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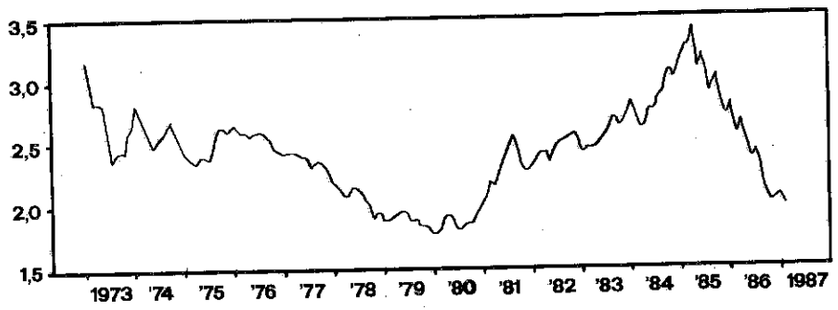
[1] Here we deal with the trends in exchange rates rather than with their short-term volatility which, however, comes into the analytical picture as one of the factors producing uncertainty.

[2] We assume a certain knowledge of the literature on the Asset Market Approach. For an overall view of which see ISARD (1978), J. SHAFER-LOOPESKO (1983), and KRUEGER (1983).

FIGURE 1

MARK-DOLLAR RATE OF EXCHANGE



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, first 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.[3]

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

[3] If the term did not suggest very different approaches, one could describe what is presented here as a "model", in which relationships are formulated in qualitative terms, and in which there is none of the determinism and standardization that characterize the prevailing approaches in economics.

rate; which assigns to capital movements the main role in the short-term behaviour of this rate.

This initial approach is then developed within 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 shock 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.[4]

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.[5] 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 subsumes the first. It states that the financial adjustment

[4] The theory can avoid the assumption that economic agents know the underlying long-run value of the exchange rates simply by assuming that they have "perfect myopic" expectations. In no case, however, can the myopia be postulated as a function of uncertainty, because it is implicit in the approach that all expectations are fulfilled, and continue to be so until the path converges. It might even be imagined that "perfect myopic" expectations are characteristic of an explosive path, but this is a "curiosum" devoid of economic logic, as FRANKEL himself (1985) recognizes. We shall return to this subject in note 23.

[5] In this approach, it is not clear on what considerations the agents base their opinions as to the (future) behaviour of these variables; nor are the motivations of economic policy made explicit.

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.[6] 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,[7] 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.[8]

[6] It is perfectly conceivable for prices to be formed even without transactions. See BIASCO (1985).

[7] In the context of the rational-expectations view, an equilibrium reflecting full information is not reached when the dimension of the state vector is greater than the dimension of the price vector. In this connection, see HELLWIG (1980), BRAY (1981), and DIAMOND-VERRECCHIA (1981). A review of the literature can be found in ANDERSEN (1985). It is worth remembering that the hypothesis of informational efficiency assumes that all utility functions are common knowledge, that the information vector is expressed solely by the price system, and that any heterogeneity of expectations is due only to differences in initial information.

[8] Such a distinction is a purely logical one, but is unlikely to be so sharp in practice: identical types of assets may be found in both categories.

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,[9] but also from the different ways in which information is perceived and processed by individual agents,[10] or from the advisability of using such information or not.[11]

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.

[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, in the informational context pertinent 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 recent formulation in terms of rational expectations, see TIROLE (1980). For a different approach, in terms of divergent beliefs in the market, see HIRSHLEIFER (1975), (1977).

[11] See the important essay by HEINER (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 HEINER (1985) and GOWDY (1985).

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.

[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 FRANKEL (1985) and DOOLEY-ISARD (1985).

It is difficult to give credit to econometric 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 econometric performance for the dollar, as for other currencies. See, for example, MEESE-ROGOFF (1983a), (1983b) and HACCHE-TOWNSEND (1981). Results unfavourable to the Asset Market Approach are generally attributed to insufficient statistical specification and to chronic structural change. DORNBUSCH (1982) notes this discrepancy between theory and concrete experience, and attributes exchange-rate movements diverging from theoretical predictions to anticipations of the behaviour of authorities, speculative "bubbles", and beliefs that are "extraneous" to the "real" functioning of the economy. These problems will be considered later in this paper in a different context.

a) A portfolio adjustment is a process that takes place in time. Asymmetries in information and different ways of interpreting signals are endemic features of the exchange market. Both long- and short-term expectations are characterized in general by lability and strong differences of opinions. If it is true that uncertainty leads to volatility of the exchange rate (whatever the chain of cause and effect), it is also true that volatility increases uncertainty. Volatility is one of the reasons (joined to incomplete information, costs and inertia) why portfolio adjustment takes place gradually.

b) This gradualness does not necessarily have a stabilizing effect on financial markets. It can cause excessive movements in prices if the adjustments mainly concern flows, if a large share of the market adjusts *ex ante* in the same direction,[13] if there are not enough speculators taking opposite positions, or if they are slow to act.

c) In these circumstances there may be explosive developments. The exchange rate may assume an autonomous movement which affects macroeconomic stability. Signals sent out by a market may lead to irreversible decisions in other markets, or to institutional changes, or to reactions on the part of the authorities. Such developments do not necessarily discourage investors from maintaining the *ex ante* direction in which portfolio adjustment is moving.

d) In this context of fragile and uncertain expectations, stock adjustment can take a long time, resulting in a situation where "portfolio investors [are] off their desired portfolios". Meanwhile, the evolving situation may take on completely different characteristics, which are superimposed on the former ones, whose delayed effects continue to make themselves felt. Hence, when the inversion comes, it is equally pronounced.

[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 portfolios 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.[14]

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,[15] 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.[16]

[14] The terms "strengthening", "rising exchange rate", "appreciation" or such are used as synonyms for "revaluation"; and *vice versa* for "devaluation".

[15] 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 demarcation 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.

[16] 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 BIASCO (1985).

However, the literature focuses almost exclusively on the influence of economic policy (in particular, monetary policy) and on the way in which agents interpret policy developments in the light of short-run economic trends. This may well be misleading, especially in the early stages of a revaluation process.

Financial agents act on the market with very different time horizons, from the very short term (days) to the very long term (years). Some agents base their views mainly on signals derived from the conditions in which monetary policy decisions mature; others on more structural conditions of the real economy. In both cases, the information is translated into expectations of specific returns on financial assets, including expectations of capital gains, and hence of variations in the exchange rate.

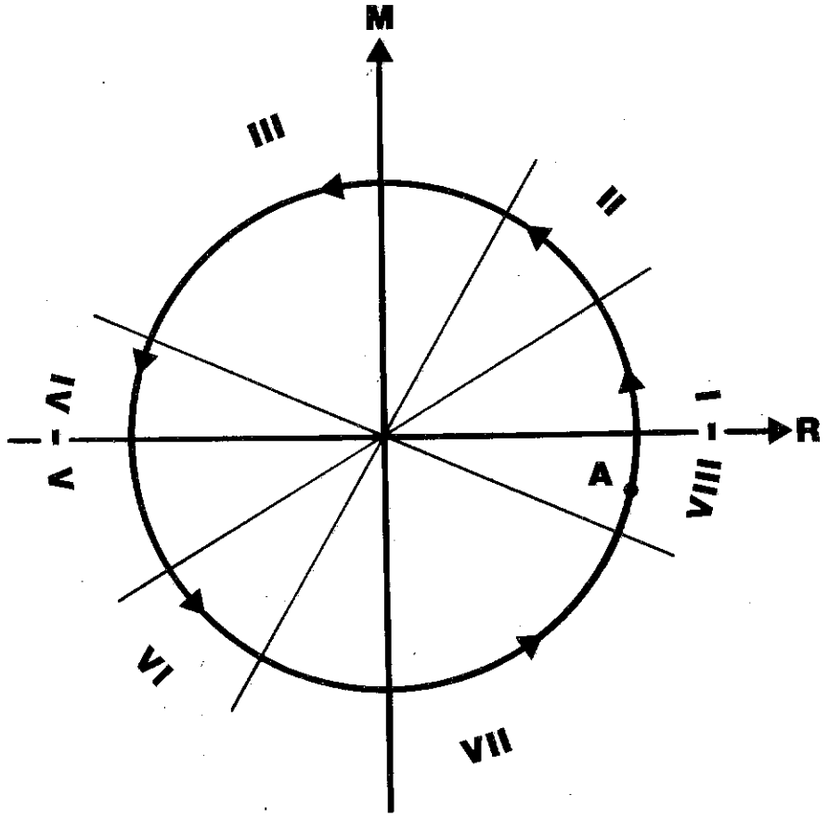
For the second type of financial agents, expectations of revaluation spring from the perception of a higher potential for production growth as compared with the rest of the world. This perception comes from signals given by the real economy relating to profitability of production and competitive strength — the latter being reflected in the type of specialization, relative inflation rates (current or expected), and, last but not least, trade balance and current account behaviour.

Financial agents with this type of orientation must play an important role (if not the major one) when the *ex ante* flows that lead to a currency revaluation are just getting started. It is a fact that, for the Mark (1976) and the dollar (1981), this type of movement has happened when monetary and real signals pointed in the same direction. In both the above cases, moreover, the initial situation was characterized — a legacy of the past — by the sound financial position of firms.

Despite these signals, the movement of the exchange rates at the beginning of the cycle is very slight, at least by comparison with what happens afterwards. At this early stage, reasons for "strength" or "weakness" are recognized only slowly, and cautiously assessed. This is a consequence of past history, as we shall realize when we have gone round the whole circle of Fig. 2. Such reasons need to be confirmed, as agents try, on the basis of fact or conjecture, to evaluate the indirect and direct consequences of exchange-rate variations.[17]

[17] This caution takes the form of different opinions on the market regarding the continuation of the rise.

FIGURE 2



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.[18] In these circumstances, agents tend to base their judgement on the duration of the phenomenon itself.[19] 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

[18] CUKIERMAN (1982), (1984) uses it in analysing the relation between inflation and relative prices and the determination of interest rates in the presence of inflationary expectations.

[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.

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.[20]

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 confirmation 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.[21]

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

[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 on the market are largely adaptive (or of another nature), a rational investor — endowed (improbably) 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 rates differentials which it creates always end up by 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.[22]

When the impact of the revaluation ends by confirming and reinforcing the exchange rate movement other aspects are grafted 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.[23]

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.[24] 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.

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[22] Perhaps one might have suspected from the start that such a process would take place in the industrial economies; during the period of fixed exchange rates, these economies had become adjusted to their exchange rates, 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.

[23] ARTUS (1976) and OKINA (1985) find that speculation against the Mark (1975-77) and the yen (1982) had an extrapolative component. The possibility of speculative bubbles can even be incorporated within the context of rational expectations. See BLANCHARD (1979) and TIROLE (1980). In this context, the speculative bubbles are studied as the cumulative divergence from the path of exchange-rate values corresponding to the fundamentals; this divergence is known to speculators, who are also able to assess the possibility of a collapse. Such a view implies (a) that in any case there will be a return to the path warranted by the fundamentals, and (b) that the fundamentals are independent of the values assumed by the exchange rate during the speculative bubble. Here these conditions are put in doubt.

[24] KEYNES (1929a, 1929b) held an opposite view, whereby in the dynamics of the exchange rate the trade flow was the independent variable, and the capital movement the dependent one. Earlier, however, Keynes (1921) 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.

However, this happens over a long period of time and after a persistent revaluation.[25] Today, private capital movements must be seen in a context quite different from the one Nurkse was looking at. In the twenties and thirties, there was a fall in prices, while, in the seventies and eighties, inflation prevailed. It follows that today for a relatively long period, which may last two years, the *ex ante* disequilibrium in the currency market due to private capital movements will not (or only with difficulty) be offset by a compensating net flow of goods and services payments. In the short run, the appreciating country benefits from the slowness of change in trade currents and contracts, and experiences a drop in inflation and an improvement in the terms of trade. The expectations that triggered the movement of capital continue to operate. As a result of this mechanism, variations in exchange rates have become much wider than in the twenties.[26]

If the difficulty of offsetting net *ex ante* capital movements on current account did not induce the authorities to intervene, the variations would be wider still. In similar phases, the German and American authorities have reacted in very different ways. The former intervened in the currency market by building up reserves and maintaining their restrictive policy; the latter favoured an expansion of income. It is difficult to escape from these two alternatives as the situation moves towards sector III of Fig. 2. Both these responses, however, produce real effects: a delay in the correction of the trade surplus in one case, an increased profitability of investment in the other. This encourages continued portfolio adjustments in favour of the currency that was

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[25] In any case, it is never automatic, nor is there a 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 on the assets 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 BRANSON (1977), (1985), KOURI (1976), and DORNBUSCH-FISHER (1980). A critical review of this procedure is to be found in BIASCO (1985).

[26] For the case where the J effect can lead to explosive paths, see WILLIAMSON (1973), WITTE (1978) and LEVIN (1983). The last two of these articles conclude that this occurs only if counterspeculation is insufficient. Concrete experience has shown that this is by no means a theoretical case. See MCKINNON (1969) in this connection.

A rise of the exchange rate due to "bandwagon phenomena" can be circumscribed 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 more limited episodes may arise in other sectors. A good deal of empirical literature is devoted to ascertaining 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.[27] 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 relations, 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.[28]

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

[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.

The literature deals with errors in assessing the fundamentals in terms of beliefs which are "extraneous" to the "true" model of the economy. See DORNBUSCH (1982). No study has ever been made of the case in which extraneous 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 extraneous beliefs, every price can be an equilibrium price — cf. HELLWIG (1980) — or the rational-expectations equilibrium may not exist — cf. FUTIA (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 depend on expectations of future prices. "Thus, the indeterminacy result is tightly related to the problem of defining the information reflected by 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).

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.[29] 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

[29] We will return to this point in Section 7, especially in footnote 52.

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.[30]

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-fuelled and feed on delayed responses to the previous situation.[31]

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.

[30] 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 even by the theorists of the Asset Market Approach (see for example FRANKEL, 1985). These limited bubbles are not neutral, because they convince agents of the resistance of the high exchange-rate levels reached during the cumulative revaluation.

[31] 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 adjustments. A review of the literature can be found in FOSTER (1979). The problem of distinguishing between permanent and transitory variations, in underlying conditions and in the resulting market prices, appears in identical terms with regard to the exchange rate.

6. The inversion phase

The emergence of conditions that change the frame of reference is endogenous. As we have seen in Section 5, real and monetary considerations may systematically give contradictory signals during the second phase of the revaluation process. If the picture is to change, they must converge (sector IV).

This occurs when the developments in the situation make inevitable a change in monetary policy. Moreover, the convergence strengthens the reliance to be placed in the negative signals that the real sector was producing (sector III).

The authorities may legitimately fear the instability and explosive potential of the current dynamics, but mainly they are afraid of the consequences of prolonging a strong exchange rate on their freedom as regards economic policy, on the dynamism of the economy, profit levels, and the loss of export shares. Where the currency is weak, on the other hand, the authorities fear inflation, and, as in the case of the USA in the 1970's, the incipient dethroning of the dollar as the main international currency.

It is surprising that reversals in the portfolio preferences of private agents did not emerge until the monetary signals from the authorities' behaviour (both those whose currency had appreciated and those where it went down). It is a fact that the end of the revaluation phase of the Mark (1980-81) and of the dollar (1985-86) can be interpreted in these terms; but this does not mean that we may look at these exchange-rate fluctuations as exogenous shocks.[32] The reasons for central bank intervention are in any case inherent in the dynamics of the events, even when policies change their sign.[33]

The interventions of the central banks, or of economic authorities in general, cripple any confidence in the espectations that produced the developments in sector III, especially extrapolative and short-term ones. This generates uncertainty in agents' decisions regarding the future range within which exchange rates will move and perhaps stabilize, especially if the rules of intervention are not fixed. It is true that, in many cases, the direction of the intervention is dictated in

[32] A certain degree of endogeneity can be imagined for the portfolio balance models, if the risk premium depends on the size of the stock of domestic securities owned by foreigners. A protracted current account deficit drives the demand for securities down and increases the supply.

[33] 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 devaluation, 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.[34] 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, not even differentials in real interest rates are corrected.[35] When the picture for the agents is blurred, past impressions still prevail, and the previous opinions about the long-run

[34] See ARTUS-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 agreement 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.

strength or weakness of any currency may be slow to recede.[36] During this phase, then, the range of expectations is at its widest,[37] 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[38] — 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[39] from the end of 1985 — 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 which they had gone through in the previous phase.[40]

[36] This obviously concerns not only the Mark and the dollar but also other currencies. The case of the Italian lira is interesting. As late as 1978-79, memories of the past still underpinned the image of a weak currency, despite the change in underlying conditions. This change was reflected mainly in a positive current account and a high rate of production growth, though these 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 CHAN-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 VISCO (1984).

[38] The effects described for the period 1979-80 are considerably obscured in the period 1985-86 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,[41] 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[42] 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.[43]

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[44] 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

[41] Economic policy, which is another cause, it at least in part determined by the behaviour of the real sector.

[42] For a critical interpretation of the literature on the relation between exchange rates and the productive structure, see BIASCO (1986), to which this section refers.

[43] In general, these models refer to the boom in the prices of raw materials and to the discovery of natural resources. The authors of the models think that these can be extended to cover more general cases of booming and lagging sectors.

[44] See for example EASTWOOD-VENABLES (1982) and BUITER-PURVIS (1983).

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,[45] 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 determinated by the clearing of demand and supply.[46]

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.[47]

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 ex-

[45] See for example TURNOVSKY (1983) and NEARY-PURVIS (1984).

[46] In these models, the sectoral transmission processes can be more easily focused by reference to what are called the "real models" of Dutch disease from which they are drawn — that is, models without the financial sector, expectations and capital movements, for which the rate of exchange is a product of the intersectoral interaction. The Asset Market Approach models in question tend to reproduce in a reduced form the equilibrium conditions of the real market, superimposing on it an equilibrium of the financial sector. For the "real" models, see in particular GREGORY (1976), CORDEN-NEARY (1982), ENDERS-HERBERG (1983), and VAN WIJNBERGEN (1984b). A review and exhaustive bibliography are to be found in CORDEN (1984).

[47] In Turnovsky, the role assumed in other models by permanent income is taken on by desired wealth. Whereas the former changes instantaneously, the second can move only gradually, and therefore governs the path of adjustment.

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.[48] 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 effecting cost economies, differentiating their products, switching markets, and accelerating technological improvements.[49]

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

[48] ENDERS (1984) and BOYER (1985) use models with unemployment; but in both cases they involve fixed exchange rates, and lack any supply perspective. In VAN WIJMBERGEN (1984b), unemployment is just a temporary "disequilibrium" feature caused by delays in the adjustment of real wages.

[49] Supply reactions cannot be analysed 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.

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;[50] the 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

[50] 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.[51] 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,[52] 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 endogenous consequence of the original portfolio choices, these choices will change, and one key currency may be abandoned in favour of another (Sections 5-6).

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.[53] 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

[51] 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" sector; but it is worth noting that, in a certain sense, this sheltering from price competition also involves the economy's tendency to expand the protected sector. This happens especially if the appreciation is accompanied by unemployment and a drop in real wages in terms of domestic output.

[52] 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 those 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 fair predictability of size, 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 at best stochastic. Agents learn to orient their decisions on the basis of information provided by the first reactions to the appreciation. The perception of competitive strength, reflected by the behaviour of the current account, has, in these circumstances, the role which announcement has in the models. Hence, the role is less marked, but it still leads to deficits in current account.

[53] 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 static way of considering the supply side reactions as different positions along a given curve. In TURNOVSKY (1983), these structural changes proceed instantaneously, by discontinuous leaps parallel with the discontinuous leaps of domestic relative prices.

vis-à-vis those of manufactured goods. The phase of rising prices has been brought about by forces within the dollar cycle after a period of dollar depreciation, when investment in other currencies was beginning to be risky.[54]

The industrial countries using a large proportion of raw materials in production[55] have experienced a revaluation process with sectoral effects identical to those described at the beginning of this Section. Moreover, a number of currencies are used by agents as a hedge in order to diversify risks for international portfolios. These currencies, too, undergo a prolonged process of revaluation.[56]

A series of countries have been affected one after the other by marked revaluation trends and experienced a currency cycle when domestic and international consequences and reactions have reversed the impact of factors responsible for revaluation.

There are many reasons why processes of devaluation may prove not to be symmetrical with those of revaluation, from the point of view of their sectoral consequences and make the currency cycle not neutral in this regard. Most of the reasons for this asymmetry are a function of increased uncertainty.

The sectors and products which are forced out of the market by revaluation do not automatically attract investment when they again become competitive and profitable during devaluation. This is partly because investments have been diverted abroad where profitable; and partly, in fact chiefly, because of entrepreneurial prudence, and also objective factors.

Episodes of revaluation have prolonged effects on expectations, so that the devaluation must be in operation for some time before agents absorb the new range of exchange values into their expectations and use these values for their long-term calculations. They cannot risk being caught on the wrong foot by a new reversal of the trend.[57] But, even if

[54] The influence of the currency cycle on the cycle of relative prices of raw materials diminished in the 'eighties, but was marked in the 'seventies.

[55] We refer to Great Britain, Australia, the Netherlands, and Norway.

[56] The Swiss Franc and the Austrian Schilling can be taken as examples.

[57] 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 confusion" of CUKIERMANN (1982, 1984), already mentioned in Section 4. This confusion 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.[58]

This may explain why lines of production abandoned during revaluation 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.[59]

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.[60] 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

[58] See especially BLEIER & HILLMANN (1982). In fact, since SANDMO (1971) the whole theory of business behaviour in conditions of uncertainty implicitly embodies a similar conclusion. A synthesis is given by GIOVANNETTI (1985).

[59] A typology of behaviour along the lines of SPENCE (1977), SALOP (1979), and DIXIT (1980) lends itself to the schematization of this case. In this approach, the producers in the market keep out potential entrants by overinvestment.

[60] 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.

demand and profit which are not seen as permanent — a flexibility which this type of country my be better equipped to provide.[61]

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

[61] It is anomalous 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.

REFERENCES

ANDERSEN, T.M., 1985, "Recent Developments in the Theory of Efficient Capital Markets", *Kredit und Kapital*, Nr. 3.

ANDERSEN, T.M., 1984, "Some Implications of the Efficient Capital Market Hypothesis", *Journal of Post Keynesian Economics*, No. 2.

ARTUS, J.R., 1976, "Exchange Rate Stability and Managed Floating: The Experience of the Federal Republic of Germany", IMF *Staff Papers*, July.

ARTUS, J.R., YOUNG, J.H., 1979, "Fixed and Flexible Exchange Rates: A Renewal of the Debate", IMF *Staff Papers*, May.

BIASCO, S., 1985, "Circuiti del dollaro e teorie degli scambi valutari", working paper.

BIASCO, S., 1986, "Temi analitici su vincolo estero e struttura produttiva dell'Italia", in: AA.VV., *Oltre la crisi*, Il Mulino, Bologna.

BLANCHARD, O.J., 1979, "Speculative Bubbles, Crashes and Rational Expectations", *Economic Letters*, No. 3.

BLEJER, M.I., HILLMAN, A.L., 1982, "A Proposition on Short-Run Departures from the Law-of-one-price", *European Economic Review*, January.

BOYER, R., 1985, "New Technologies and Employment in the Eighties", Cepremap, working paper.

BRANSON, W.H., 1977, "Asset Markets and Relative Prices in Exchange Rate Determination", *Sozialwissenschaftliche Annalen des Instituts für Hohere Studien*, Nr. 1.

BRANSON, W.H., 1985, "The Dynamic Interaction of Exchange Rates and Trade Flows", paper prepared for Conference on International Trade and Exchange Rates in the Late Eighties, Namur.

BRAY , M., 1981, "Futures Trading, Rational Expectations, and the Efficient Market Hypothesis", *Econometrica*, May.

BUITER, W.H., PURVIS, D.D., 1983, "Oil, Disinflation and Export Competitiveness: A Model of the Dutch Disease", in: *Economic Interdependence and Flexible Exchange Rates*, edited by J. Bhandari and B. Putnam, M.I.T., Cambridge, Mass.

CHAN-LEE, J.H., 1980, "A Review of Recent Work in the Area of Inflationary Expectations", *Weltwirtschaftliches Archiv*, Nr. 1.

CORDEN, W.M., 1984, "Booming Sector and Dutch Disease Economics: Survey and Consolidation", *Oxford Economic Papers*, No. 3.

CORDEN, W.M., NEARY, J.P., 1982, "Booming Sector and De-industrialisation in a Small Open Economy", *Economic Journal*, December.

CUKIERMAN, A., 1982, "Relative Price Variability, Inflation and the Allocative Efficiency of the Price System", *Journal of Monetary Economics*, No. 2.

CUKIERMAN, A., 1984, *Inflation, Stagflation, the Phillips Curve and Relative Prices*, MacMillan, London.

DIAMOND, D.W., VERRECCHIA, R.E., 1981, "Information Aggregation in a Noisy Rational Expectations Economy", *Journal of Financial Economics*, No. 2.

DIXIT, A.D., 1980, "The Role of the Investment in Entry-Deterrence", *Economic Journal*, March.

DOOLEY, M., ISARD, P., 1985, "The Appreciation of the Dollar: An Analysis of the Safe-Haven Phenomenon", International Monetary Fund, working paper.

DORNBUSCH, R., 1976, "Expectations and Exchange Rate Dynamics", *Journal of Political Economy*, December.

DORNBUSCH, R., 1982, "Equilibrium and Disequilibrium Exchange Rate", *Zeitschrift für Wirtschafts- und Sozialwissenschaften*, Nr. 6.

DORNBUSCH, R., FISHER, S., 1980, "Exchange Rates and the Current Account", *American Economic Review*, December.

EASTWOOD, R.K., VENABLES, A.J., 1982, "The Macroeconomic Implications of the Source Discovery in an Open Economy", *Economic Journal*, June.

ENDERS, K., 1984, "The Dutch Disease or Problems of a Sectoral Boom", *Zeitschrift für Wirtschafts- und Sozialwissenschaften*, Nr. 1.

ENDERS, K., HERBERG, H., 1983, "The Dutch Disease: Causes, Consequences, Cure and Calmatives", *Weltwirtschaftliches Archiv*, Nr. 3.

FOSTER, J., 1979, "Interest Rates and Inflation Expectations: the British Experience", *Oxford Bulletin of Economics and Statistics*, May.

FRANKEL, J.A., 1985, "Six Possible Meanings of 'Overvaluation': The 1981-85 Dollar", *Essays in International Finance*, Princeton, No. 159.

FUTIA, C.A., 1981, "Rational Expectations in Stationary Linear Models", *Econometrica*, January.

GIOVANNETTI, G., 1985, "Fluttuazione dei cambi e decisioni di impresa. Alcune considerazioni critiche sulla legge del prezzo unico", working paper.

GOWDY, J.M., 1985, "Rational Expectations and Predictability", *Journal of Post Keynesian Economics*, No. 2.

HACCHE, G., TOWNSEND, J., 1983, "Exchange Rates and Monetary Policy: Modelling Sterling's Effective Exchange Rate, 1972-80", *Oxford Economic Papers*, July.

HEINER, R.A., 1983, "The Origin of Predictable Behavior", *American Economic Review*, September.

HEINER, R.A., 1985, "Rational Expectations when Agents Imperfectly Use Information", *Journal of Post Keynesian Economics*, No. 2.

HELLWIG, M.F., 1980, "On the Aggregation of Information in Competitive Markets", *Journal of Economic Theory*, December.

HICKS, J.R., 1946, *Value and Capital*, 2nd ed., MacMillan, London.

HIRSHLEIFER, J., 1975, "Speculation and Equilibrium: Information, Risks and Markets", *Quarterly Journal of Economics*, November.

HIRSHLEIFER, J., 1977, "The Theory of Speculation under Alternative Regimes of Markets", *The Journal of Finance*, September.

ISARD, P., 1978, "The Exchange Rate Determination: A Survey of Popular Views and Recent Studies", *Studies in International Finance*, Princeton, No. 42.

KEYNES, J.M., 1921, *Tract on Monetary Reform*, McMillan, London.

KEYNES, J.M., 1929a, "The German Transfer Problem", *Economic Journal*, March.

KEYNES, J.M., 1929b, "The Reparation Problem: A Rejoinder", *Economic Journal*, June.

KOURI, P.J.K., 1976, "The Exchange Rate and the Balance of Payments in the Short Run and the Long Run: A Monetary Approach", *Scandinavian Journal of Economics*, No. 2.

KRUEGER, A.O., 1983, *Exchange Rate Determination*, Cambridge University Press, Cambridge, Mass.

LEVIN, J.H., 1983, "The J-Curve, Rational Expectations, and the Stability of the Flexible Exchange Rate System", *Journal of International Economics*, November.

MCKINNON, R.I., 1979, *Money in International Exchange*, Oxford University Press, Oxford.

MEESE, R.A., ROGOFF, K.S., 1983a, "Empirical Exchange Rate Models of the Seventies: Are any fit to Survive?", *Journal of International Economics*, No. 1.

MEESE, R.A., ROGOFF, K.S., 1983b, "The Out-of-Sample Failure of Empirical Exchange Rate Models: Sampling Error or Misspecification?", in: *Exchange Rates and International Macroeconomics*, edited by J.A. Frenkel, NBER.

NEARY, P.J., PURVIS, D.D., 1983, "Real Adjustment and Exchange Rate Dynamics", in : *Exchange Rates and International Macroeconomics*, edited by J.A. Frenkel, NBER.

NURKSE, R., 1944, "International Currency Experience", League of Nations.

OKINA, K., "Empirical Tests of 'Bubbles' in the Foreign Exchange Market", *BoJ Monetary and Economic Studies*, No. 1.

SALOP, S.C., 1979, "Strategic Entry Deterrence", *American Economic Review*, June.

SANDMO, A., 1971, "On the Theory of the Competitive Firm Under Price Uncertainty", *American Economic Review*, March.

SHAFER, J.R., LOOPESKO, B.E., 1983, "Floating Exchange Rates after Ten Years", *Brookings Papers on Economic Activity*, No. 1.

SPENCE, M., 1977, "Entry, Investment and Oligopolistic Pricing", *Bell Journal of Economics*.

TIROLE, I., 1980, "Speculation and Rational Bubbles", working paper, Department of Applied Economics, Cambridge.

TOBIN, J., 1982, "The State of Exchange Rate Theory, Some Skeptical Observations", in: *The International Monetary System under Flexible Exchange Rates*, edited by Cooper R.N. *et al.*, Harvard University Press, Harvard.

TURNOVSKY, S.J., 1983, "Expanding Exports and the Structure of the Domestic Economy: a Monetary Analysis", *The Economic Record*, September.

VAN WIJNBERGEN, S., 1984a, "The 'Dutch Disease': A Disease After All?", *Economic Journal*, March.

VAN WIJNBERGEN, S., 1984b, "Inflation, Employment and the Dutch Disease in Oil-Exporting Countries: A Short Run Disequilibrium Analysis", *Quarterly Journal of Economics*, May.

VISCO, I., 1984, *Price Expectations in Rising Inflation*, North Holland, Amsterdam.

WILLIAMSON, J., 1973, "Another Case of Profitable Destabilizing Speculation", *Journal of International Economics*, February.

WITTE, W.E., 1978, "Another Case of Profitable Destabilizing Speculation": A Comment", *Journal of International Economics*, May.