies, the sectoral pressures they produce end up by affecting the whole of the international monetary relations, conferring on it an active role in changes in international specialization.

A very interesting simulation, which unfortunately no econometric exercise can provide, would be to figure what would have happened if the Mark-dollar relationship during the past thirteen years had remained at the mean value around which it has oscillated. The answer is crucial for an understanding of the disadvantages of the system of fluctuating exchange rates.

Roma

SALVATORE BIASCO

40 It is remarkable that the yen should have often remained within the range of the main currencies. Unlike Germany and the United States, Japan has managed to keep the dynamics of the exchange rate under control. This has allowed the productive transformation of Japan to proceed more gradually and without prolonged shocks. But this anomaly seems to be a thing of the past, since the liberalization (by now inevitable) of the Japanese currency market. And, today, Japan is in difficulty precisely because of its specialization, which in the end causes agents to consider the yen as a currency liable to be revalued.
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"New" Directions for Private Resource Transfers

The traditional contrast has been between, on the one hand, a package of resources in the form of 100 percent equity investment by the parent company and continuing full control of the firm, and, on the other hand, arm’s length market transactions between entirely independent agents, where control completely ceases at the point of transfer.

Since the 1960’s and 1970’s there has been a growing tendency to add to these two traditional forms other arrangements. Ownership has been diluted, so that it can vary between zero and 100 percent. Control can be shared to varying degrees. The forms of control can be confined to specified areas. And these arrangements may be changing, in a previously agreed manner, over time. Sometimes these are called “new forms of foreign investment”. They have been most in evidence in the petroleum and metals industries, but also in manufacturing, particularly for host country markets and in industries with mature technologies. But there is considerable variation in the experience of different countries and sectors. In fact, these “new forms of direct investment” are neither new, nor in the strictest sense investment. But they have become more frequent in the seventies, and they have, to some extent, replaced more traditional forms of investment. Among them are the following:

1. Licensing agreements
2. Joint ventures
3. Turnkey projects
4. Sub-contracting (without equity participation)
5. Management contracts
6. Marketing contracts