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The Role of Exchange Rates in Economic Stabilization
and Structural Adjustment in Four Planned Economies

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Summary

The Soviet Union, the German Democratic Republic (GDR), Poland (in the 1970s), and Hungary represent a spectrum within the Council for Mutual Economic Assistance (CMEA) regarding the extent to which foreign trade decisionmaking has been decentralized and the exchange rate has taken on a direct price-determining role. To the extent that these developments have occurred, the scope is in principle broadened for the exchange rate to play a role both in respect to economic stabilization and structural adjustment.

In the Soviet Union, the authorities are increasingly using more economically meaningful exchange rates, along with other criteria, to plan foreign trade. Exchange rates may have a price-determining role in some sectors, but as yet this is not a general tendency. As long as the autonomy of foreign trade organizations and industrial enterprises is severely limited, exchange rates will remain chiefly a planning device at the highest levels of the planning hierarchy.

The large combines in the GDR have somewhat more interest in, and autonomy regarding, foreign trade than do their industrial counterparts in the Soviet Union. The exchange rate influences the domestic prices of some importables in the GDR, and it may also have a limited resource allocational role, at the level of the combine, in exports. The price-signalling function, and therefore the role that the exchange rate might play in structural adjustment, may be enhanced in that economy in years to come.

The Polish exchange rate system and policy of the 1970s is instructive. This experience, which included the establishment of an economically meaningful (although overvalued) exchange rate, partially decentralized foreign trade decisionmaking, significant price distortions, and growing governmental intervention in foreign trade, highlights some of the dangers involved in a partially liberalized foreign trade system responding to distorted financial parameters. The question is raised as to whether these distortions may have added to the evolving structural and macroeconomic problems faced by that economy in the 1970s.

Experimentation with exchange rate-determined domestic prices and foreign trade liberalization has been most striking in Hungary. The potential significance of the exchange rate as a transmitter of structure-determining signals from the world market, and as an important instrument of economic stabilization policy, is much enhanced in the present Hungarian context. Past experience raises some doubts about the actual economic impact of exchange-rate changes in Hungary, but as yet there has been insufficient indepth theoretical or empirical analysis of the role of the exchange rate in this economy.

I. Introduction

This paper examines the role that exchange rates might play in economic stabilization and structural adjustment in planned economies. This issue has heretofore been relatively neglected in the Western literature. This is somewhat understandable in light of the conventional wisdom, based on a stylized version of the centrally planned economy (CPE) of the Soviet-type, that the exchange rate has little or no effect on prices or real trade flows in a CPE, and therefore that it essentially has only an accounting function. 1/ It is true that in recent years, mainly in response to major decentralization of foreign trade in Hungary, some attention has been devoted to the adjustment role of the exchange rate in "modified" planned economies. To date, however, most analyses of this issue have been either overly stylized, or they have been so country-specific as to virtually preclude generalization. 2/ Yet another strand of literature, especially prevalent in the 1960s and early 1970s, surveyed the evolution of an almost bewildering array of "effectiveness indices" that, in the absence of economically meaningful official exchange rates, were being used with varying degrees of success to improve the commodity and geographical structure of CPE foreign trade. 3/ The main focus of these studies, however, was the planning of foreign trade rather than the implications of such planning devices for shorter-run stabilization or longer-run structural adjustment of the economy as a whole.

In this paper we develop a uniform terminology and common framework designed to facilitate comparative analyses of exchange rates in planned economies. The paper attempts to avoid the opposite pitfalls of over-stylization and excessive institutional detail. It focuses on the exchange rate regimes and to a certain extent the exchange rate policies of four CMEA countries: The Soviet Union, the GDR, Poland (in the 1970s only), and Hungary. On the one hand this paper attempts to illustrate the diversity of exchange rate concepts, systems and practices among these four countries. On the other hand, it highlights many of the common problems faced by policymakers in these countries in attempting to enhance the role of exchange rates. Although these four countries are not necessarily representative of the range of exchange rate systems

1/ The classical view of the exchange rate in CPEs is set out in Pryor (1963) and Holzman (1974), Chapters 4, 6 and 15. Also see Wolf (1980a).

2/ See, respectively, Wolf (1978) and the insightful studies of the Hungarian experience by Portes (1979) and Marer (1981a, 1981b).

3/ Reviews of the extensive Soviet and East European literature on foreign trade planning criteria include Pryor (1963), Boltho (1971) and Hewett (1974). Gardner (1983) reviews the evolving Soviet discussion on cost-benefit analysis regarding foreign trade.

now existing within the CMEA, their diversity is sufficient to permit us perhaps to attain a more sophisticated view of the actual and potential functions that exchange rates may perform in planned economies.

This study is not meant to be comprehensive. Its purpose is rather to ferret out the essentials of each country's exchange rate regime and its recent evolution. The focus is on the rates or exchange-rate-type coefficients that are meant to affect commercial flows of traded goods. ^{1/} In each case we are interested in the extent to which exchange rates may affect more than just the efficient planning of foreign trade. Our interest in macroeconomic and structural adjustment necessitates answering (whenever possible) the following questions: (1) Who are the principal foreign trade decision makers that are expected to pay attention to exchange rates; (2) What are the relevant exchange rates from their standpoint; (3) How are these exchange rates determined; (4) What impact is the exchange rate system and changes in the rates supposed to have on the domestic economy; and (5) To what extent are these expected effects realized in practice? Answering the last question involves also exploring both the theoretical and practical linkages between the exchange rates and variables controlled by the targeted foreign trade decision makers, and the extent to which these decision makers (e.g., foreign trade and/or industrial enterprises) have the incentive and the authority to respond.

Our attempt to develop a common framework for analysis is summarized in Section II. Sections III - VI use this framework to examine individually each of the four countries. Brief concluding remarks are presented in Section VII.

II. A Common Framework

1. Some simplified terminology and notation

For the stylized market economy (ME) with both explicit trade taxes and possible implicit trade taxes resulting from quantitative restrictions or exchange control, the basic relationship between domestic and foreign currency prices of traded goods is:

$$(1) P_i = P_i^* e (1 + t_i)$$

^{1/} For a comprehensive classification of and information on various official exchange rates in CMEA countries, see van Brabant (1984).

Here transport costs, trade commissions (etc.) are ignored, and P_i and P_i^* denote, respectively, the domestic price and the world price (in foreign currency) of the i th traded good; e is the official exchange rate, expressed as the domestic currency price of foreign exchange; and t_i is equal to the ad valorem equivalent of the full (explicit plus implicit) trade tax on the i th product. In the simplest stylized case, with no trade distortions and perfect international commodity arbitrage, we have the familiar equilibrium condition $P_i = P_i^* e$.

Recent stylized analyses of the CPE or "modified" CPE (Wolf (1978, 1980a)) have involved only slightly less economy of notation. Here the distinction is made between the so-called valuta (or devisa) price of a traded good (P_i^*), which is equal to the foreign currency price converted at what we shall now call the official valuta or external exchange rate (e' , where $P_i^* = P_i^* e'$), and the "domestic" wholesale price (P_i) at which the state-owned foreign trade organizations (FTOs) buy exportables from and sell importables to state-owned industrial enterprises or wholesalers: 1/

$$(2) \quad P_i = P_i^* e' \alpha_i = P_i^* \alpha_i$$

The external exchange rate is typically established by reference to historical gold parities or on some other basis little related to the CPE's foreign trade position. For the CPE or MCPE, the implicit trade tax variable α_i is simply equal to the ratio of the domestic to the valuta price of the i th good. We will define α_i in this paper as the implicit internal exchange rate for the i th product. (Regional and currency-specific exchange rates differences are usually ignored in this paper, for simplicity, but observe that, in general, inconsistent cross-exchange rates and/or foreign currency prices will yield different implicit internal exchange rates for each commodity-currency combination.)

In the stylized CPE (and to some extent in the MCPE as well) the FTOs as a group earn a profit (π) from foreign trade equal to:

$$(3) \quad \pi = B_i^* - B_T$$

1/ In Wolf (1978, 1980a) this "external" exchange rate was simply referred to as the "official" exchange rate and denoted as e .

where B_T^* is the so-called valuta trade balance and B_T is the trade balance evaluated in domestic prices. ^{1/} This foreign trade profit of the FTOs is essentially nominal in nature from their standpoint, because the government automatically taxes away (subsidizes) this profit (loss). In effect, this variable tax-subsidy process, called price equalization, severs the linkage between foreign currency and domestic wholesale prices. The FTOs are therefore portrayed in stylized models as having little interest in valuta prices per se, and because at the same time they are assumed to trade only on the basis of foreign trade plans given to them mainly in terms of quantities, this stylized CPE model yields the conclusion that the exchange rate in such economies has only an accounting role. ^{2/}

Because the intent of this paper is to move away from such very stylized models, a greater number of potentially significant prices must be taken into account. In addition to the official external exchange rate (e') of equation (2), the authorities may also establish an official internal rate (e''). As discussed in detail in later sections, this exchange rate conceptually serves as a basis for comparing domestic currency values with prices expressed in valuta. It is designed in principle to compensate for the arbitrariness of the external exchange rate and to influence the pattern and volume of foreign trade. In the past such official internal rates were not published and frequently were not uniform across all branches of the economy. Corresponding to each official internal exchange rate is what we shall call the transactional or calculative price for the i th good (P_i''), where:

$$(4) \quad P_i'' = P_i^* e' e'' \beta_i$$

where $(\beta_i - 1)$ is the ad valorem trade tax (subsidy) rate. Only if this transactional price, which may well be only an accounting price (hence the term "calculative"), happens to equal the actual domestic price (P_i) at which the i th good is transferred between FTOs and domestic industry and $\beta_i = 1.00$, will the official internal exchange rate (e'') be equal to the implicit internal rate (α_i) for the i th product.

The product of the official external and internal rates ($e' e''$) in equation (4) could be considered a "full" exchange rate, analogous to e

^{1/} See Wolf (1980a).

^{2/} Various analysts, such as Holzman (1974) and van Brabant (1984), have suggested that FTOs may not be totally indifferent to the level of the official external exchange rate. But even they have suggested that his exchange rate plays at most only a negligible role in classical CPEs.

for the market economy in equation (1). This full exchange rate is variously referred to as a foreign trade "coefficient" or "multiplier", as in Hungary between 1968 and 1975, or as the "commercial" exchange rate, as in Hungary and Poland beginning in 1976 and 1982 respectively.

We must also explicitly allow for the possibility that the wholesale price of units of the i th tradable that are domestically produced but nontraded may be set by the authorities at a different level (P_i^d) than the price at which the same tradable may be transferred between the FTOs and domestic industry (P_i). Furthermore, neither of these prices need correspond exactly (even allowing for trade commissions, etc.) to the calculated average cost (sebestoimost', or C_i) of the i th good when produced domestically. Moreover, if this cost is augmented by a (in principle uniform) capital charge, it will be referred to as full cost (privedennye zatrat, or C_i^f). This full cost in turn may or may not be equal to some calculated economic value (narodnokhoziastvennaia otsenka or shadow price) for the i th good (Z_i). The ratio (Z_i/P_i^f), in other words, the ratio of the estimated shadow price of the i th good to its valuta price, will be referred to as the real implicit internal exchange rate for that product. Each of these prices, costs and exchange rates is listed and defined in Table 1.

2. Exchange rates and the determination of trade flows in market and planned economies

Using a simple diagrammatical approach, this section will briefly illustrate the basic problems faced by foreign trade planners in CPEs or MCPEs who seek to increase or maximize the gains from trade in the presence of distorted domestic prices and frequently arbitrary official external exchange rates. These problems are best understood by comparing the CPE situation with the role that the exchange rate plays in determining real trade flows in a stylized market economy. The explicitly comparative approach will also enable us to clarify the differences between the foreign exchange diagrams commonly derived for the ME and CPE, and the notions of an "equilibrium" exchange rate in the ME as opposed to the "optimal" exchange rate concept frequently discussed by Soviet and East European economists.

Consider first a "small" market economy exchanging a composite importable for a composite exportable. For simplicity of exposition, the foreign currency price of each composite good is, by appropriate selection of units, set equal to unity. The domestic supply (S) and demand (D) schedules for the importable are shown in panel A of figure 1. In panel B is drawn the corresponding excess demand (or import demand) curve, D_m , for the importable. Because P_m^* , the foreign currency price of the importable, is equal to unity, the domestic currency price

Table 1. Glossary of Important Prices and Exchange Rates

P_i	=	Domestic price at which the i th good is transferred between foreign trade organizations and domestic industrial or wholesale enterprises.
P_i^*	=	Foreign currency price of the i th good.
P_i^{\dagger}	=	Valuta price, in domestic currency, of the i th good (P_i^*e').
P_i^{\ddagger}	=	Transactional, or calculative price of the i th good (see equation 4).
P_i^d	=	Domestic wholesale price of the i th tradable when produced domestically (may or may not be traded).
C_i	=	Average cost (average branch cost) of production of the i th good.
C_i^{\dagger}	=	Full cost (average cost plus capital charge) of production of the i th good.
Z_i	=	Calculated "economic value", or shadow price, of the i th good.
e'	=	Official external (or valuta) exchange rate (e.g., units of valuta rubles per dollar).
e''	=	Official internal exchange rate (e.g., units of domestic or internal rubles per valuta ruble).
e	=	Official full exchange rate ($= e'e''$).
e_s'', e_s	=	Internal and full shadow exchange rates respectively
α_i	=	Implicit internal exchange rate for the i th good (P_i/P_i^{\dagger}).
Z_i/P_i^{\dagger}	=	Real implicit internal exchange rate for the i th good.
e_{xa}'', e_{ma}''	=	Average real implicit internal exchange rate for exports and imports respectively.
e_{xa}	=	Average domestic cost of earning one unit of foreign exchange

of the importable (P_m) will therefore be equal to $e(1 + t_m)$ or simply equal to e when there are no trade distortions (i.e., $t_m = 0$). Our assumption of $P_m^* = 1.00$ enables us very simply to derive a demand curve for foreign exchange in panel C. This is because $e = P_m^*e$ and $V_m^* = P_m^*Q_m$, where V_m^* and Q_m^* denote the foreign currency value and volume respectively of the importable.

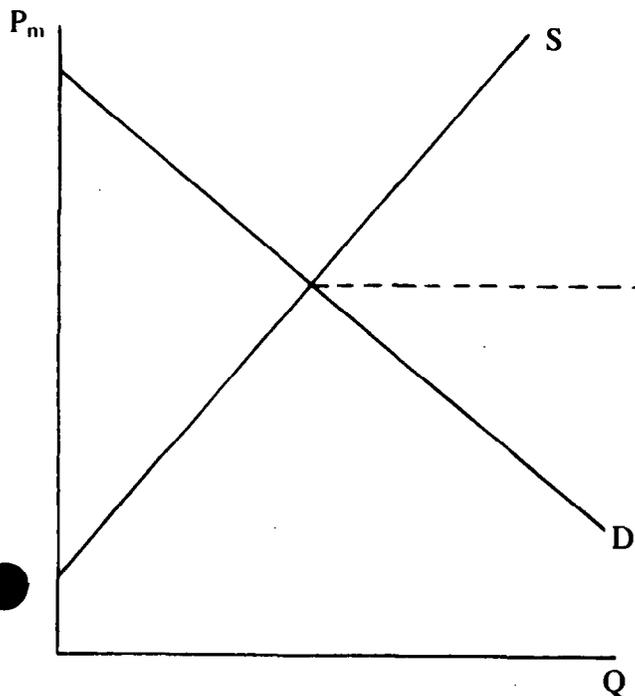
The official exchange rate, e , is of course determined exogenously to our diagram, either by market forces or by the authorities. Consider exchange rate e_0 . This yields in panel B a foreign supply curve for the importable, in terms of domestic prices, of S_m^0 , if there are not trade restrictions ($t_m = 0$). The equilibrium domestic price for the importable will be P_m^0 , the quantity imported will be OQ_m^0 , and the foreign exchange demanded will be OV_{m0}^* . A higher exchange rate, say e_1 , yields supply curve S_m^1 , imports of OQ_m^1 and foreign exchange demanded of OV_{m1}^* . The resulting demand curve for foreign exchange, corresponding to $t_m = 0$, is F_a^d .

A tariff with ad valorem rate of $t_m = (e_1/e_0 - 1)$ at exchange rates e_0 and e_1 will shift upward the foreign supply curve (in domestic prices) to S_m^1 and S_m^2 respectively, generating equilibrium points B and C in panel B. Corresponding points in panel C are B" and C", which trace out the inward shift in the demand curve for foreign exchange to F_b^d . Quantitative restrictions of OQ_m^1 and OQ_m^2 respectively would yield a similar result. An exchange control regime which limited the availability of foreign exchange for importing to OV_{m1}^* and OV_{m2}^* would leave unaffected the initial foreign exchange demand curve (F_a^d), but lead to trade points B and C respectively in panel B. In each case t_m would equal $e_1/e_0 - 1$, but in the latter two cases (QRs and exchange control) international commodity arbitrage would be broken.

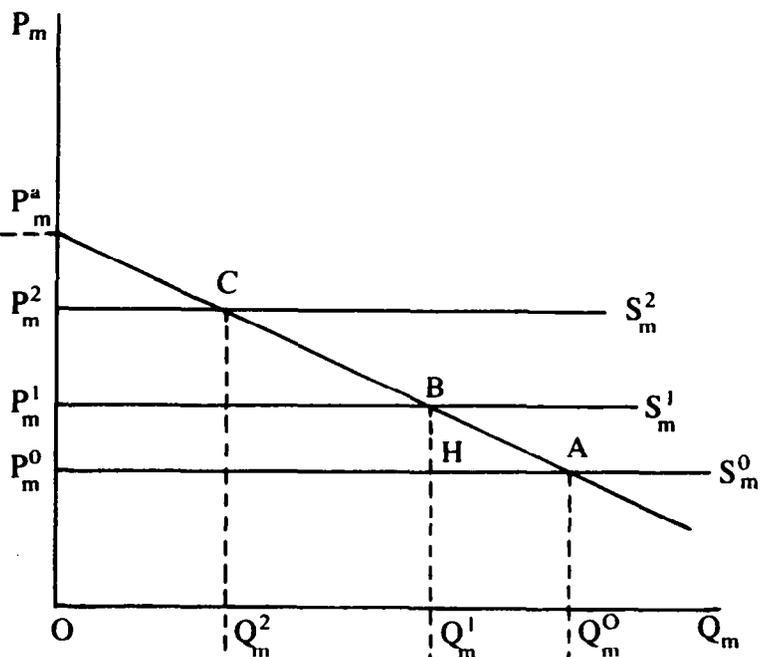
Assume an exchange rate of e_0 and the existence of trade or exchange restrictions such that $t_m = e_1/e_0 - 1$. This will yield imports of OQ_m^1 selling at domestic price P_m^1 . Ignoring distributional issues, the apparent net gain to the economy of importing OQ_m^1 will be equal to $P_m^0 P_m^1 BH$ in panel B. Imports will be expanded as long as the domestic price of the importable exceeds P_m^1 , and the economy apparently gains from this trade expansion as long as the domestic price less the tariff equivalent ($P_m^1 - P_m^0$) exceeds P_m^0 . Noting that $P_m^0 = e_0$, and by equation (1) that $P_x = e_0(1 + t_x)$, where subscript x refers to the composite exportable (also with foreign currency price equal to unity), this is the same as saying that the economy apparently gains from import expansion as long as the domestic price of the importable less the tariff equivalent exceeds the apparent domestic marginal cost of producing the exportable ($P_x/(1 + t_x)$). This is the actual domestic currency marginal cost of earning one unit of foreign exchange from the standpoint of

Figure 1.

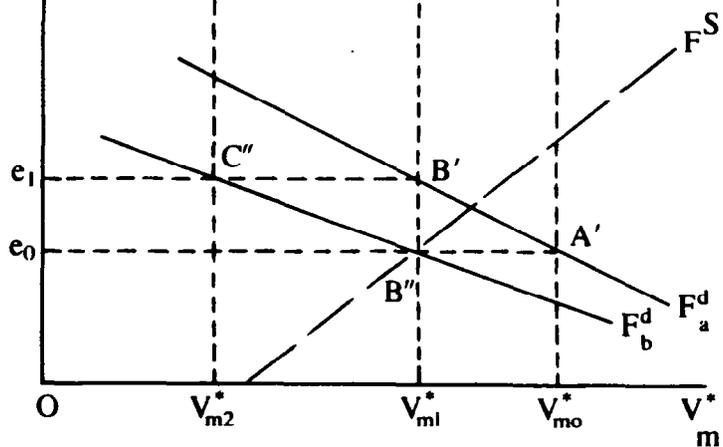
A.



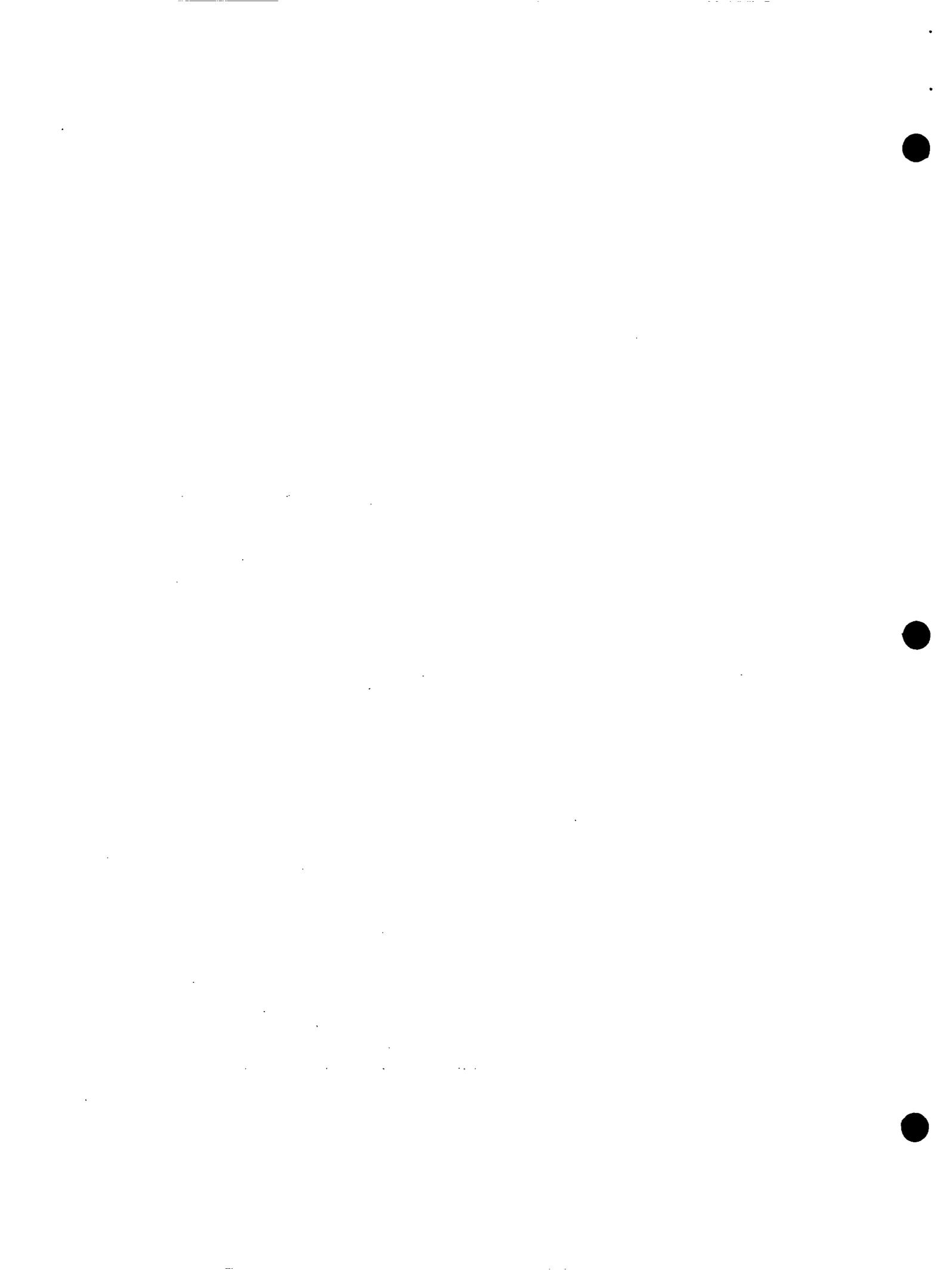
B.



e



C.



exporters, but the real cost to the economy is P_x . Thus, for example, if exporters are subsidized ($1 + t_x > 1.00$), the apparent real domestic cost of exports is lower than the actual cost to the economy, and the apparent gain from importing is correspondingly exaggerated.

In sum, the exchange rate in a market economy provides critical signals for efficient domestic resource allocation. Even if this rate is freely determined by market forces, however, the level of this rate and private sector calculations of the gains from trade will be importantly influenced by the pattern of explicit and/or implicit trade taxes.

Before turning to the planned economy, it will be useful briefly to review the role ascribed to the exchange rate in market economies in respect of economic stabilization and structural adjustment. One important role, of course, is as a transmitter of price signals from the world market regarding shifts in demand patterns and the costs of production. The greater the role permitted for international commodity arbitrage in the domestic economy, the more efficiently will the exchange rate be able to perform this information transmittal role.

Changes in the exchange rate are commonly thought to affect short- and medium-run resource allocation and macroeconomic balance through two basic channels. One such channel is the structure of relative prices. Devaluation by a country that is "small" with respect to both importables and exportables will still raise the price of tradables relative to nontradables, at least in the short- and mediumrun. This will encourage reallocation of resources into production of tradables and consumption of nontradables, with attendant positive effects on the balance of trade. If the country is "large" with respect to at least one of its tradables, devaluation will in general affect the terms of trade and influence both the balance of trade and the structure of domestic production.

Krueger (1978) has also emphasized the impact that devaluation may have on the relative price between tradables even for a "small" country, in the event that devaluation is accompanied by relaxation of binding, quantitative restrictions on imports. In Figure 1, for instance, imagine initial exchange rate e_0 and quantitative restrictions that limit imports to OQ_m^1 and result in domestic price P_m^1 . Assume that devaluation is accompanied by elimination of the QRs, and that the foreign exchange market equilibrium rate rises to between e_0 and e_1 . Whereas the domestic price of the exportable rises proportionately to the exchange rate, the domestic price of the importable falls to between P_m^1 and P_m^0 , and imports expand to between OQ_m^1 and OQ_m^0 . In this case of devaluation cum trade liberalization, the degree of import substitution bias will be reduced and productive resources will be reallocated into exportables.

The other main channel of impact of exchange rate adjustment in simple one-asset (money) models is through the price level. By raising domestic prices, devaluation reduces both the real wage and real money balances, at least if not immediately offset by proportionate increases in the nominal wage and money supply. The result should be reduced excess demand pressures and a fall in real domestic expenditure, unless initially there exist "excess" money holdings.

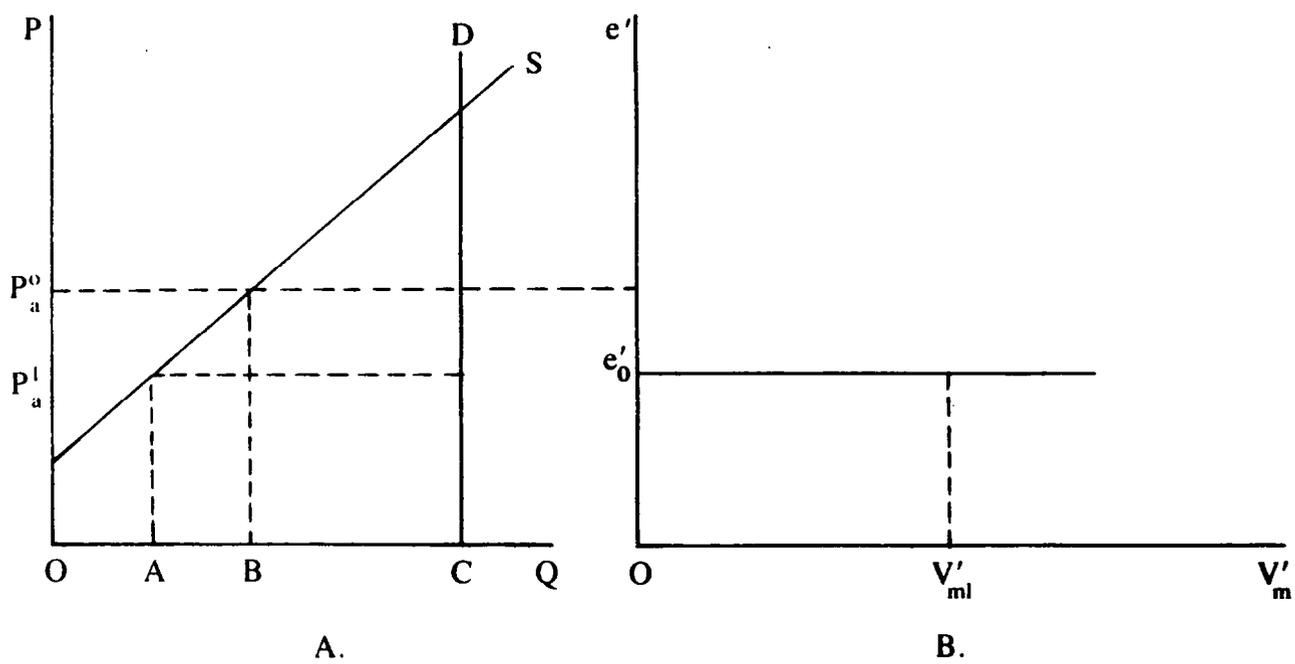
These familiar and relatively straightforward and determinant relationships for the stylized market economy tend to disappear when we turn to the CPE. The opportunity cost evaluations implicit in the domestic supply and demand curves in panel A of Figure 1 are not in general reflected in the administratively set prices of the CPE. Domestic producer prices, for example, are typically based on historical average costs of production of a particular branch and are held relatively fixed over time and over fairly wide ranges of output. The basic indeterminacy of the trading decision under primitive central planning is illustrated in Figure 2. In panel A is drawn an upward sloping supply curve reflecting the "real" increasing domestic marginal cost of producing the importable. For simplicity, we have drawn a perfectly inelastic planners' demand curve for the good. In panel B the valuta price of the importable ($P'_m = P^*_m e' = e'$) is plotted against the volume (= value) of imports.

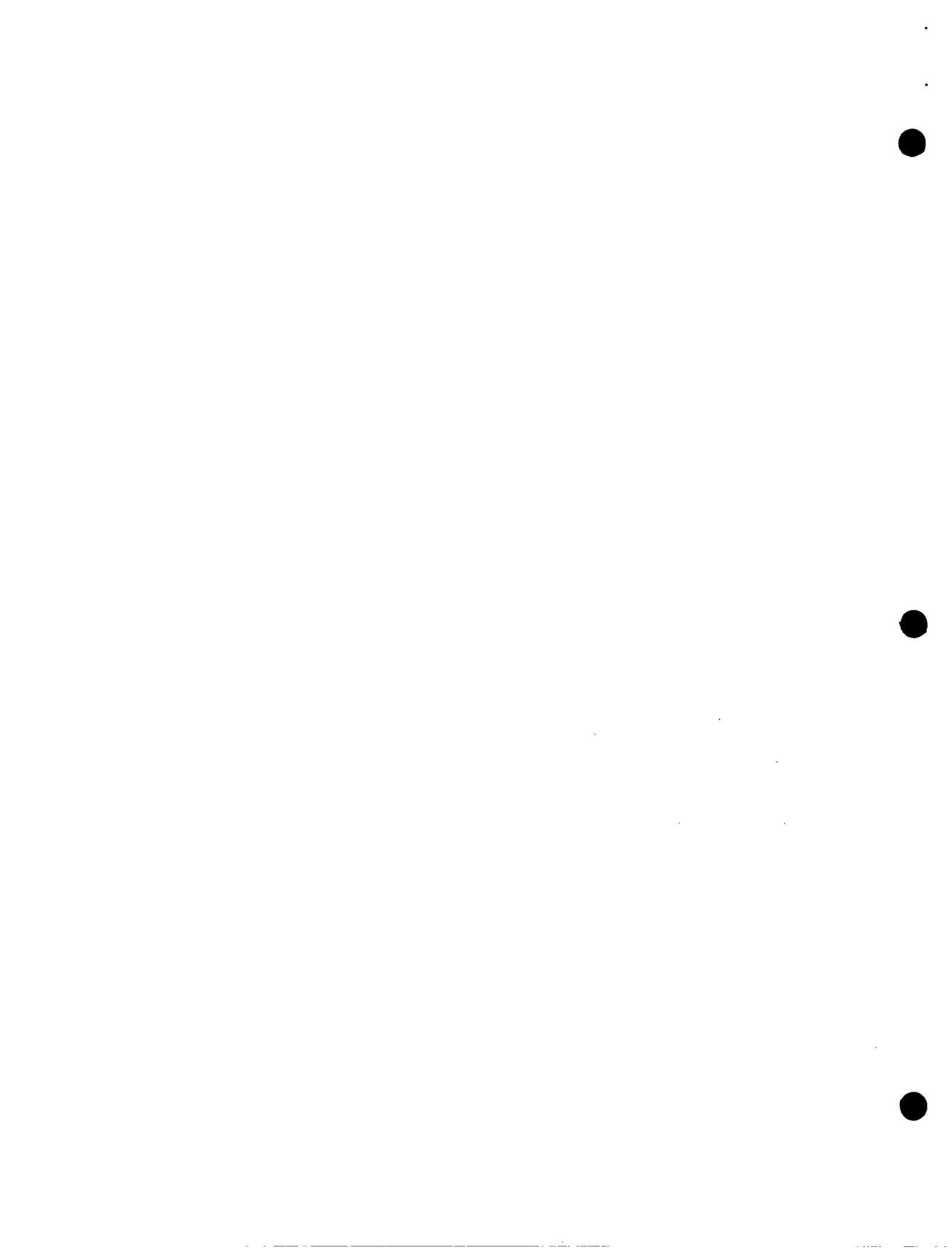
Assume that last period this "small" CPE followed an autarkical policy, producing OC of the importable. The domestic price of the importable, based, say, on the average full cost of production (C^1_m), was administratively set at P^0_a . Now let the planners ponder whether they should import this period and if so, how much. They have arbitrarily set the official (external) exchange rate at e_0 . Were they to ignore the arbitrariness of the official exchange rate and to emulate the efficiency criteria of the market economy, they would authorize imports equal to AC (= OV^1_{m1}). But the planners do not know the shape of the real domestic supply curve and in any event ideological scruples might keep them from employing such a marginalist approach. Their best measure of domestic cost is P^0_a . Because P^0_a is greater than the valuta cost of the importable, they might be tempted to import this product. There is nothing to tell them, however, exactly how much to import.

Now let us assume that they decide to import, say, BC. Domestic output will be scaled back to OB and over time this might (but need not) lead to a downward adjustment in the domestic price if the lower real costs of production somehow get reflected in enterprise accounting costs. If the domestic price were lowered to, say, P^1_a , imports would no longer appear profitable, they might be eliminated, and so forth.

Aside from the indeterminacy on the domestic price side, the planners will soon recognize that unlike in the market economy, their official

Figure 2.





(external) exchange rate embodies no economically useful information. Only by coincidence would this rate even approximate the domestic accounting cost of earning foreign exchange (i.e., P_x), let alone the real cost. Indeed, as we shall see, most CPE's official (external) exchange rates have historically understated the domestic currency cost of earning foreign exchange. Fairly early on, therefore, the more thoughtful planners realized that they needed to (1) improve their measures of domestic costs and use values of products, and (2) adjust the official external exchange rates in a way to reflect more accurately the true cost of foreign exchange. Clearly, the success of the second endeavor depended very much on progress with respect to the first. 1/

The development in the CMEA region of so-called "foreign trade effectiveness indices" has been comprehensively reviewed by Boltho (1971) and Hewett (1974). They have also described the early attempts, especially by Hungarian and Polish economists, to develop shadow exchange rate measures using large-scale linear programming models. 2/ These latter approaches lend a basic theoretical underpinning to the notion of shadow exchange rates and optimal foreign trade planning in CPEs and MCPEs. The basic idea is to optimize some objective function (e.g., minimize prime cost or maximize consumption) subject to linear constraints with respect to production capacities and the balance of trade. Fixed coefficient production functions and constant costs, both for domestic and foreign produced goods, are assumed. The optimization process yields real trade flow requirements by commodity and domestic currency shadow prices for each tradeable.

In a diagram similar to Figure 3, importables are arranged in descending order by the calculated ratio of their domestic shadow price (Z_{mi}) to the valuta equivalent of their foreign currency price (P_{mi}). Exportables are arranged in ascending order of the ratio of their "real" domestic cost of production (Z_{xi}) to their valuta price (P'_{xi}). 3/ Because constant marginal costs are assumed for each product,

1/ The basic problem is succinctly summarized by Hewett (1974): "The two primary obstacles to direct computations of the profitability of foreign trade in a primitively planned economy are meaningless exchange rates and equally meaningless domestic prices. Either of these problems can make a commodity apparently profitable to export or import when in actuality it is not." (p. 139).

2/ Formal optimization models also appeared frequently in the East German literature in the 1960s, and were developed and refined by Soviet economists in the 1970s (see Boltho (1971) and Gardner (1983)).

3/ In some instances, in which "full" shadow exchange rates are sought, Figure 3 would be redrafted by plotting the (Z_i/P_i^*) against V_i^* .

the valuta expenditure (V_m') and revenue (V_x') curves in Figure 3 are really just approximations to bar graphs composed of individual commodities (such as importables a, b and c, and exportables d and f).

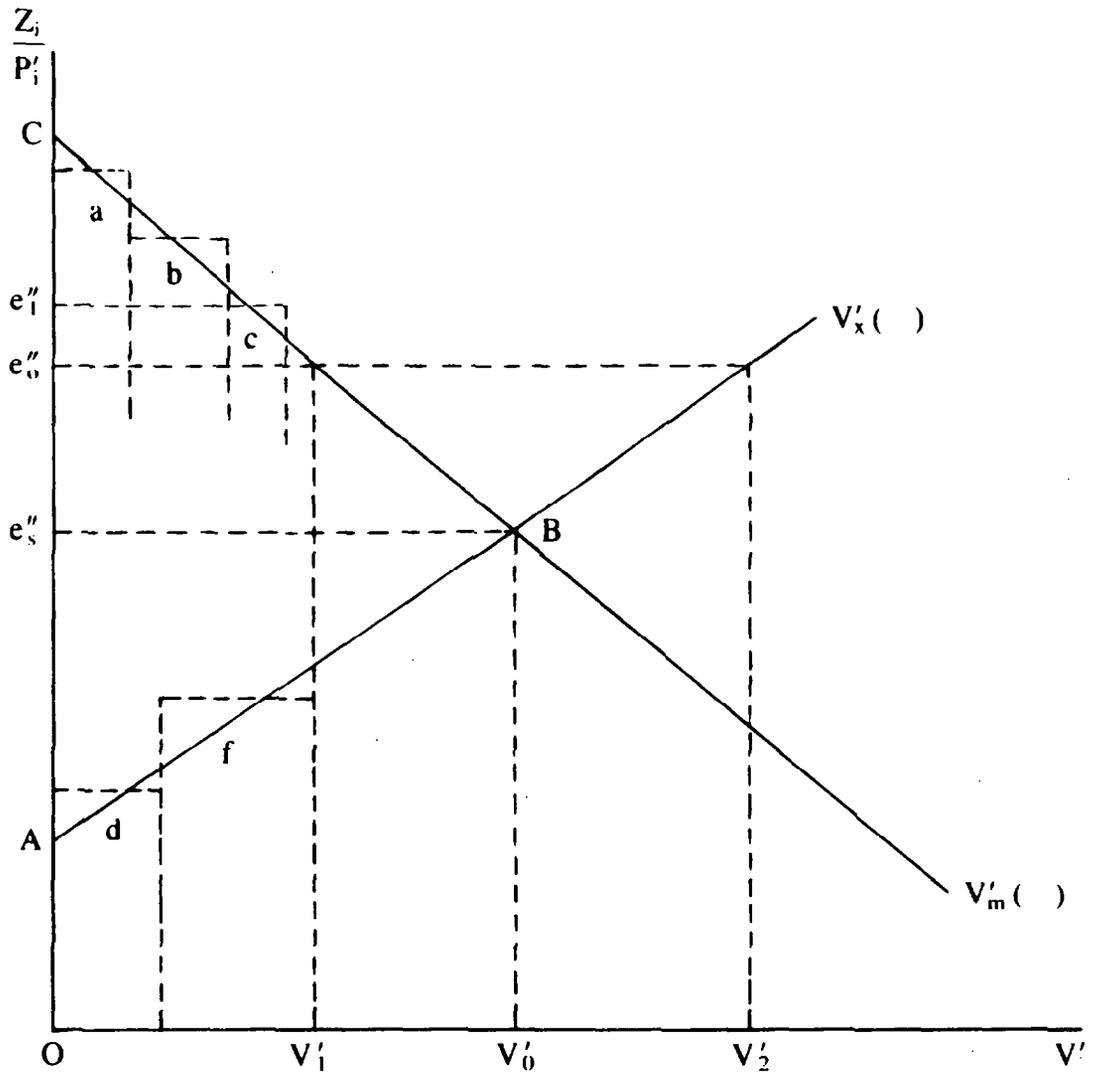
According to this approach, imports are only profitable if the real saving of resources (or use value) to the national economy by their import is greater than the real value of the resources used to earn the foreign exchange for their purchase. This suggests that trade should be expanded, in the order indicated in the diagram, only as long as $(Z_{m1}/P_{m1}') > (Z_{x1}/P_{x1}')$. Thus the "optimal" level of balanced trade is V_0' , which is found at the intersection of the V_m' and V_x' curves. This intersection also yields the shadow internal exchange rate e_s'' . At e_s'' , the domestic (average) real relative price of the marginal tradables is equal to their relative price in the foreign market. The net gain to the economy, when trade is conducted at V_0' , can be measured by the triangle ABC. It can easily be shown that a different pattern of trade, whether balanced or not, will yield a smaller sum of differential rents. 1/

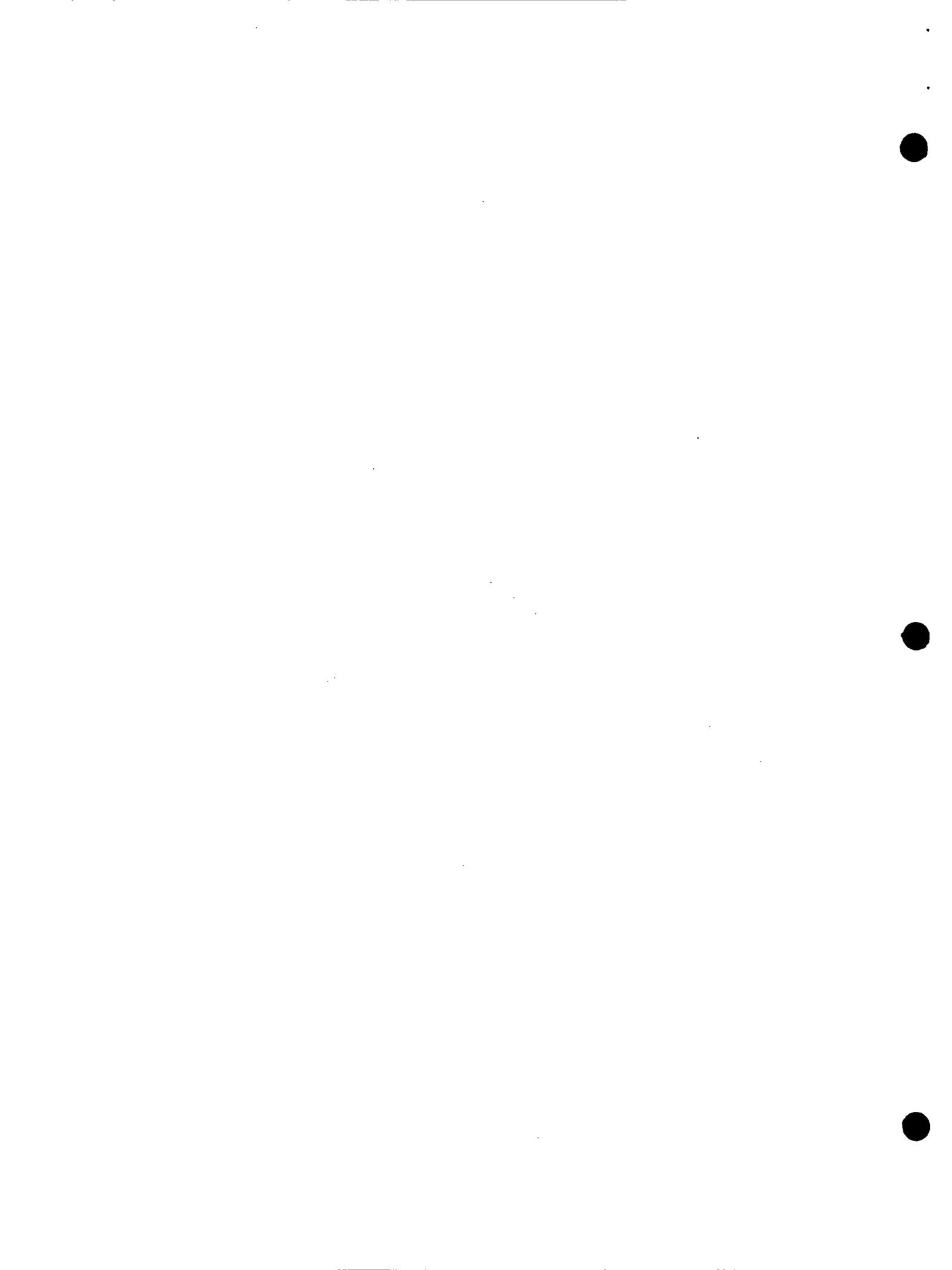
(If Figure 3 were converted from valuta into foreign currency prices (i.e., it were redrawn in $(Z/P^*, V^*)$ space), and if we assumed that each P_i were set equal to its respective Z_i , it could be demonstrated that the combined FTO net "profit" of equation (3) would exactly measure the real gain to the economy from foreign trade, as long as the official external exchange rate (e') were equal to the external shadow rate (e_s') (regardless of whether $B_T > 0$), and even if $e' \neq e_s'$, as long as $B_T = 0$. Only under these particular circumstances, however, can the measured budgetary impact of foreign trade in the CPE (recall that under price equalization the net foreign trade profits of the FTOs accrue to the government budget), be considered an appropriate rough measure of the actual "gains" from trade.)

We must be careful, however, not to confuse Figure 3 or its counterpart in $(Z_i/P_i^*, V^*)$ space with the foreign exchange market diagram constructed for the market economy (see panel C of Figure 1). The foreign exchange demand schedule in the ME, for instance, indicates the aggregate demand of decentralized economic agents for foreign exchange, at various exogenously determined (from their standpoint) exchange rates. In Figure 3, for the planned economy, the vertical axis measures Z_i/P_i' , or what we earlier referred to as the real implicit internal exchange rate for the i th product. The V_m' schedule, for instance, in effect reflects the planners' demand for valuta at different official internal exchange rates.

1/ This approach to calculating the shadow or "optimal" internal exchange rate is discussed in much greater detail in Trzeciakowski (1978) and Shagalov (1973).

Figure 3





It is the planners themselves, however, who will determine the actual official internal exchange rate. Moreover, it is their own preferences, implicitly reflected in the V' schedules, that will influence their ultimate choice of this exchange rate.

Another important distinction stems from the fact that the foreign exchange market schedules for the ME represent the summation of (interdependent) foreign exchange curves relating to individual commodities. This was camouflaged in Figure 1, because for simplicity we dealt there with composite tradables. In Figure 4 is illustrated the derivation of an aggregate foreign exchange demand curve as the summation of several individual schedules. (We again make the simplification that all $P_{mi}^* = 1.00$). Now let us compare the impact on real imports of increasing the full ME exchange rate in Figure 4 from e_0 to e_1 , and raising the official internal rate for the CPE in Figure 3 from e_0'' to e_1' . In the latter case the planners would want to eliminate entirely imports of item c, but items b and a, with high calculated real implicit internal rates, would continue to be imported in full measure. In the market economy, on the other hand, real imports of all those products would be contracted, the relative amounts depending on the different price elasticities of import demand. This basic difference reflects, of course, the underlying assumption of constant costs and use values in the optimization approaches of the East European and Soviet economists.

Observe also that the shadow internal exchange rate in Figure 3 is not really an "equilibrium" rate in the sense in which that term is usually used with respect to the market economy diagram. Were the foreign trade planners to relinquish control over resource allocation and trade and over the allocation of foreign exchange, there would be no reason to expect that market forces would necessarily cause the internal exchange rate to settle at e_3'' . Although using the shadow rate as a criterion for trade in the planned economy would lead to balanced trade (and thus trade balance "equilibrium" in that sense), trade could also be balanced at levels other than V_0' in Figure 3, by using different internal exchange rates for imports and exports. If the target were, say, a trade deficit, the shadow rate would then be below the level shown in the Figure. This shadow rate is therefore better visualized as an "optimal" than an "equilibrium" exchange rate.

Having set out a common framework and terminology we now proceed to examine individual planned economies' exchange rate systems in some detail.

III. The Soviet Union

The organization of Soviet foreign trade decisionmaking has been documented in considerable breadth and detail in Hewett (1974), Gruzinov

(1979), and Gardner (1983). The actual degree of autonomy possessed by FTOs in the USSR remains, however, something of a mystery. Even the patterns of formal authority are less than fully transparent. The reforms of the Soviet foreign trade system of 1978-79 had as their objective improved coordination between the Ministry of Foreign Trade, to which virtually all FTOs are subordinate, and the relevant industrial ministries. New material-incentive funds were also established for the FTOs, and various internal changes were made in FTO organization designed to promote coordination with the industrial enterprises. 1/ According to one Soviet source this partial reorganization of the foreign trade system has improved the coordination and effectiveness of foreign trade. Nevertheless, current calculations by the Central Planning Committee (Gosplan) of the economic effectiveness of foreign trade are not seen by this same source as obligatory indicators either for the FTOs or for their domestic customers or suppliers. 2/

The planners have in the past been most concerned with two measures of foreign trade effectiveness. One measure is often referred to as budgetary effectiveness, and this is summarized by the aforementioned "profit" earned by the FTOs (see equation (3)). As noted earlier, this is a good approximate measure of the CPE's static gain from foreign trade in the event that the domestic cost structure reflects relative scarcities and valuta trade is balanced, even if the official external exchange rate is different from the shadow rate. But the budgetary measure itself provides no information about whether the level or composition of trade is at or near the optimum.

It is quite possible that in contrast to the stylized view of the CPE, the Soviet FTOs themselves have an interest in the size of their foreign trade "profits." Soviet sources are a bit vague on this point, noting that FTO commissions and payments into bonus funds are related to their valuta turnover. 3/ But according to VAVT (1983), they are also rewarded on the basis of above-plan convertible-currency export earnings and their economizing on hard-currency expenditures. If the FTOs are also interested in their profits, they will therefore also be interested in the official external exchange rate. If they have no discretion with respect to trade volumes (but only some bargaining power with respect to foreign trade prices), then whether their profits increase with a rise in the external exchange rate will depend on whether their initial valuta balance is positive ($\partial\pi/\partial e' > 0$ as $B_T' > 0$). 4/ If, on the other hand,

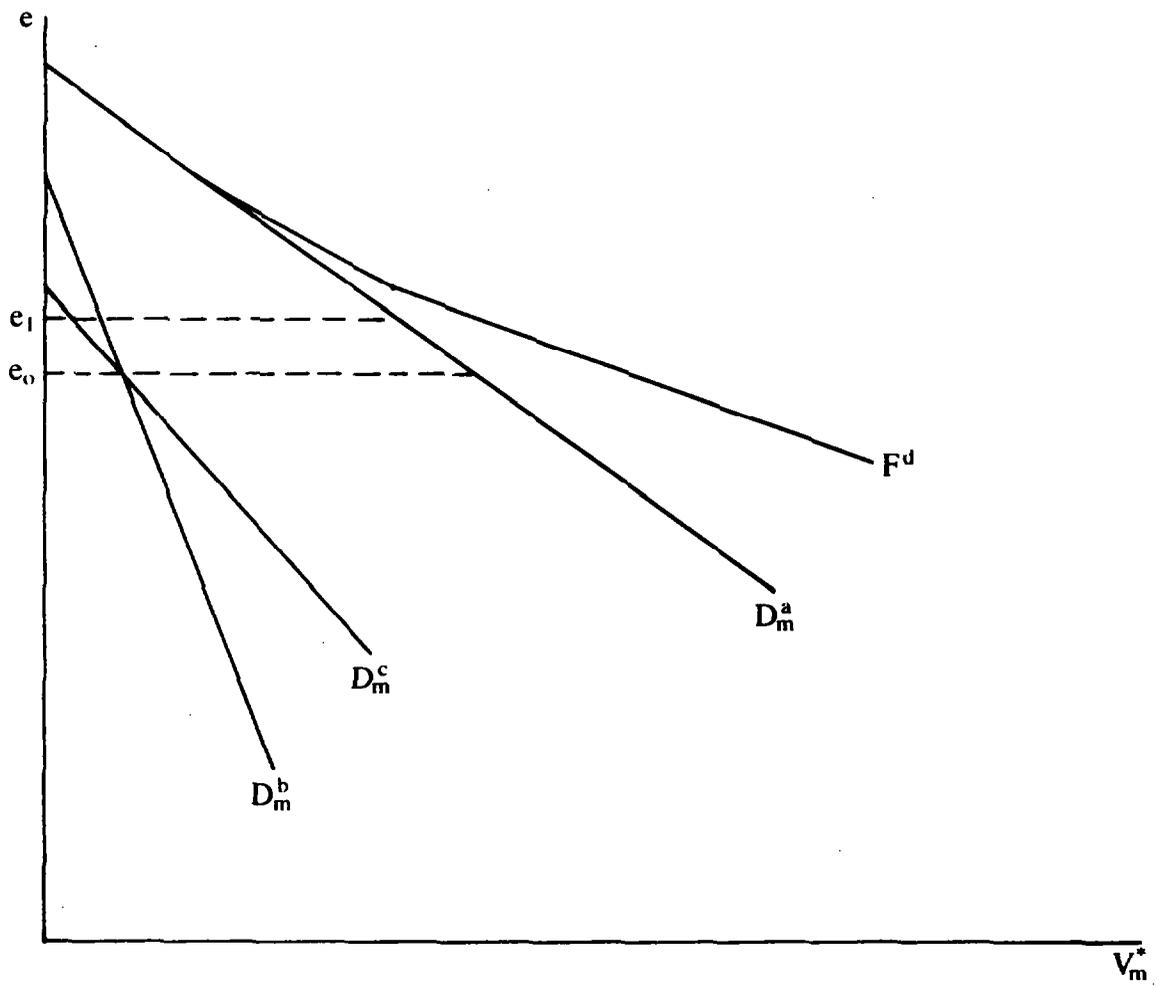
1/ For details, see Hewett (1983).

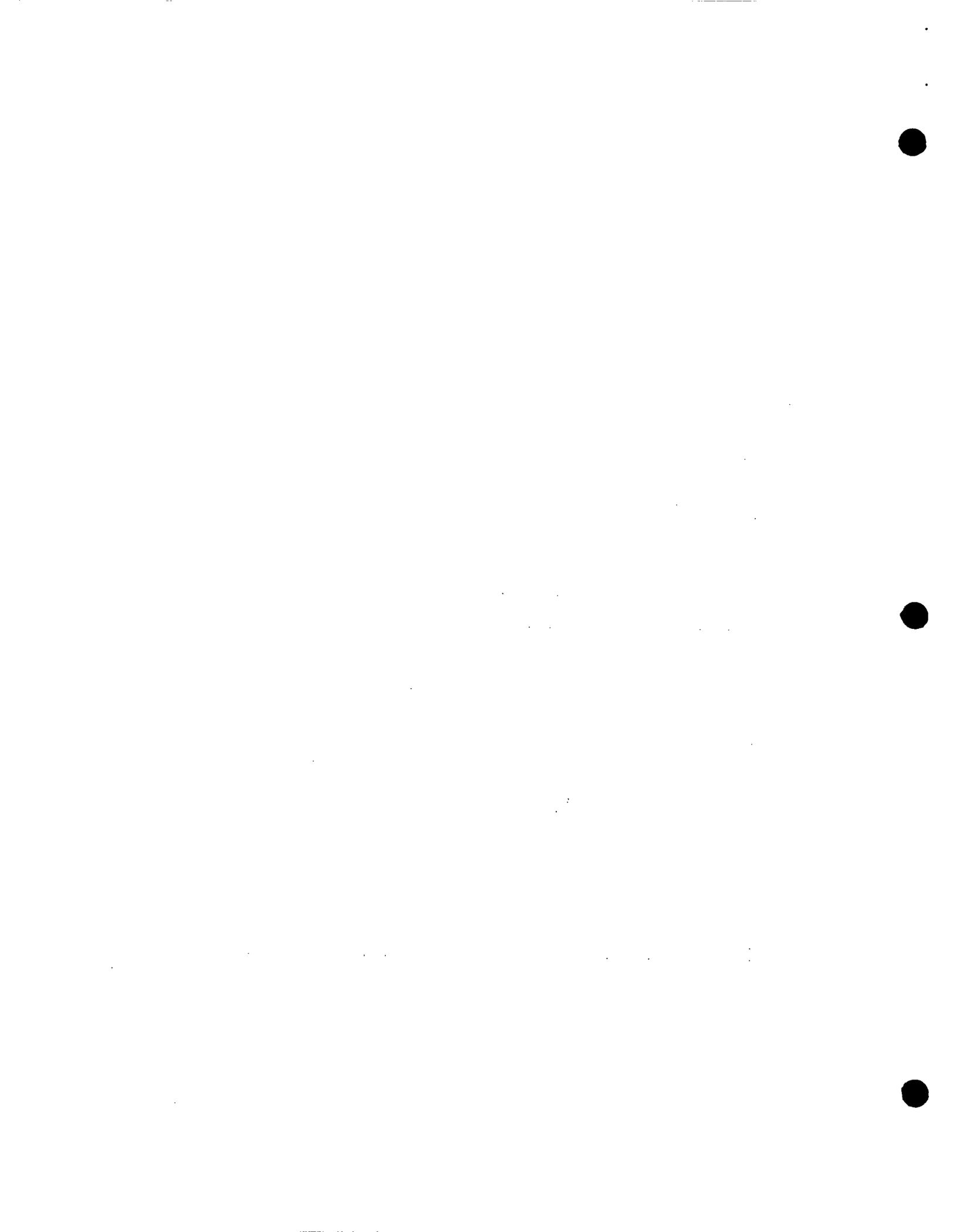
2/ VAVT (1983), pp. 103-04.

3/ See Zakharov and Shagalov (1982) and VAVT (1983), pp. 88-89.

4/ See Wolf (1980a) for details.

Figure 4.





the FTOs do have some discretion with respect to trade volumes, then an interest in maximizing or at least increasing "profitability" would lead them to increase real exports in the event of an external devaluation. Rather than seek to reduce real imports, however, which now would be less "profitable" after devaluation, they might attempt to increase them so as to offset the decline in the difference between the domestic wholesale price (P_i) and the valuta price ($P_{f'e}$). 1/ This in itself might be sufficient reason for the authorities to severely limit the discretion of the FTOs with respect to import trade volumes. 2/

Discussions with Soviet economists suggest, however, that while being severely limited in the course of plan implementation with respect to manipulation of a real trade flows, the FTOs do after all have some say (based on their study of market conditions, etc.) in the initial development of the foreign trade plan. If they care about their foreign trade profits, they would therefore have an interest in shifting exports (imports) towards regions for which the authorities had established relatively high (low) external exchange rates.

Whatever logic holds for the response to external exchange rates should hold as well with respect to movements in foreign currency prices. If the FTOs are able to influence real trade flows, at least in the planning process, we would expect them to push for increased real exports as valuta export prices rose. Yet Wolf (1982) has shown that Soviet real exports to the West in the 1970-78 period were actually reduced, ceteris paribus, as Soviet terms of trade improved due to significant increases in export prices. 3/ This suggests that either the FTOs had little material interest in their nominal foreign trade profits, or that if they did, they had little influence over the real trade flows that in part determine these profits.

The case for moving beyond calculations of budgetary effectiveness to measures of what is frequently called valuta or economic effectiveness is plainly stated by Shagalov and Faermark (1981). After discussing how an "optimal" or "limit" internal exchange rate might be calculated, they add:

1/ Ibid.

2/ If FTOs were given the incentive to fulfill valuta export targets, a revaluation of the external rate might lead to an increase in export volume, but only if the trading organizations could secure additional exportables from industrial enterprises.

3/ The empirical analysis cited was in terms of dollar prices, but the appreciation of the external ruble vis a vis the dollar in this period did not offset the average increase in dollar prices for Soviet exports to the West.

"The necessity for utilizing the above-mentioned calculated indicators is due to the fact that the operative exchange rate, reflecting the gold content of the ruble, does not give an adequate valuation to the economic significance of this or that currency, and prices, operating in domestic trade, in many cases inadequately reflect the socially required expenditures involved in their production."

The history of Soviet debates over various foreign trade efficiency indicators is well-documented by Boltho (1971) and, through the late seventies, by Gardner (1983). Official internal exchange rates have been utilized in Soviet foreign trade planning for years. Zakharov (1982), for example, discusses the use, since the 1950s, of different official internal rates for various groups of imported machinery and equipment. These rates were fixed for a number of years on the basis of the average implicit internal exchange rate (α_1) in the base year for a given product group. The resulting calculative prices (P_i^* , see equation (4)), were not only designed to influence decision-making (by whom?) regarding whether to import, but also are said to have directly or indirectly influenced the overall producer price level. This acknowledgment by Gosplan's chief technical expert on foreign trade supports Treml's argument that rising world market prices for machinery have affected Soviet domestic prices. 1/ Indeed, Zakharov proposes that official internal exchange rates should be lowered in line with world inflation, so as to protect the Soviet economy from imported price increases. It is not at all clear, however, whether this particular alleged price linkage in machinery and equipment imports, provided by the official internal exchange rate, is more than an anomaly in an otherwise relatively insulated economy. 2/

Debate continues in the Soviet Union about how most appropriately to measure the economic effectiveness of foreign trade. One focus of controversy is the definition of the domestic prices that should enter into the effectiveness calculations. Gardner (1983) presents an excellent analysis of the institutional vested interests implicit in the debate. At issue is whether existing wholesale prices (which historically have been closely related to average costs), so-called full cost, or more sophisticated shadow price-type values should be used. Rosefielde (1981) argues that wholesale prices are probably at least rank-correlated with domestic shadow prices. The Soviet economist Smirnov (1983) is openly

1/ See Treml (1980).

2/ Treml (1980) has argued that the price-insulating properties of the Soviet foreign trade system have been exaggerated.

contemptuous of the search for artificially constructed shadow prices; thus, the need laboriously to calculate the latter is seen as misguided. Prokhorov (1983) argues that the wholesale price reform of 1 January 1982 in effect made these prices much more valuable than before in determining the economic effectiveness of foreign trade.

Mathematical economists such as Shagalov, however, have refined the methodology for calculating shadow exchange rates (along the lines of Figure 3), and also have presented evidence suggesting the lack of systematic correlation among wholesale prices, calculated full costs, and "economic values" (or shadow prices). ^{1/} As one might expect in an economy without market clearing prices in general, "economic value" is defined somewhat differently depending on whether tradables are considered "deficit" or "non-deficit" goods. Export of deficit goods requires domestic consumers to substitute other, presumably higher cost and/or less efficient products. Zakharov and Shagalov (1982) consider the economic value of the non-deficit goods to be simply the full cost involved in their production; in other words, average branch costs plus a capital charge. For deficit exportables, the economic value is defined as the full cost of the domestic substitute plus the additional costs borne by consumers in having to make the substitution. On the import side, where presumably all imports are of "deficit" goods, economic value is defined as the full cost of the domestic import substitute replaced by the import plus other benefits or resource savings that the consumer receives from obtaining a foreign-produced good.

It is not entirely clear which prices or values are actually used in the working out of the foreign trade plans by Gosplan and the relevant ministries. Gosplan (1980) and Zakharov and Shagalov (1982) leave the impression that the above economic value approach to determining "real" domestic costs has been followed since the adoption of new methodological guidelines in 1980. Smirnov (1983), however, is under the impression that Gosplan still follows essentially the full cost approach laid down in the 1968 "provisional" Gosplan guidelines. Zakharov (1982) is also a bit tentative as to whether his advocated approach has actually been adopted by Gosplan.

At the same time debate continues regarding the establishment of the proper official internal exchange rate. A number of economists still seem to be averse to setting this rate equal to the "marginal" rate, e_s , indicated in Figure 3. The basic alternatives can be illustrated by focusing on exports. One approach would be to consider the i th exportable profitable only if its real implicit internal exchange rate (Z_{xi}/P_{xi}) is

^{1/} Shagalov (1983), Chapter 3.

less than the weighted average real implicit exchange rate (e''_{xa}) for, say, last period's exports. Assume for simplicity that the valuta value of exports last period were equal to OV'_0 in Figure 3. The average export rate, e''_{xa} , will lie somewhere between A and e''_s on the vertical axis. Clearly many exports with a higher real implicit exchange rate (up to e''_s) would be profitable. A more sophisticated "average" shadow exchange rate approach would limit exports to those products with (Z_{xi}/P'_{xi}) less than the weighted average real rate for past imports (e''_{ma}). As Gardner (1983) points out, this so-called "import equivalent" criterion is an improvement over the e''_{xa} , because it at least takes into account the (average) economic value to the country of obtaining foreign exchange. Assume again, for simplicity, initial imports with a valuta value of OV'_0 . Clearly the rate e''_{ma} will lie somewhere between C and e''_s . Following this particular average-rate criterion, however, would in this case lead the planners to over-export. 1/

According to Zakharov and Shagalov (1982), Gosplan currently uses some 20 internal exchange rates, with different rates "for trade with individual CMEA countries, other socialist countries, and developed capitalist and developing states." Shagalov and Faermark (1981) observe that the present Gosplan approach to calculating these rates cannot be considered optimal. It has been suggested by some Soviet economists, however, that as a practical matter these rates often may not significantly differ from e''_s because the planners in effect calculate e'' by splitting the difference between e''_{xa} and e''_{ma} . 2/

The ultimate logic of a formal optimization approach to foreign trade, in which either domestic output or consumption is maximized, would be to permit structural shifts in the larger world economy to influence, through foreign trade, the structure of domestic production. Although the formal models developed by Soviet economists stress the desirability of integrating the foreign trade sector more closely into the national economy, few would appear to propose that structural development within the USSR take place independently of a policy of relative self-sufficiency, or at least relative self-sufficiency within the CMEA region. While the planning of foreign trade on the basis of more meaningful internal exchange rates appears to have become official policy, foreign trade "effectiveness" is still listed

1/ Shagalov (1983), Chapter 3 critically evaluates these so-called "average" approaches in detail. Also see Gardner (1983).

2/ A number of optimization techniques are being experimented with by researchers affiliated with Gosplan (see, e.g., Privalov and Suliagin (1981)), but it is very difficult to fathom the extent to which they are being used in actual foreign trade planning.

in the Gosplan (1980) guidelines as just one of several important factors determining the foreign trade plan. (One of the criteria still mentioned is budgetary effectiveness.)

Zakharov and Shagalov (1982) have proposed setting domestic wholesale prices for exportables (P_{xi}) between a lower limit, equal to domestic costs of production (presumably the shadow price, Z_{xi}) and what we have called the transactional or calculative price (P_{xi}'') derived from the shadow exchange rate. This is seen as a way to ensure that neither industry nor the FTOs will have a financial interest in exporting goods that are "unprofitable" from the standpoint of the economy as a whole. (Recalling equation (4), it is clear that $Z_{xi} < P_i''$ implies $Z_{xi}/P_{xi} < e_s''$.) The authors suggest that setting the domestic price in this fashion would give a financial interest to industry to reduce costs and to the FTOs to maximize the foreign currency price received for exports.

Aside from the case of imported machinery and equipment, however, there is little hard evidence of transactional prices at present directly affecting either FTO financial positions or domestic wholesale prices in the Soviet Union. 1/ Treml (1980) argues that domestic prices of machinery are also affected by the foreign prices received by Soviet machinery exporters, but this linkage is not so evident. While it is true that domestic machinery producers are offered price supplements for exports to convertible currency markets, this in itself is not proof that world market price developments affect domestic prices. Indeed, the tying of these supplements to the higher domestic costs of producing exportable machinery, relative to the costs of producing for the home market (P_i^d), 2/ rather than to the calculative price (P_i''), would seem to suggest the opposite. The above proposal by Zakharov and Shagalov therefore would appear to be meant to apply not so much to the existing system but to a future possibly reformed foreign trade system in which transactional prices would in general be important to the enterprises, as well as to the planners, and would directly affect the financial position of the FTOs as well as the establishment of the prices (P_i) at which the FTOs deal with domestic industry. At the present time the official internal exchange rates would appear to play an even smaller role in the short-run determination of consumer prices in the USSR, given that virtually all retail prices in the socialized sector are administratively set.

In sum, it is evident that the foreign trade planners at Gosplan are increasingly using more economically meaningful exchange rates in plan-

1/ As noted earlier, VAVT (1983) suggests that the FTOs and industrial enterprises do not view economic effectiveness calculations as obligatory indicators.

2/ See Treml (1981).

ning the composition and direction of foreign trade. It is also clear, however, that foreign trade patterns depend on a number of other criteria as well. There is some evidence that exchange rates have a price-determining role in some sectors of the Soviet economy, but as yet this is not a general tendency. As long as the autonomy of the foreign trade organizations (FTOs) and industrial enterprises regarding foreign trade remains quite limited, it is likely that the exchange rate will remain chiefly a planning device at the highest levels of the planning hierarchy. The present role of the exchange rate in respect of macro-economic stabilization or structural adjustment appears to be negligible.

IV. The German Democratic Republic

The industrial combines, or Kombinate, have emerged since 1977-79 as the most important unit of economic management in the German Democratic Republic (GDR). 1/ Over the past few years the Kombinate have in theory also taken on a greater share of responsibility for foreign trade decision-making. For many of the combines, foreign trade plays a vital role in their overall activities. Of about 150 combines, 90 are estimated to sell over 20 percent of their output abroad, and about 40 of these have export quotas of 40 percent or more. 2/

Foreign trade itself is carried out by specialized foreign trade enterprises (FTEs), but the organizational relationships that these FTEs have with the combines are varied. There appear to be essentially four possibilities: (1) an FTE may report directly to a Kombinat, (2) it may report directly to the Ministry of Foreign Trade (MFT), (3) it may report directly to the MFT, but carry out the foreign trade for several Kombinate, or (4) it may report directly to an industrial ministry, but have several foreign trade departments, each of which is responsible both to the ministry itself and to a particular Kombinat belonging to that industry. 3/

With a view to strengthening the export interest of production enterprises, the combines, and the FTEs, export profitability has at least in theory entered into calculations of the so-called "unified enterprise result" since 1971. 4/ These "results," or profits, in turn affect the

1/ See Csaba (1983).

2/ Interview material.

3/ This latter type of structure appears, for example, in the chemical industry. The basic organizational alternatives are discussed in Kupferschmidt (1984).

4/ Gerstenberger (1974), p. 43. The "unified enterprise result" calculation was first introduced in 1968 on a trial, step-wise basis in important branches of the metal-working and chemical industries.

contributions to the bonus funds. The export profitability calculation methodology used today has been discussed in the East German economic literature since at least the mid 1970s, 1/ although only more recently has it been made clear what exchange rate is used. Export profitability involves comparing a transaction price (P_{xi}''), with the domestic price (P_{xi}) inclusive of FTE commissions, etc. The transaction price is equal to the foreign currency price times a full exchange rate (or Umrechnungskoeffizient), which is defined as the average domestic cost of earning a unit of foreign exchange. 2/ This is analogous to calculating whether the implicit internal exchange rate for the i th good (α_i) is less than the average implicit internal rate for all exportables. If domestic prices were to approximate reasonably closely actual scarcity values, then the comparison would in effect be whether (Z_{xi}/P_{xi}') were less than e_{xa}'' ; in other words, this would be similar to the rather primitive shadow exchange rate-type calculation advocated by some Soviet economists, discussed in the preceding section. 3/

This export profitability calculation is by no means meant as a rigid criterion for whether or not to export. 4/ Indeed, to use e_{xa} as a "cut-off" point would be self-defeating, as it would lead over time to ever lower levels of exports. It is rather meant to give the combines and the FTEs a better sense of the relative profitability of various exportables, and to encourage them to raise their average level of export profitability. Kupferschmidt et al. (1982) indicate that export profitability is only one of several criteria by which an FTE's performance is evaluated. It is indeed suggested that profitability per se may still be viewed as less important than fulfillment of the annual trade plans with respect to real trade flows and foreign exchange earnings. Rather than focusing on the level of profits per se, evaluation appears to be directed more to comparisons of actual against planned profitability or to the growth of the enterprises's average export profitability. 5/

There is little evidence to suggest that export calculative prices (i.e., $P_{xi}'' = P_{xi}' e_{xa}$) are permitted to influence directly domestic

1/ See Gerstenberger (1974) and Blessing (1977).

2/ Blessing, Fröhlich, and Grote (1984).

3/ This official conversion or exchange-rate has been held constant with respect to the transferable ruble for the past five to seven years, but has been changed as frequently as once a year vis-à-vis the dollar. The confusing pattern of official rates used in converting trade statistics is discussed in WEFA (1982).

4/ Blessing, Fröhlich, and Grote (1984).

5/ Kupferschmidt et al. (1982), pp. 276-281.

wholesale prices (P_i). One could imagine, however, a Kombinat, faced with an increasing calculative price (as the result, say, of a rising world market price) having a financial interest in obtaining above-plan allocations of domestic inputs by bidding up their prices. Whether the Kombinate are presently in a position to so affect domestic prices is, however, open to question. The role that world market prices should play in directly influencing the domestic prices of exportables appears to be a hotly debated issue in the GDR. 1/

The major channel for the direct transmission of world market price changes into the GDR would appear to be imports. Some GDR economists have suggested that domestic wholesale prices for virtually all products for which close domestic substitutes are insignificant are now based on transactional prices (Aufwandspreise). For many importables, however, such as certain raw materials and spare parts, these domestic prices are fixed for the duration of the Five-Year Plan. If close domestic substitutes are available, then the domestic prices of such importables are determined by domestic costs. 2/

The FTEs and combines are expected to make calculations also of import profitability. The standard for profitability is again the weighted average P_i/P_i^* ratio for exports (e_{xa}). In this case, imports are particularly encouraged that have a P_{mi}/P_{mi}^* ratio greater than e_{xa} . GDR economists point out that such comparisons are meaningless in the event that domestic prices are indeed set equal to transactional prices. 3/ (Because $P_{mi} = P_{mi}'' = P_{mi}^* e_{xa}$, P_{mi}/P_{mi}^* will always equal e_{xa} .) Thus, the profitability calculation only makes sense if there exist domestic substitutes with autonomous domestic prices. In this case, however, Blessing and Grote (1982) suggest that one should follow the new Soviet guidelines (Gosplan (1980) for estimating the economic value of importables (i.e., Z_{mi}) in establishing a domestic value for the comparison. As especially befits a country so dependent on raw material and fuel imports, the GDR economic literature of course also stresses the necessity of fully taking into account the real cost of the import content of exports in calculating export profitability. 4/

If this is a realistic portrayal of how the GDR foreign-trade system works in practice, then both changes in world market (and intra-CMEA) prices and in the average domestic cost of earning foreign exchange (e_{xa}) could be expected to influence the balance of trade and structural adjustment within the country. The principal differences from the Soviet case, in theory at least, would seem to be that in the GDR there is more scope

1/ See the discussion in Ebersbach (1983).

2/ Blessing and Grote (1982), and Blessing, Fröhlich, and Grote (1984).

3/ Blessing, Fröhlich, and Grote (1984).

4/ See Kupferschmidt et al (1982), pp. 74-78.

for the transmission of external price developments to the domestic economy through the exchange rate, and a much greater share of the response to changing world market price signals is being undertaken by the combines, as opposed to the planners. ^{1/} Thus changes in world market price relatives may influence the domestic structure of GDR importable prices and the pattern of demand for imported versus domestically produced inputs. Through the export profitability calculations, the relative attractiveness to the combines of different lines of production may also be altered.

It is more problematical whether periodic changes in the "average" exchange rate on which such calculations are made will significantly affect either the trade balance or the structure of domestic production. This is particularly so because this exchange rate itself is in turn a function of the level of trade (as well as the domestic and foreign price levels), and the volume of trade appears to be very much influenced by the structural priorities and import decisions of the planners. In any event, the "average" nature of the official exchange rate reduces its usefulness in achieving the "optimal" volume and composition of foreign trade. Finally, whatever changes in producer prices that do take place in this system have little necessary direct impact on the structure and level of consumer prices. It is likely, however, that more of the wholesale price changes have been passed through to the retail level, by administrative decision, than would be suggested by the official retail price indices.

Some outside observers, such as Csaba (1983), are quite skeptical about the degree of autonomy possessed by the Kombinate and about the role that the exchange rate system described above has played in determining the patterns of foreign trade and domestic adjustment. In his view, "...the volume, directions and commodity structure of foreign trade continue to be determined centrally and "in kind", and not by the enterprises; furthermore, the results achieved on the foreign market do not have a direct influence on the allocation of investments." ^{2/} GDR economists have also recently

^{1/} Blessing et al (1977), when discussing some of the distinguishing characteristics of the Soviet foreign trade system (by contrast, presumably, with that of the GDR), notes that calculations of foreign trade effectiveness are made only for large projects and the aggregate trade plans in the USSR, that efficiency indices are obligatory for neither the Soviet FTOs nor the industrial enterprises, and that the latter are essentially insulated, except in the event of very large projects involving sizable foreign trade volumes, from the impact of changing foreign trade prices. (Blessing's observations, of course, apply to the Soviet system of the mid-seventies, but they would appear to be still generally applicable today.)

^{2/} It should be noted, however, that most of Csaba's sources are from 1980 or earlier.

written of the need to further strengthen the interests of the combines in foreign trade and to integrate their own FTEs more fully into their production and trade activities. ^{1/} Further research has been urged with regard to the measurement of export and import profitability, and with respect to improving the "understanding of the relation among the conversion coefficients for different foreign currencies and the developments in domestic and foreign prices." ^{2/} The East German economist Luft has emphasized also the need, in a "foreign trade intensive economy", for the "entire economic management system to meet to a greater extent the requirements resulting from a higher degree of international economic involvement." ^{3/}

V. Poland in the 1970s

The theoretical foundations for the Polish exchange rate system of the 1970s were set out in a number of pioneering works by Polish economists in the 1960s, including, in particular, Trzeciakowski (1965). The basic approach, explained in detail in Trzeciakowski (1978), is essentially that used to determine the shadow exchange rate, e_s^* , in Figure 3. Aside from this basic theoretical approach, however, and the development of various decomposition algorithms for calculating shadow prices and exchange rates, Trzeciakowski and his collaborators were also concerned with the practical problem of seeking to maximize foreign trade efficiency in an intentionally mixed system of direct and indirect management of foreign trade. Although Polish policymakers had come to accept the need for greater decentralized decision-making in foreign trade, centrally determined import and export quotas were still to apply to a large share of trade.

The basic approach suggested by Trzeciakowski (1978, Chapter 14) was to determine first an "optimal" level of trade essentially along the lines of Figure 3. ^{4/} Because many of the centrally-determined imports would be "unprofitable" at the shadow internal exchange rate, however, these would be subject to differentiated price-equalization subsidies. Those centrally-directed imports which were profitable would be subject to price-equalization taxes. The task then would be to ensure that all remaining ("liberalized") imports would be profitable from the standpoint of the national economy. Because in general some of the controlled imports of $V\{V\}$ (in Figure 3) would be profitable (say $V\{V\}$), the liberalized imports

^{1/} See Ebersbach (1983) and Kosser and Kupferschmidt (1983).

^{2/} Blessing et al, (1984).

^{3/} In Ebersbach (1983). Emphasis added by the author.

^{4/} This 1978 volume is a translation of Trzeciakowski's book that appeared in Polish in 1975.

would have to be restricted to OV_1 . To do this, Trzeciakowski recommended imposing an undifferentiated import tax (equal to, say, $Oe_0'' - Oe_5''$ in Figure 3) on these imports. The remaining differential rents accruing to the enterprises would be taxed away on a progressive basis. It was believed that this system of taxation would give the enterprises an incentive to lower costs and generally strive for efficiency that would not result under a system of differentiated taxes. 1/ Once the total value of imports has been determined, the required volume of exports would be generated through a combination of centrally-mandated exports and an undifferentiated subsidy on "liberalized" exports that would stimulate enterprises to make up the difference. Remaining differential rents from exporting would also be taxed on a progressive basis.

The basic optimization approach was experimented with in the late 1960s in some branches on a "calculative" basis only. Industrial enterprises and FTOs were assigned calculated shadow prices for key imports and shadow internal exchange rates for each currency area. The calculated prices (P_i') were not allowed to affect actual domestic prices, but the "calculated" profits of the enterprises involved in the scheme affected their bonus funds. At the same time a truly "transactional" system (in which the P_i were affected by the P_i') was also experimented with in one industrial trust. 2/

The so-called "new economic maneuver" in Poland beginning in 1971 was accompanied by a fairly significant experiment in indirect management of foreign trade. Industrial ministries and the so-called "large economic organizations" (WOGs) were permitted to trade on their own account or through FTOs on a commission basis. 3/ Although the WOGs were to have considerable autonomy, they were still given many value and quantity trade quotas by the central authorities. 4/ The system that evolved, therefore, was one of mixed direct and indirect management of foreign trade.

Although the 1970 strikes had led to the rescinding of various internal price reforms regarding consumer goods, most of the planned producer price changes were retained. 5/ Transactional prices designed to affect domestic

1/ One of the bothersome aspects of Trzeciakowski's approach is the apparent assumption that centrally-directed imports are always those with the lowest real implicit internal exchange rate.

2/ For details see Trzeciakowski (1978), Chapter 12, and Hewett (1974).

3/ Brus (1982). In this connection it is interesting to note that Plowiec, as early as 1972, expressed doubts as to the wisdom of the Ministry of Foreign Trade relinquishing jurisdiction over so many FTOs to the industrial ministries. See Plowiec (1973/74).

4/ See Brus (1982).

5/ Ibid.

prices were applied widely in exports. According to Plowiec (1973/74), there was now the possibility that negotiated domestic wholesale prices would encourage profit-oriented industrial enterprises to lower costs and raise product quality (with a view to raising the P_{xi}), while FTOs at the same time would have a direct interest in maximizing the foreign currency prices received for their exportables as well as buying from the lowest cost domestic firms.

Plowiec (1973/74) notes that there was relatively little application of transaction pricing on imports. Böhm (1983) has suggested that transaction pricing was applied to raw materials and machinery imports for which there were no domestic substitutes, although the transaction prices were fixed for the Five-Year plan. In practice, Böhm notes, most domestic raw material prices were not constructed on the basis of a uniform criterion, and in many cases failed to cover domestic costs of production. While price equalization was terminated in principle, it must have remained very important on the import side and also would have had to apply to centrally-directed exports.

The transactional prices that were established were based on an official internal exchange rate (e) that approximated the average implicit internal exchange rate for exports. The dollar-area official internal rate of 15 zlotys (kept secret for most of the decade) was set at 110 percent of the estimated average implicit rate, which rendered approximately one-third of existing exportables unprofitable from the enterprises' standpoint. 1/ The official rate was based on an analysis of the 1967/68 cost structure of Polish exports, and was fixed for the Five Year Plan period. Many of the foreign trade experts advocated setting the official internal rate at its marginal level, but largely because of the fear of inflationary consequences the (approximate) average rate was adopted. 2/ According to Böhm (1983), the existing structure of implicit internal exchange rates (the α_1) was such that energy carriers, which were frequently priced domestically at below-cost, and raw material-intensive products, were the most profitable exports. Exports that were "unprofitable" at the existing α_1 and e , including the products of light industry and many foodstuffs, had to be mandated by the central authorities and subsidized on a differentiated basis (i.e., $\beta_{xi} > 1.00$ in equation (4)). This meant a greater degree of continuing state intervention in enterprise activities

1/ Böhm (1983) The dollar-area official external rate in 1971 was 4.0 zlotys. The implicit official full rate, therefore was 60. The ruble area internal rate was set at 10, and the rate for trade with the developing countries was established at 13 zlotys.

2/ Böhm (1983).

than had originally been foreseen, and the automatic subsidies reduced the pressure on these exporting firms to lower their costs.

Widespread price-equalization on importables meant that the explosion in energy and raw materials prices in 1973-74 was not directly transmitted into the Polish economy. 1/ At the same time, increasing world inflation and particularly rapid price increases for energy and raw material-intensive manufactures were reflected in rising transaction prices for Polish exportables. The result was a rapid increase in effective protection for a wide-range of processing industries, and quasi-autonomous enterprises were led to step-up imports of raw materials for processing and re-export. 2/ The authorities realized what was happening, however, and by 1975 exporters were apparently required to compute their profits using shadow prices for imported imports, and at the same time a windfall profits tax was imposed on exports. This "perverse" response to world market price developments could have been forestalled, of course, by a combination of a broadening of transaction pricing in imports and/or by revaluation of the internal zloty relative to the valuta zloty.

At the beginning of the 1976-80 plan period the official internal exchange rate for the dollar area was indeed reduced from 15.0 to 13.0. Some domestic prices for raw materials were also raised. According to Böhm (1983), these policy actions in effect reinstated the official internal rate to about 110 percent of the average implicit internal exchange rate. Over time, however, "windfall" profits on exports increased, and exporters were once again required to employ shadow pricing, and a tax was imposed on the raw material value of exports. At the same time, to promote exports in response to the deteriorating balance of payments, branch-differentiated export rebates were paid to those WOGs or industrial associations with exportables having an average implicit internal exchange rate (α_1) in excess of 0.87 of the official internal rate. Only coal and other energy carriers did not require export subsidies under this arrangement. Böhm (1983) argues that these subsidies were mainly financed by higher taxes on the truly profitable exporters, so that the system was sliding back towards full price equalization.

1/ Despite the stability of CMEA foreign trade prices prior to 1975, the overall Polish valuta import price level increased by 8.8 percent and 16.9 percent in 1973 and 1974 respectively. In 1975, valuta import prices rose by 14.0 percent, largely because of higher prices for imports from the CMEA. See Fallenbuchl (1980).

2/ See Böhm (1983) and Fallenbuchl (1980) for details. Wolf (1980b) analyses this phenomenon using a stylized model of a "modified" CPE.

Plowiec (1980/81) has suggested that a "submarginal" official exchange rate, which would make roughly 70-80 percent of exportables profitable to the enterprises, is probably satisfactory in a regime in which there is both centrally-mandated and liberalized trade. This was also the recommendation of a special Commission for Foreign Trade Reform, and in 1980 the official internal exchange rate for the dollar-area was accordingly raised to 14.5, which was about 30 percent higher than the estimated average implicit internal rate. The Commission also recommended that the official rate be changed if the average implicit rate on exports changed by more than 3 percent. (In 1982 Poland began to quote publicly a full official commercial exchange rate, i.e., e'e"). 1/

A tantalizing empirical issue that emerges from the Polish experience is the extent to which the nature of the Polish foreign trade and exchange rate systems, the relative fixity of the official internal rate, and the structure of foreign trade taxation and subsidization, contributed to the deterioration of the Polish economy in the 1970s. It is possible that the partial decentralization of foreign trade decisionmaking, combined with overvaluation of the zloty and a policy of subsidizing raw material imports, added in a significant way to Polish structural problems and excess demand pressures. The Polish experience would seem to highlight a serious issue for the authorities in a partially decentralized foreign trade system, namely the motivation and the ability of enterprise managers to use efficiently the modified environment to their own, but not necessarily the economy's, best advantage. The importance of establishing "correct" financial parameters in such a modified system cannot be exaggerated. This is certainly appreciated by many Polish economists who continue to probe for ways to promote maximum efficiency in decentralized trade that is also consistent with the center's need to plan the volume and to a large extent the geographical and commodity composition of foreign trade. 2/

VI. Hungary

Of all the CMEA country exchange rate systems, that of Hungary is probably best known in the West. In no small measure this is due to an impressive accumulation of English-language literature regarding the Hungarian exchange rate system since the introduction of the New Economic Mechanism (NEM) in 1968. 3/ One cornerstone of the NEM, of course, was

1/ Böhm (1983).

2/ Plowiec (1973/74) and Ryszkiewicz (1984) address these issues, arguing in effect for undifferentiated rather than product- or enterprise-specific trade taxes and subsidies.

3/ This literature includes Brown and Marer (1973); Marer (1981a, 1981b), and Balassa (1983).

the development of functional price linkages to foreign markets by means of a foreign trade "coefficient" or "multiplier." For all practical purposes this was a full exchange rate, although until 1976 it coexisted with what we have been calling an official external rate. 1/ In 1976 the external rate was eliminated for purposes of calculating trade statistics, and the multiplier was thereafter referred to as the "commercial" rate. In 1981 the commercial and non-commercial exchange rates were "unified" into one official exchange rate.

Another essential facet of the NEM was the establishment of a more flexible price system with different categories of producer and consumer prices: "free" prices--although changes in these prices typically required consultation with the central price authorities, "limited flexibility," and fixed prices. For a wide range of goods price equalization was abolished, and for other products it was in effect to be internalized within the enterprises by means of a "reserve for smoothing out price differences." Enterprises, now in principle released from the constraints of detailed central planning, were encouraged to increase profits, including those earned in foreign trade activities. Larger enterprises or trusts in some cases were given foreign trade rights; in other cases FTOs were now to carry out foreign trade for profit-oriented enterprises on a commission basis. 2/

The dollar and ruble-area exchange rates established in 1968 were set approximately equal to the estimated average domestic cost of earning one unit of foreign exchange (e_{xa}) in the period 1960-64. A lengthy debate both preceded and followed this decision, with many reform-minded economists recommending that the official rate be set equal to the marginal domestic cost of earning a unit of foreign exchange. 3/ (Observe that this marginal rate would only be equal to the full shadow rate if (1) the structure of domestic producer prices approximated scarcity values, and (2) the value of imports (to be paid for by exporting) were determined on a shadow price basis rather than independently of exports.) According to Kozma (1981), the main considerations arguing for use of an "average" rate were to limit domestic inflation and to maintain "stable surroundings for the enterprises." In effect, it was desired to "facilitate a gentle transition from the old system to the new," and to maintain a greater scope for continued central intervention (e.g., through differentiated export subsidies). Such intervention permitted both the planners and enterprise managers to continue to think in real rather than primarily value terms, and avoided significant dispersion of profit rates for exporting enterprises.

1/ This coexistence permitted van Brabant (1977) to calculate what could be called the implicit (!) official internal exchange rate.

2/ See Brown and Marer (1973); Kozma (1981), and Marer (1981b) for details.

3/ Brown and Marer (1973). The full exchange rate was set at 60 and 40 forints for the dollar and ruble respectively, in 1968.

Although enterprise profitability was now directly affected by the transactional prices ($P_{xi} = P_{xi}^* e^{\beta_i}$) the impact of foreign currency price movements on the domestic prices of non-traded exportables (P_{xi}^d) appears to have been only indirect after about 1973. By then, "prime costs" had become the predominant basis for increases in domestic exportable prices. 1/ Prime costs could of course increase if world market prices for imported intermediates were not offset by subsidies. Moreover, higher transactional prices for exportables, even if not permitted to influence domestic prices directly, in principle would induce enterprises to allocate resources into exportable production, and this, under increasing marginal cost conditions, would put upward pressure on the prime cost and thus the domestic wholesale price of the exportables (P_i and P_i^d).

That the transactional pricing was at least indirectly affecting the domestic prices of exportables and directly the prices of at least some importables is suggested by the "active" exchange rate policy of the mid- and late-1970's that was partly designed to nullify, through revaluation, the imported inflation. 2/ Another motive for revaluation, of course, would have been to eliminate the windfall profits of raw material-intensive exporters who were benefitting from being able to import raw materials at subsidized prices. 3/

In principle, profit-oriented enterprises should have been sensitive to any changes in domestic relative prices (P_i^d/P_j^d) or changes in transaction prices (P_i^t) relative to domestic prices (P_i and P_i^d), that were caused by changes in world market price relatives and/or the exchange rate. Many Hungarian economists expressed skepticism in the late 1970s and early 1980s, however, that enterprises really reallocated resources in a significant way in response to such relative price changes. Kozma (1981) suggested that the setting of the official exchange rate at the "average" level made large-scale export subsidies inevitable and that this reduced the profit interestedness of enterprises and their sensitivity to changes in relative prices. Tardos (1980) argued that enterprise managers in the Hungarian environment were by no means short-run profit-maximizers, but interested above all in demonstrating monotonically increasing profits over time. This, too, would leave them relatively insensitive to price changes, at least in the short run, and in an environment of far-reaching export subsidization, their perception may have been that their time could be better spent bargaining for higher subsidies than shifting resources

1/ See Hare (1976). Prime costs, together with a permitted pre-tax profit markup that would include a capital charge, would be roughly analogous to full costs (as defined earlier).

2/ See Brown and Tardos (1980).

3/ See Wolf (1980b). Windfall profit taxes were also used by the authorities to discourage exports unprofitable from the national economic standpoint, and also to try to avoid growing profit disparities among enterprises.

among different activities and investing in export-oriented lines of production. Kornai (1980), was also skeptical of the price sensitivity of enterprise managers that were only subject to what he called the "soft" budget constraint, and who realized the authorities' reluctance to permit the bankruptcy of firms. He has also suggested that in any event the reallocation of, say, exportables to foreign markets in response to favorable price developments may be effectively neutralized by non-price pressures coming from the authorities to alleviate or avoid excess demand pressures on domestic markets. 1/ If these and other impediments to enterprise price sensitivity were indeed dominant, the type of "perverse" resource allocation possibilities portrayed in the hypothetical MCPE model of Wolf (1980b), in which there was an uneasy coexistence of transaction price-determined domestic prices for some goods and effective price equalization for others, may not have been a problem.

In the late 1970s there was accordingly a lively debate over whether Hungary should pursue an "active" exchange rate policy, and if so, whether devaluation or revaluation of the forint would be best. Not surprisingly, those with an interest in promoting exports, such as the Ministry of Foreign Trade, or in reducing the budgetary burden of the export subsidies, such as the Ministry of Finance, tended to look approvingly on devaluation. Others, concerned primarily about domestic price stability, were more interested in revaluing the forint. Those economists who perceived Hungary's foreign trade elasticities to be low were skeptical that devaluation would seriously improve the deteriorating balance of payments. Kozma (1981) saw some potential for devaluation to encourage exports, but suggested that the demand for imports was very price inelastic because imports of investment goods were determined principally through the "moral suasion" of the central authorities. 2/ Portes (1979) assessed Hungarian trade elasticities to be low with respect to domestic import demand and export supply, and also in respect to foreign demand for that country's exports. The logic of the MCPE model of Wolf (1978), on the other hand, was that if price elasticities were more than negligible but mainly only domestic exportable prices were affected by devaluation, an increase in the exchange rate could worsen the foreign currency trade balance.

This price system was replaced in 1980-81 by the so-called "competitive" system. Now the domestic prices of imported intermediates were to be tied directly to the tariff-inclusive transactional prices. Energy prices, however, were still fixed centrally and were only modified "intermittently"

1/ Kornai (1981).

2/ Also see Brown and Tardos (1980).

as world market prices changed. ^{1/} The "competitive" rules on the export side, however, were more complex. While wanting domestic firms to be sensitive to changes in world market prices for exportables, the authorities also sought to limit the domestic inflationary impact of such changes. This was especially critical for an economy in which most industrial branches had ended up with monopolistic market structures after a quarter century of central planning.

Marer (1984) observes that enterprises that exported more than 5 percent of output for convertible currency (accounting for about two-thirds of Hungarian industry) were subjected to three basic rules: (1) the average price of their domestically-marketed output could not rise at a faster rate than the average rate at which their transactional export prices (plus a rebate for imputed indirect taxes) increased; (2) the average profit margin on domestic sales could not exceed that in exports; and (3) individual product prices on domestically marketed goods could not exceed "the actual or hypothetical convertible currency [transactional] import price" for those particular products.

The competitive price system has been subjected to various criticisms. Balassa (1983) has noted, for example, that firms might raise their convertible currency prices in order to increase their overall rate of export (and therefore permitted domestic) profitability, but that if they faced elastic export demand this would lead to reduced export revenue and a loss for the national economy. Others have suggested that enterprises might seek to eliminate less profitable exports altogether so as to raise their overall level of export profitability (and again raise the scope for raising domestic prices). This would contribute further to a decline in export revenue, and could constitute a loss to the national economy if these seemingly unprofitable exports (because of a below-marginal exchange rate), were indeed socially profitable. Other firms might be tempted to cut back exports so as to be exempt from the "five percent" rule that made them directly subject to the "competitive" rules.

These and other problems led to various changes in price-building regulations in 1981-82, and in 1984 further modifications were introduced. The number of firms to be covered by the competitive rules is to be increased. Moreover, certain enterprises are now to be subject only to the third rule noted above (that relating to the prices of individual products). By 1985 enterprises accounting for as much as 35-40 percent of manufacturing output may be able to qualify for this more liberal application of the competitive rules, but presumably a demonstration of "responsible" behavior with respect to utilization of domestic monopoly power will be a criterion for continuing to qualify.

^{1/} Balassa (1983).

Given the greater scope for the official exchange rate to influence domestic prices in Hungary, relative to the other CMEA countries reviewed here, it is interesting to speculate on the extent to which the evolving exchange rate and pricing system in that country may have affected the process of structural adjustment and macroeconomic balance. Few analyses of these issues are available, at least in English. Van Brabant (1977), in a detailed study covering 1969-75, found little systematic evidence that the Hungarian export structure, in either dollar or ruble area trade, had shifted away from branches with apparent high implicit internal exchange rates (α_i) into branches with relatively low domestic costs of earning foreign exchange relative to the (implicit) official internal exchange rate. Simon (1984), in a comprehensive empirical study of the 1965-79 period, found that over 40 percent of Hungarian branches experienced a negative correlation between changes in their share of total exports and changes in their "price/cost" (presumably, P_i^*/C_i^*) ratios.

Regarding the impact of devaluation on the trade balance, Balassa (1983) suggests that much of the previously mentioned skepticism may be unwarranted. Wolf (1981), econometrically examining Hungarian export performance for a small sample of exports to West Germany in 1970-78, found some evidence of positive export supply elasticities. Marer (1984) suggests, however, that under the "competitive" system a devaluation in general is unlikely materially to affect the convertible currency trade balance. This is mainly because now domestic prices (through competitive pricing) and CMEA forint trade prices (through a system of producers' differential turnover foreign taxes and subsidies) are linked fairly directly to transactional prices on exports to the convertible currency area. A devaluation, therefore, will cause very little if any change in the hard currency transactional price relative to these other prices, and there will be correspondingly little incentive for producers to reallocate resources into production for the convertible currency area. This, it should be noted, is in contrast to the stylized market economy case, in which the domestic prices of exportables and of other products ultimately rise precisely because of excess demand pressures caused by the reallocation of resources into exports as a result of the initial devaluation. Marer's point is that the "competitive" system, by only emulating the outcome but not the process of the competitive free market, may preclude the allocational impact that characterizes the latter.

It should be noted, however, that administratively-determined adjustments in ruble area transactional prices may only follow changes in dollar area transactional prices with a lag, although it is doubtful in any event that short-run changes in relative ruble/dollar area transactional prices would lead to resource reallocation. Of course, not all domestic prices are subject to the "competitive" system, and in any event, enterprises are by no means compelled to raise domestic prices *pari passu* with convertible-currency export transaction prices. If demand management policies were

sufficiently restrictive, producers might well not raise domestic prices until the allocational impact of devaluation had itself created domestic excess demand pressures. Moreover, even if a change in the exchange rate were to have little effect, the emerging domestic price-building role of the transactional prices in this system, together with the enterprise's presumed interest in raising its profitability, might give the firm the incentive to concentrate investments in those exportables expected to enjoy relatively rapid world market price increases in the future.

Marer (1984) notes also that because Hungary is so dependent on imported raw materials and intermediates, and these are priced domestically mainly on a transactional basis, a devaluation will tend to raise domestic material costs of production virtually in proportion to the increase in the price of exportables. This, too, might be expected to diminish, but not necessarily to eliminate, the impact of a devaluation. Observe, however, that this argument would apply to any country that imports most of its raw materials, whether it is a modified CPE or a market economy.

It has been suggested that because the nominal wage is directly controlled by the authorities in Hungary, the expenditure-reducing impact of devaluation is perceived by the authorities to be less important than it might be by the government of a market economy. Under the more parametric wage regulation system now in effect, however, and given the increasing importance of incomes earned outside the socialized sector, it is not obvious that the Hungarian authorities can control nominal incomes as precisely as commonly believed. Furthermore, if Hungarian workers are subject to money illusion, they may more readily accept a decline in the real wage through price increases rather than by a reduction in the money wage, and the exchange rate, which now in principle affects a wide range of prices, could be seen as a relatively efficient means to change the price level. Finally, the separate effect that a devaluation and attendant price increases would have on real money balances, and therefore possibly on real expenditure, should not be ignored.

If relative price changes are indeed minimized by the "competitive" system, or if many of the aforementioned alleged obstacles to Hungarian enterprise responsiveness to relative price changes persist one wonders whether in the current environment the expenditure-reducing impact of devaluation may dominate the substitution effect. If so, and exports respond only slowly to the new price relationships, excess supply conditions could develop in the meantime that, given the difficulty that enterprises have in releasing workers, might be reflected more in inventory accumulation rather than in rising unemployment.

Many economists have suggested that together with tighter financial discipline, a further liberalization of imports would raise the effectiveness of the exchange rate system and exchange rate policy in Hungary. 1/

1/ See, for example, Balassa (1983).

Liberalized imports would put downward pressure on domestic prices of import substitutes. This would reduce the bias towards import substitution (recall the analysis of Krueger (1978) discussed in Section II), and by increasing de facto competition domestically, remove one of the main reasons for preserving the artificial "competitive" pricing system. This in turn might make the exchange rate a more effective policy instrument.

VII. Concluding Remarks

This paper has reviewed the exchange rate systems of four CMEA planned economies: the Soviet Union, the GDR, Poland, and Hungary. In section II a common framework was developed and, at the risk of some over-simplification, a common terminology was also proposed for analyzing the often bewildering array of exchange rate concepts and jargon in the different planned economies.

Each of these four countries has evolved a more sophisticated and probably economically more meaningful exchange rate system over the past 10-15 years. As noted in section II, the main problem facing the planners in each country has been how to increase the static and dynamic gains from trade, by improving foreign trade calculations as well as the organization of foreign trade activities and their integration with the rest of the economy. In the realm of pricing, this has involved attempts to rationalize both the system of domestic prices and the exchange rates by which these more realistic prices might be related to the structure of prices in the larger world market.

The four countries examined perhaps represent, roughly in the order examined, a spectrum with respect to the extent to which foreign trade decisionmaking has been decentralized and the exchange rate has taken on a direct price-determining role. To the extent that the exchange rate has been given this function, the scope is correspondingly broadened for the exchange rate to play a role both as regards macroeconomic stabilization and structural adjustment in these economies.

In the Soviet case, reviewed in Section III, it is evident that the planners are increasingly using more economically meaningful exchange rates in planning the composition and direction of foreign trade. It is clear however, that foreign trade patterns also depend on a number of other criteria. There is some evidence that exchange rates have a price determining role in some sectors of the Soviet economy, but as yet this does not appear to be a general tendency. As long as the autonomy of the foreign trade organizations (FTOs) and industrial enterprises regarding foreign trade remains quite limited, it is likely that the exchange rate will remain chiefly a planning device at the highest levels of the planning hierarchy. Its role in economic stabilization or structural adjustment continues to be negligible.

The large combines in the GDR (examined in section IV) have somewhat more interest in and autonomy with respect to foreign trade than their industrial counterparts in the Soviet Union, although this autonomy should not be exaggerated. Descriptions of how the system operates in theory suggest that the exchange rate, and the transactional prices that it determines, do have a price transmission role in the GDR. This is especially evident on the import side. The exchange rate also appears to have at least a limited resource allocational role, at the level of the combine, in exports. The current discussion in the GDR suggests that the price-signalling function and therefore the role that the exchange rate might play in structural adjustment, might be enhanced in that country in years to come.

This study made no attempt to describe or analyze the present Polish exchange rate system or policy. Instead, in section V, we focused in part on the attempt of Polish economists to come to grips with the problem of how to maximize the efficiency of decentralized foreign trade in the context of continued upper-level involvement in and overall direction of foreign trade planning. We also briefly reviewed the actual Polish exchange rate system and policy in the 1970s. This experience, which featured the establishment of an economically meaningful (although overvalued) exchange rate, partially decentralized foreign trade decisionmaking, significant price distortions, and growing governmental price and non-price intervention, highlights some of the dangers involved in a partially liberalized foreign trade system responding to distorted financial parameters. The question was raised as to what extent the Polish price and exchange rate systems and policies may have contributed to the evolving structural and macro-economic problems faced by that economy in the 1970s.

Experimentation with exchange rate-determined domestic prices and foreign trade liberalization has been most striking in Hungary (see section VI). Some of the foreign trade problems that arose in Poland in the 1970s appeared in Hungary as well. Nevertheless, the commitment to liberalization in that country was only temporarily sidetracked. The potential significance of the exchange rate as a transmitter of structure-determining signals from the world market, and as an important instrument of economic stabilization policy, is much enhanced in the present Hungarian context. As yet, however, there has been insufficient indepth analysis of the role of the exchange rate in this economy, and there is virtually no published empirical evidence regarding this issue.

In sum, the exchange rate systems of these four countries present a considerable range of diversity. If nothing else, this study should demonstrate that we must go beyond the very stylized models (of both market economies and CPEs) in attempting to understand the actual impact of exchange rates in planned economies. The paper also shows, in the author's view, one of the values of comparative analysis--the diversity of exchange rate systems documented here may prove useful in analyzing and speculating on the potential role that exchange rates might play in different planned economies.

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