

# The Role of Exchange Rates

## A Reconciliation of Alternative Approaches

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The exchange rate constitutes a relative price. However, the nature of this price relationship has of late become surrounded by controversy. One view holds that the exchange rate is the relative price of national outputs. This “conventional” view is generally associated with the purchasing-power-parity doctrine (PPP) as well as with the partial equilibrium (income-expenditure and elasticities) approaches to the balance of payments and the exchange rate, respectively. The alternative, “monetary”, view maintains that the exchange rate is the relative price of national monies, strictly a monetary phenomenon, and it is associated with the recently developing monetary or asset approach to the exchange rate. Proponents of the monetary view frequently declare the traditional view as “erroneous” or “fallacious”. Thus the impression is being generated, and stated explicitly on occasion, that the traditional and monetary views constitute two mutually exclusive conceptions of the role and determinants of exchange rates. It is my contention that this is a spurious contradistinction, that neither the traditional nor the monetary view is intrinsically fallacious but that they constitute complementary approaches to and conceptions of exchange rates whose respective importance is to some extent dependent of the time dimension of analysis. This is not to deny that either approach can be, and has been, erroneously applied yielding misleading results and policy recommendations. This is precisely the case where the analysis is exclusively preoccupied with naive versions of either approach. On the other hand, the properties of long-run stationary general equilibrium clearly identify the exchange rate as the relative price of national outputs while the characteristics of dynamic adjust-

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ment behaviour suggest the importance of asset market considerations in the short-run determination of exchange rates.

### I. Determinants of the Exchange Rate

The exchange rate must clear the market for foreign exchange. The observation that it constitutes the relative price of national monies is tautologically true and, therefore, does not qualify as the differentiating criterion between the alternative approaches. Such a criterion must be sought in the particular behavioral conception of the constituent elements of the foreign exchange market. This issue is succinctly epitomized in the valid confrontation of flow and stock approaches.

#### 1. *Flow Approach*

The balance of payments and its various components are viewed as equilibrium flow phenomena. Demand for and supply of foreign exchange are derived from the relevant balance of payments flows. It is a characteristic and a potential weakness of the conventional approach that it generally focuses only on current account transactions as determinants of the foreign exchange market, considering balance of payments adjustment as a special problem of general price theory. In this basic model the demand for foreign exchange is derived from domestic demand for imports and the supply of foreign exchange from foreign demand for domestic exportables. Consequently, the exchange rate is determined by the determinants of the flow demands for and supplies of tradeables — principally relative commodity prices and incomes. These variables also constitute the major vehicles for the transmission mechanism which presupposes efficient commodity arbitrage. Another important determining variable is the state of expectations which is usually recognized in the context of “leads and lags” in foreign exchange payments, but which can also exert direct influence on the transactions in tradeables themselves. The equilibrium exchange rate is that which balances the equilibrium flows of imports and exports, and it is in this sense determined in the commodity market and regarded as the relative price of national outputs.

The preoccupation with the current account implies the virtual neglect of capital movements in the determination of exchange rates (Stützel, 1958, Ch. 4.5). This neglect is explicable on the one hand in terms of basic balance of payments accounting principles which ensure

that the current account balance is equal to the negative capital account balance including reserve movements. On the other hand, it was a classical contention that short-term capital movements are intrinsically accommodating and, therefore, transitory, and that long-term capital movements, determined by the real yield structure, will precipitate the requisite adjustments of the current account balance through relative price and income effects. In those instances where the basic model is extended to incorporate capital movements, its essential flow nature remains unaffected: capital movements, like commodity transactions, are conceived of as equilibrium flow phenomena. The volume of capital flows is determined by international yield differentials, and the flow demands for and supplies of foreign exchange are correspondingly augmented. The exchange rate continues to be determined in the flow for international funds market and, given efficient commodity arbitrage, continues to represent the relative price of national outputs.

## 2. *Stock Approach*

The basic theoretical presumption of this approach is the postulate of pervasive portfolio balance behavior. Consequently, asset markets occupy the center of analysis. Demands and supplies refer to the stocks of the various assets and are determined accordingly. Portfolio imbalance gives rise to flows which are strictly disequilibrium adjustment phenomena, intrinsically transitory in a stationary environment, and they play no part in the determination of equilibrium asset prices. That price is determined instead by the interaction of the stock demand for and supply of the respective asset. The important determining variables of the stock demands for assets are real income and wealth, price levels and rates of return, and expectations.

Applied to the exchange rate as the relative price of assets denominated in different currencies, this approach maintains that the equilibrium exchange rate is determined in asset markets. As in the conventional approach, the exchange rate clears the market for international flows of funds. These flows, however, are no longer derived from equilibrium commodity (and capital) flows, but from stock disequilibrium in the various asset markets and are determined accordingly. In the stock approach the international exchange of goods and services is virtually excluded from analysis, and the importance of commodity arbitrage is deprecated (*Frenkel*, 1976, p. 204).

One latent weakness of this approach in the context of period analysis is that stock and flow equilibrium conditions are not necessarily equivalent. Formally it can be shown that equivalence holds in continuous time analysis (Foley, 1975, p. 319) but that in period analysis stock equilibrium implies flow equilibrium only if the additional assumption of perfect foresight is made (idem, p. 317). This problem, however, becomes less significant the higher are adjustment speeds and the lower are adjustment costs of portfolio imbalance.

## II. The Monetary Approach

The monetary approach to exchange rates in its extant versions (e.g. the contributions in the *Scandinavian Journal of Economics*, 1976, No. 2 and in *Frenkel and Johnson*, eds., 1978) is a subset of the stock approach. It is a subset of the stock approach because — designations of “asset approach” and references (usually in parentheses or footnotes) to the generic concept of „assets” notwithstanding — it focuses mainly on one single asset, namely money. “As usually formulated, the monetary approach stresses that the exchange rate, as the relative price of two monies, is determined by the equilibrium between the demands for and the supplies of the stocks of money outstanding” (Hodrick, 1978, p. 97). The usual assumption in that literature is that under flexible exchange rates nominal money supplies are exogenously determined. As a consequence, the determinants of the stock demand for money assume strategic importance for the determination of the equilibrium exchange rate.

The simplest structure of this sort of model is to determine monetary stock equilibrium, domestic and foreign; to introduce this into the PPP relation which is explicitly divorced from commodity arbitrage; to note that the economy under consideration is small so that the foreign price of the single commodity is given and adjustment has to occur in the domestic money demand determining variable(-s); and to conclude that the exchange rate is indeed the relative price of national monies, determined in the money market. (Incidentally, that assertion could be corroborated directly, and without significant loss of informational content, by noting that the price of money is the inverse of the price level and expressing the PPP condition as the ratio of these quotients). The exchange rate so determined is usually of minimal significance for the operation of the model except perhaps for the specification of some expectations mechanism with an exogenous elasticity parameter.

In the specification of the demand for money functions “eclecticism” appears to predominate in these models and it gives rise to a peculiar admixture of short- and long-run considerations. The monetary analysis is essentially oriented toward the elucidation of the properties of long-run stationary (or stable) equilibrium. This statement applies most ostensibly to the monetary approach to the balance of payments under fixed exchange rates, but no less to its “dual”, the monetary approach to the exchange rate. That long-run time horizon is appropriate for assuming that perfect wage and price flexibility secure and maintain the full employment level of real output. On the other hand, the prominent emphasis on asset considerations, based on the presumption of relatively high adjustment speeds in asset markets, is particularly apposite in short-run analysis “since what governs in the short run the equilibrium price of money is the stock demand and the stock supply” (*Dornbusch*, 1976 a, p. 276). Yet the assumption of continuous full employment maintenance is uncritically retained in this context and, as a consequence, the real income variable is eliminated from the demand for money function. Further, irrespective of specification, the demand for money is assumed to be a stable function of a small number of variables — a long-run proposition. That assumption is also uncritically retained in the short-run analysis even though there is no evidence to substantiate its veracity nor does it possess *a priori* plausibility (*Parkin*, 1976, p. 253).

In the specification of the demand for money function one can observe a variety of alternative hypotheses whose choice is not always testimony to the disinterestedness of the researcher. For example, in some models with money and equities the demand for real balances is postulated to be an interest-dependent function of real wealth (*Dornbusch*, 1976 a; *Myhrman*, 1976). In pure monetary models the expected rate of inflation has been identified as the dominant determining variable of the demand for real balances (*Frenkel*, 1976) or, alternatively, the exchange rate, current level and expected rate of change, is recruited as the strategic determinant of the demand for nominal balances (*Mussa*, 1976). These money demand functions usually also include the conspicuous “portmanteau” variable. The distinguishing characteristic of this sort of model is an exceedingly selective application of the standard contemporary monetary-theoretic framework of analysis. And this selectivity is the manifestation of the lack of a reasonable comprehensive asset or portfolio balance model. In such

a model money demand and, thus, the exchange rate would no longer be the provenance of a single astutely chosen variable but rather of the interaction between asset, commodity and labor markets. The divorce of the exchange rate from output considerations could not be sustained in a correctly specified model.

The purchasing power parity relationship has been identified as the “ideological antecedent” of the monetary approach to the exchange rate (Hodrick, 1978, p. 97). Indeed, Frenkel (1976, p. 203) argues that “[t]he original formulation of Cassel was stated in terms of the relative quantities of money”, that “the role of prices in Cassel’s computation of the equilibrium exchange rate serves only to proxy the underlying monetary conditions. The determination of exchange rates does not seem to rely, directly or indirectly, on the operation of arbitrage in goods” (emphasis added). This conjecture is designed to buttress the veracity of the claim that the exchange rate is a monetary phenomenon, and it identifies the PPP relationship as a particularly attractive “building block” of monetary models. But it is at variance with the textual evidence. “It is not easy to see how Cassel could be interpreted this way . . . There could be little doubt that what determines the exchange rate, in this presentation [cited by Frenkel], are prices of goods, which are the basic factor in the model rather than a ‘proxy’ for money . . . The ‘proxy relationship’ between prices and money is thus, in Cassel’s work, the precise opposite of that which is attributed to him by Frenkel” (Michaely, 1978, pp. 33 - 4). The importance of output markets and commodity flows as one set of factors determining the equilibrium exchange rate is a basic contention of the PPP doctrine. But this is not an exclusive emphasis. Disturbances originating in the monetary sector can influence the exchange rate as well. The extent to which the exchange rate is a “monetary phenomenon” depends crucially on the relative stability of the two sectors. Within the purview of the PPP doctrine this is an empirical and not an aprioristic issue.

### III. Reconciliation

The assertion that the exchange rate is an exclusively monetary phenomenon has not been established by the practitioners of the monetary approach. Attempts to “test” the monetary approach and to corroborate this assertion have evaded the problem previously identified by Branson and Hill (1971, p. 10) in a parallel context: “we must rely fairly heavily on our *a priori* theoretical specification of the model stemming from

the stock-adjustment view, and obtain parameter estimates more or less conditional on that theoretical view being correct, as opposed to testing the theory against the data." This deficiency is particularly noticeable in the characteristic specification of the money market where the short-run stability of the demand for money is taken for granted and the money supply is considered exogenous. In the short run, the demand for money may be subject to transitory shifts (*Parkin*, 1976, p. 253), while the exogeneity of the money supply is an exceedingly unhelpful assumption (*Corden*, 1976, pp. 387 and 403). Further, considering the demand for money as a single functional relationship of one or another "dominant" variable may be expeditious and plausible under specific historical circumstances — such as *Frenkel's* (1976) investigation of the German hyperinflation — but it is crucially inadequate as the theoretical foundation for general aprioristic statements about the role and determinants of the exchange rate.

It should be noted that not all applications of the asset approach are confined to the narrow framework of the basic monetary approach delineated above and, indeed, that recent research appears to be increasingly oriented toward bridging the erstwhile conceptual polarization between monetary and real approaches (e.g. *Dornbusch* and *Fischer*, 1980). *Mussa* (1976) devotes considerable effort toward elucidating some of the "real causes and effects" of exchange rate behavior. His discussion gets awfully muddled, however, in the attempt to reconcile and integrate these considerations with the underlying monetary perspective. Emphatic insistence that real factors influence the exchange rate only through their "impact on the demand for money" does not make the exchange rate "fundamentally an asset price" (p. 241). In a paper distinguished by its comprehensive perspective which elucidates the joint influence of monetary and real variables on the exchange rate, *Dornbusch* (1976 b) asserts that "organizing thought about [the long-run determination of] exchange rates around the monetary sector is likely to be a direct and informative approach" (p. 260). That point remains to be established and is contingent upon an assumption that is rarely spelled out in detail and is still the subject of debate.

The legitimation for concentrating principally on money and credit markets in macroeconomic analysis derives from one of the fundamental postulates of monetarism, namely the presumption of the inherent stability of the private sector (*Brunner*, 1970). Subject to this proviso asset markets, and monetary policy in particular, assume stra-

tegic importance for the determination of macroeconomic equilibrium in general, and the exchange rate in particular. If, on the other hand, the private sector is subject to erratic shocks and structural changes affecting consumption and production patterns, then these factors deserve prominent emphasis, even within the context of a stock approach. This point is recognized in *Myhrman's* "monetary impulse theory" (1976, p. 186). However, contrary to *Myhrman's* assertion, such a theory would need to distinguish between the reasons for changes in the money supply. There is a difference between monetary policy passively accommodating budget imbalances or actively cooperating in the pursuit of stabilization or distribution goals. Thus, a relationship re-emerges between the exchange rate and output considerations.

The asset approach to exchange rates has been helpful in orienting analysis away from an exclusive preoccupation with flow phenomena. The emphasis on portfolio balance clearly identifies international asset flows as transitory adjustment phenomena and underlines the importance of expectations for exchange rate determination. It yields useful explanations of historical episodes characterized by highly volatile exchange rate behavior. The validity of the approach itself is independent of specific institutional factors such as the freedom of capital movements. Even in the presence of pervasive capital controls this approach is serviceable in explaining the behaviour of asset holders and its effect on the exchange rate and the balance of payments, respectively. However, this invariance with respect to historico-institutional circumstances does not apply to the uses to which the approach has been put. There are ample incidences in economic history (up to the present) where the presumption of monetary instability is appropriate and where monetary disturbances have exerted the predominant influence on exchange rates. But this observation, and the "evidence" extracted from such episodes, is not sufficient to designate the exchange rate a monetary phenomenon and, conversely, to denigrate as a "conceptual error" (*Mussa*, 1976, p. 233) the conventional view which associates the exchange rate with relative national commodity price levels. This claim is simply unsustainable as a general proposition and irreconcilable with the asset approach itself. On the one hand, the distribution of assets is governed by their rates of return, by prices, that is, which carry a time dimension and not by simple purchase prices. Therefore, the price of national monies which is relevant in the context of balance of payments analysis and adjustment is not the

exchange rate but the respective interest rates (*Stützel*, 1958, p. 264 et passim). On the other hand, in full stationary stock equilibrium there are no asset flows and the current account must be balanced. Therefore, equilibrium commodity flows continue to exist, and the equilibrium exchange rate must be such as to balance these commodity flows. Given the relatively high adjustment speeds in asset markets, their importance for the short-run determination of exchange rates is incontrovertible. However, this consideration should not distract from the fact that the long-run equilibrium exchange rate is the relative price of national outputs.

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## Zusammenfassung

### **Die Rolle der Wechselkurse: die Vereinbarkeit unterschiedlicher Standpunkte**

Die Gegensätze unterschiedlicher Auffassungen des Wechselkurses als der durch die Warenmärkte bestimmte, relative Preis des Sozialproduktes einerseits und als der durch die Märkte für Vermögenswerte bestimmte, relative Preis von Währungen andererseits werden kritisch untersucht. Bei einem richtig aufgestellten Bestandsanpassungsmodell werden die nominellen Wechselkurse sowohl durch reale als auch durch monetäre Störungen beeinflusst. Jede These, daß diese Auffassungen sich gegenseitig ausschließende Alternativen darstellen, ist daher abzulehnen. Andererseits deuten die unterschiedlichen Anpassungsgeschwindigkeiten auf den Märkten für Vermögenswerte und Waren darauf hin, daß bei der kurzfristigen Bestimmung von Wechselkursbewegungen der Markt für Vermögenswerte die vorherrschende Rolle spielt.

## Summary

### **The Role of Exchange Rates: A Reconciliation of Alternative Views**

The contradistinction between alternative views of the exchange rate as the relative price of national outputs, determined in commodity markets, and as the relative price of national monies, determined in asset markets, is critically examined. In a correctly specified stock adjustment model nominal exchange rates are influenced by both real and monetary disturbances. Consequently, any suggestion that these views constitute mutually exclusive alternatives must be rejected. On the other hand, the differential adjustment speeds in asset and commodity markets suggest the predominance of asset market considerations for the short-run determination of exchange rate behaviour.

## Résumé

### **Le rôle des taux de change: la compatibilité des positions différentes**

Les contradictions des diverses interprétations du taux de change, l'une le traduisant comme le prix relatif, défini par les marchés des marchandises, du PNB, et l'autre comme le prix relatif, défini par les marchés des valeurs de capital, des monnaies, sont passées au crible de la critique. Avec un modèle adéquat d'ajustement du stock, les taux de change nominaux subissent l'influence tant des perturbations réelles que monétaires. Toute thèse prétendant que ces interprétations présentent des alternatives s'excluant mutuellement est donc à rejeter. Par ailleurs, les disparités des vitesses d'adaptation sur les marchés des capitaux et des marchandises indiquent qu'en cas de définition à court terme des mouvements des taux de change, le marché des capitaux joue le rôle prédominant.