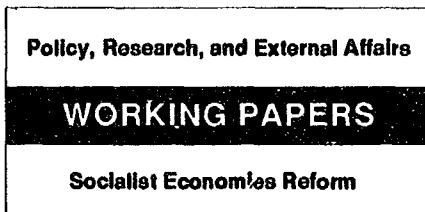


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# The CMEA System of Trade and Payments

## The Legacy and the Aftermath of Its Termination

Martin Schrenk

A brief history and critique of the Council for Mutual Economic Assistance and conjectures about the consequences of its demise.

This paper — a product of the Socialist Economies Reform Unit, Country Economics Department — is part of a larger effort in PRE to analyze the systemic legacy which militates against the structural adjustment and economic recovery of Eastern Europe's socialist economies in transition. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact CECSE, room N6-043, extension 37188 (27 pages).

The Council for Mutual Economic Assistance (CMEA, sometimes referred to as COMECON) was founded in 1949. Its European members were Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania, and the USSR. Mongolia, Cuba, and Vietnam were non-European members. Albania was a member but left after its break with the USSR. Yugoslavia was an associate member.

Past analyses of the economies of the socialist member countries tended to downplay trade and payment relations through the CMEA. The key concern of analysts was with Western external debt, borrowing requirements, and creditworthiness in convertible currencies. In that context, relations within the CMEA were peripheral. Moreover, the paradigm of multilateral trade and currency convertibility was not suited for analysis of CMEA's system of trade and payments.

Schrenk describes the CMEA system of trade and payment (the "CMEA regime") and

considers how the transition from traditional socialism to a market economy is linked to changes in the mechanism for international transactions.

The author gives a brief history of the CMEA, describing its organizational structure, institutional principles, and reform efforts, and provides a brief statistical overview of the relative importance of CMEA trade for its members. The paper sets out the traditional "institutional model" of the CMEA regime, discusses its defects, and briefly evaluates the CMEA regime.

After describing the events surrounding the CMEA's demise in 1990, Schrenk conjectures about the consequences of that demise. He explains that because there is so little hard evidence and statistical data — and because the implicit political assumptions are so uncertain — many conclusions in this final section must be conjectural.

The PRE Working Paper Series disseminates the findings of work under way in the Bank's Policy, Research, and External Affairs Complex. An objective of the series is to get these findings out quickly, even if presentations are less than fully polished. The findings, interpretations, and conclusions in these papers do not necessarily represent official Bank policy.

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**The CMEA System of Trade and Payments:  
The Legacy and the Aftermath of its Termination<sup>1/</sup>  
by Martin Schrenk**

**INTRODUCTION**

Past analyses of the economies of the socialist member countries tended to downplay trade and payment relations through the Council for Mutual Economic Assistance (CMEA, sometimes referred to as COMECON). The key analytical concern was with Western external debt, borrowing requirements, and creditworthiness in Convertible Currencies (CCs); in that context relations within the CMEA were peripheral. Moreover, the paradigm of multilateral trade and currency convertibility was not suited for analysis of CMEA's system of trade and payments.

This paper describes the CMEA system of trade and payment, (the "CMEA regime") and considers how the transition from traditional socialism to a market economy is linked to changes of the mechanism for international transactions. Section 1 summarizes the CMEA's history, organizational structure, institutional principles, and reform efforts. Section 2 provides a brief statistical overview of the relative importance of the CMEA trade for its members. Section 3 sets out the traditional "institutional model" of the CMEA regime. Section 4 discusses its defects. Section 5 presents a summary evaluation of the CMEA regime. Section 6 turns to the events surrounding the CMEA's demise during 1990. The final section presents a number of conjectures as to the consequences of that demise. Due to the dearth of hard evidence and statistical data -- and the high degree of uncertainty of the implicit political assumptions -- many conclusions of the final section are conjectural.

**I. HISTORY AND ORGANIZATION OF THE CMEA AND INITIATIVES FOR REFORM**

The CMEA was founded in 1949. Its European members were the USSR plus Poland, GDR, Czechoslovakia, Hungary, Romania and Bulgaria ("the Six"). Mongolia, Cuba, and Vietnam were non-European members. Albania was a member but left after its break with the USSR. Yugoslavia was an associate member.

The highest body of the CMEA was the Council Session, the regular annual meeting of heads of governments. Its permanent board was the Executive Committee of government representatives; a number of Council Committees and Standing Commissions met regularly on specific matters of sectoral planning and coordination. The core organization was the CMEA Secretariat. The CMEA created two special financial institutions, the International Bank for Economic Cooperation (IBEC) and the International Investment Bank (IIB), both located in Moscow, the CMEA's headquarters.

IBEC managed the complex clearing between members' accounts and short-term credits; accounts were held and settled bilaterally in "transferable rubles" (TR), the common currency for CMEA trade and payment transactions. IIB's main activity was financing joint projects; it also undertook external borrowing in convertible currencies for joint projects and financed investment projects in developing countries (mostly in the non-European CMEA members and on a small scale). By end of 1987, IIB was reported to have committed a total of TR10 billion (\$16 billion at the -- meaningless -- official exchange rate) to 87 projects; 70 percent of all commitments were for the energy sector. While IIB participated in joint projects, not all such projects relied on IIB financing. IIB loans typically had a

maturity of between 5 and 15 years at interest rates between 3 and 5 percent, with reportedly lower rates for "priority projects" and for lending to LDCs.

The political principle of the CMEA was "equality, sovereignty, and interest." Unanimity was required on all decisions of common concern. The organs of the CMEA had no supranational executive or legislative mandate. Common decisions of members were merely declarations of intent and were not legally binding unless translated into (mostly bilateral) treaties. The unlimited veto power the principle gave to every member was circumscribed merely by the "principle of interestedness," which excluded veto rights of countries not directly affected by the particular matter. Nevertheless, the lack of supranationality in procedures tended persistently to reduce the outcome of initiatives to the lowest common denominator; a case in point was the failure of the Soviet initiative during the Khrushchev era to institute an integrated CMEA-wide planning system.

During the four decades after inception, the CMEA developed an elaborate institutional framework for planning and implementing bilateral trade between members, denominated in TR.<sup>2</sup> This did not create a "common market" with supranational institutions and a common external trade policy. However, the CMEA evolved into a distinct "economic region" in terms of preferential relationships among members codified in bilateral treaties. Agreements on production specialization were often an integral part of trade relations. The framework of the CMEA regime was an outgrowth of central planning, and its rules and procedures differed fundamentally from those of the convertible currency trade regimes of the member countries.

## II. IMPORTANCE AND PATTERN OF CMEA TRADE

Data on intra-CMEA trade are notoriously deficient and merely indicate orders of magnitude.<sup>3</sup> Table 1 gives an overview of the structure of global CMEA trade.

The figures demonstrate the weight of intraregional trade for members in 1985. According to these data, 56 percent of total CMEA exports were internal to the region; for the USSR intraregional trade accounted for about one-half the total, and for the Six (in the aggregate and on average) for about 60 percent.

**Table 1. Structure of Exports by Trade Areas  
(1985; US\$ billion)**

Area/ Country of Origin	Area/Country of Destination							WORLD
	OECD	LDCs	Yug.	China	USSR	Six	CMEA	
OECD	909.4	269.2	6.0	27.0	20.6	15.2	(38.5)	1,247.4
LDCs ex. Y&C	304.2	142.9	1.9	7.6	10.5	6.8	(17.3)	473.9
Yugoslavia	3.5	1.7	n.a.	0.1	3.4	1.8	(5.2)	10.7
China	11.4	13.9	0	n.a.	1.1	1.0	(2.1)	27.3
USSR	21.3	15.7	0.2	0.9	n.a.	40.8	(40.8)	78.9
Six	20.4	9.5	1.5	1.5	32.9	17.9	50.8	83.7
CMEA	(41.7)	(25.2)	(1.7)	(2.4)	(32.9)	(58.7)	(91.6)	(162.6)
WORLD	1270.2	452.9	9.6	37.1	68.4	83.5	(151.9)	1,921.7

Source: United Nations.

The importance of members' intraregional trade and trade with the USSR in 1989 is highlighted in Table 2.

**Table 2. Shares of the CMEA in Exports of Member Countries;  
Shares of the USSR in Exports of Member Countries  
(1989 - percentage of total exports)**

	CMEA / TOTAL		USSR / CMEA		USSR / TOTAL	
	X	M	X	M	X	M
Bulgaria	83	73	79	74	66	54
CSSR	54	55	57	54	31	30
GDR	42	38	57	58	24	22
Hungary	39	39	62	56	24	22
Poland	35	32	60	56	21	18
Romania	40	55	58	59	23	32
USSR	46	50				

Source: Van Brabant (1990).

CMEA trade relations were thus predominantly bilateral relations between each of the Six and the USSR.

CMEA trade exhibited a distinct pattern of commodity specialization. The USSR primarily supplied raw materials, including a high share of primary energy, mainly in exchange for manufactures. Hungarian data, which are representative for the Six, illustrate the commodity pattern reflected in Table 3, consisting of USSR exports of primarily "hard goods" in worldwide demand in exchange for "soft goods" with only a limited, if any, market outside the CMEA.

**Table 3. Hungary: Commodity Composition, Ruble and Non-Ruble  
(1987 - in percentage)<sup>4/</sup>**

	Exports		Imports	
	Ruble	Non-Ruble	Ruble	Non-Ruble
Energy	0.8	8.1	31.6	11.3
Other Raw Materials	1.9	8.6	12.7	13.3
Semifinished Goods	10.5	25.9	12.9	30.7
Machinery including Spares	56.5	15.7	29.6	23.4
Other Manufactures	17.2	13.2	10.5	10.3
Agriculture and Food products	13.1	28.6	2.7	11.1

Source: Central Statistical Office.

This commodity pattern established dependency among members. The pattern of specialization, however, indicates that the degree of dependency was quite different for the Six than for the USSR: supply-side constraints to trade diversion on the part of the Six were inherent in their export mix, while the USSR could, in principle, shift trade to non-CMEA countries without major economic disruptions.

### III. THE "INSTITUTIONAL MODEL" OF THE CMEA REGIME

To establish a systemic context for selective discussion of problems (Section 4), this paper now turns to the traditional CMEA regime as an institutional model and identifies the main "actors," principal "rules," and the connection between these "building blocks."<sup>2/</sup> This "idealized" presentation will be subsequently refined. The model is a simplified image of a more complex reality. During the 1980s, the differences between the model and reality, and also among countries, widened progressively, although often more in pronouncement than in fact.

Desiderata of Integration. "Socialist integration" and "socialist division of labor" were frequently cited objectives of the CMEA. The doctrine of static comparative advantage was rarely invoked. The principal economic advantages of integration via the CMEA were rather seen in economies of scale realized by "cooperation" and "specialization." There could also be capital cost savings from predictable output levels and composition, concentration of research and development through coordinated programs with free exchange of results. Independence from exogenous cyclical disturbances and "security of supply" in the face of real or imagined political disruption of international trade were also major goals, supporting a tendency toward regional autarky.

Industrial Cooperation. Cooperation mostly took the form of horizontal specialization agreements on specific final products that gave the country of specialization a virtual monopoly. Vertical specialization involving complex cross-country supply networks for parts and components is more difficult to organize though intergovernment agreements and was accordingly rare; supply of raw materials from the USSR to the Six was, however, a major exception. Cooperation agreements were mostly bilateral and long-term.

Trade Planning. CMEA trade was planned through consultations called "plan coordination," an integral part of the national five-year planning exercises. The consultations focused on an exchange of information about national requirements or availability of tradables derived from national balances of supply and requirements. While participation in plan coordination was mandatory, the extent and contents of agreed exchange were voluntary. The agreements were given more specific content in bilateral, medium-term government protocols that set the volume and composition of trade; these agreements often included or were based on production cooperation. Over the planning cycle, the medium-term protocols were respecified further in annual protocols. The planned trade balances were broken down into a number of subcategories to be balanced separately. Since frequently both quantities and value balances were determined (either in absolute terms or as relative changes over the past), trade planning often set implicit transaction prices.

Quantity Bias. The origin of CMEA trade planning in traditional central planning through material balances, where trade is the "closing" item, and the practice of breaking the total down into specific subbalances gave the targets of bilateral protocols a distinct quantity bias. Even if the ex ante balances were expressed in value terms for purposes of monitoring or statistical aggregation, understandings on composition, or on quantity and price indices, tended to turn the value targets into

physical indicators as well. The quantity bias, however, did not imply that CMEA trade was "barter trade."<sup>6</sup>

**Hard/Soft Goods.** The CMEA trade planning procedures and the nature of the delivery commitments gave rise to a distinction between "soft" goods (uncompetitive at world markets and tradable only within the region and as part of the bilateral quota regimes) and "hard" goods (fully tradable at the competitive world market).<sup>7</sup> It was to the advantage of each country to maximize CMEA imports of hard goods in exchange for CMEA exports of soft goods in order to conserve convertible currency; this pattern of preference was referred to as "structural bilateralism." Incompatible country positions complicated the problems of setting and balancing subcategories in CMEA trade.

**Imported Inputs.** Many manufactured goods incorporated inputs of raw materials intermediate goods and components imported from the CMEA and the West. If a country's average content of imported hard inputs of its exports to the CMEA exceeded that of its CMEA trading partner, and if the foreign exchange cost or benefit per unit of domestic currency differed between the two regimes, separate accounting and balancing became necessary for the implicit deficit country to contain this leakage.

**Trade Management.** In the traditional CMEA regime, trade was managed by a few large Foreign Trade Organizations (FTOs) that operated under direct supervision of the ministry in charge of international economic relations; the FTOs had a trading monopoly for a wide range of products. This concentration ensured that delivery contracts were concluded and that deliveries were made in accordance with the governments' trade protocols. Central control over maintenance of agreed delivery balances was also thereby facilitated, and the real economy was isolated from effects of currency transactions.

**Delivery Priorities.** CMEA trade was based on international treaties, so if current demand could not be met, CMEA export had, at least in principle, the highest priority in the central allocation of output. Conversely, deliveries to convertible currency markets were, at least in principle, a residual after satisfying treaty obligations and domestic requirements. Countries were also legally bound to absorb agreed-upon CMEA imports, and to place the burden of adjustment on domestic deliveries and CC imports in the case of an unplanned glut.<sup>8</sup>

**Quotas.** Because of bilateral treaty commitments, the need to maintain distinct subbalances, and the lack of convertibility, an elaborate regime of import and export monitoring and control was required. Ex-ante and ex-post flows could only be matched through mandatory quotas, although not necessarily described as such. Quotas could take the form of ceilings and/or floors on exports or imports and were often enterprise-specific for each country (see Inotai 1986). Ad hoc quota adjustments were required to manage emerging imbalances.

**Prices.** The CMEA tried but failed to develop its own set of regional relative prices based on the labor theory of value. In fact, each country had its own set of relative prices, reflecting domestic distributional and political priorities, that deviated from relative prices in both the competitive world market and in other CMEA countries. Prices for CMEA trade were established with reference to world market prices. Moving five-year averages, converted into TR (the so-called "Bucharest principle") served as the basis for negotiations on determination of regional transaction prices. Since these negotiations were strictly two-way and aimed at bilateral balancing, the same good could be traded at different prices between different pairs of countries; hence CMEA prices constituted sensitive information.



**Price Equalization.** Since each CMEA country's internal relative prices were unrelated to domestic supply/demand conditions, comparative advantage, or opportunity cost, domestic prices differed from both CMEA transaction and actual world market prices. Because of the inconsistencies, domestic and trading prices interfaced in the accounts of the few large FTOs that were mandatory intermediaries in CMEA trade, rather than affecting the transactions of domestic export-producing and import-receiving enterprises. Domestic enterprises dealt with the FTOs exclusively in domestic prices in domestic currency and therefore were completely isolated from external transaction prices. The "windfall profits" and "losses" created in the accounts of FTOs by inconsistent sets of relative prices were thus neutralized in an administratively manageable way through the institution of "price equalization."<sup>2/</sup> The balance of price equalization was ultimately settled through the government budget. The size and sign of the budgetary impact could under certain conditions be adjusted by changes in internal prices, and/or by changes of exchange rates.<sup>10/</sup> Price equalization was not a trade management instrument nor was there a fiscal revenue function. It was rather an internal settlement mechanism to maintain orderly financial relations in spite of the autonomous pricing practices of the CMEA countries that resulted in widely differing sets of relative prices unrelated to comparative advantage. "Taxes" and "subsidies" used with reference to price equalization may be convenient shorthand terms but can be misleading if used without qualification of the context. These were not the taxes and subsidies of the Western neoclassical international trade literature.

**The Payment System and Convertibility.** The CMEA system of bilateral clearing did not involve international payments through transfer of currency to or from accounts in another country. The TR lacked two major properties of "money": it was neither a means of payment nor a store of value (Ausch 1969 and 1972). The total of TR in the CMEA system was merely a measure of the outstanding bilateral surplus or deficit in national clearing accounts held by the countries with IBEC. A corollary of bilateral balancing and settlement through clearing is that the system functions without a need for currency reserves. By the same token, the system lacks financial convertibility. Preagreed commodity balances and domestic allocation regimes rule out the possibility of using a surplus in clearing balances to "shop around" for procurement opportunities in the country with a debit in the clearing accounts -- hence the "commodity inconvertibility" of the TR. This undermined a third function of money, that of an unambiguous measure of value. Surpluses in bilateral balances could be freely used in the deficit country only if bilateral understandings existed to this effect, which required a specific designation of commodities and a quantitative ceiling for qualifying transactions. Of course, the lack of bilateral financial and commodity convertibility implied the absence of any financial multilateralism.

**Credits.** Bilateral clearing of matching value balances, and the absence of money properties of the common currency, also ruled out "commercial" trade credits as a normal ingredient of foreign trade. Due to currency and commodity inconvertibility, imbalances became "involuntary trade credits" of no value to the surplus country, unless the imbalances could be carried forward by mutual agreement for future clearing settlement. A major concern of prudent trade management was thus avoiding the accumulation of an unplanned surplus. Export quotas were the preferred instrument to prevent undesirable surplus. Countries could, however, agree on medium-term commodity and long-term investment credits in the form of specified temporary surpluses and deficit positions in specific subaccounts. Interest and principal were normally settled in the same way, and the agreements were built into future commodity balances.

**Balance of Payments.** The practice of setting up planned subbalances and settling ex post through clearing made macroeconomic management of the balance of payments redundant between CMEA

countries. External balance became a microeconomic task. Furthermore, due to the absence of fungibility across subbalances, aggregate bilateral balances had no economic meaning and could hide large partial surpluses and deficits that were not and could not be consolidated. The aggregate balance of a particular CMEA country with the region as a whole was an even less meaningful construct, as this could hide side-by-side huge bilateral surpluses and deficits that could not be cleared multilaterally.

Exchange Rates. Since (1) trade flows were set in bilateral agreements and managed directly through government authorities or FTOs as their agents, (2) firms' financial claims and obligations from CMEA trade were denominated in domestic prices and currencies, (3) windfall gains and losses in the accounts of FTOs were neutralized through price equalization, and (4) external balance was not a macroeconomic management task, exchange rates served merely as a device for statistical aggregation across CMEA currencies. As discussed above, however, there was a link between exchange rates and the aggregate fiscal balance.

#### IV. MAJOR PRACTICAL DEFECTS OF THE CMEA REGIME

The CMEA system of rules and procedures, although internally consistent, exhibited a number of endemic practical defects.

Rationale for Integration. Three deficiencies of the initial rationale for the CMEA became increasingly obvious. First, the traditional Marxist preoccupation with dynamic effects, according to which comparative advantage is not "given" to a country but is rather "made" through "learning-by-doing" and accumulating know-how, was not matched by provisions to ensure a semblance of static efficiency. Second, concern for achieving economies of scale through agreements on "cooperation" was not balanced by concern for maintaining effective competition. And third, as detente progressed, the concern for security of supply lost its previous importance.

Assessments of Gains from Trade. Domestic and CMEA pricing conventions and the lack of a meaningful exchange rate precluded any practicable means of evaluating domestic resources costs or assessing gains from trade. One consequence was the inability of governments to judge whether any particular exchange of goods was economically efficient.<sup>11/</sup> The arbitrary pricing rules suggest that a sizable portion of CMEA trade must have been "inefficient," while opportunities for efficient trade remain unrevealed.<sup>12/</sup>

A related consequence of the impossibility of inferring whether there were realized gains from trade was the suspicion of all partner countries that they were the losers from CMEA trade. This created pervasive distrust about CMEA transactions. There is anecdotal evidence that for each country at least some transactions during some periods gave rise to substantial "losses." The complaints about losses from trade also gave rise to an extended debate among Western economists about "implicit subsidies" by the USSR to the CMEA Six, during the 1970s and much of the 1980s, in the form of underpriced raw materials exchanged for overpriced manufactures. Numerical estimates of the total implicit transfer differ widely. However, Western analysts are in general convinced that during this period the USSR was the main "loser" by a wide margin.<sup>13/</sup> Supporting evidence is provided by the fact that the Eastern European Six -- with the exception of Romania -- did not seem to have made a determined effort to reduce the share of CMEA in total trade, although the principles of trade planning starting from initial "offers" and "inquiries" provided scope for a determined strategy in this direction.

**Procedures.** A shortcoming of the CMEA regime was the necessity to resort to the cumbersome and inherently inefficient procedures of clearing within bilateral subbalances, and to use export quotas as the major instrument of management. Procedural complexities rather than strategic decisions were the main reason that CMEA trade remained essentially bilateral.

Trade compression was a consequence of the cumbersome procedures. In order to maintain bilateral balances for specific subcategories of goods, the obvious -- if not the only -- means of assuring effective trade planning was to maintain export volumes "at safe levels," that is, so low that both trading partners felt reasonably certain that they could avoid unplanned trade credits from surpluses.

Commodity specialization of the FTOs was frequently determined in terms of export mix (serving a diverse clientele's import requirements) or by the import needs of the export-supplying producers (handling a broad spectrum of commodities often paralleling other FTOs). In either case, the range of goods tended to be more diffuse on the import side than on the export side, giving the FTOs a predisposition to focus their expertise, initiatives, and organization on exports as primary activity. This created a systematic bias against CMEA imports and resulted -- due to the feedback on trade planning -- in suppression of some trade that might have been feasible or desirable on the basis of comparative advantage (Ausch 1969), side-by-side with excessive specialization.

**Trade Patterns.** The practice of having trade handled by a few large FTOs, and excluding thereby the export-producing and import-receiving firms, had a number of undesirable consequences for the trade structure. The generation and exchange of product information was suppressed, making CMEA trade informationally inefficient. It was unnecessary and impossible for producing firms to develop an export marketing infrastructure. And guaranteed exports underwritten by bilateral treaties -- pronounced in the case of specialization agreements -- created monopolies that, particularly when combined with sellers' market conditions, gave export producers no incentive to be concerned with product standards, delivery terms, and customer satisfaction. The practice of trade planning and of detailed bilateral protocols also tended to restrict changes in the composition of trade to incremental adjustment of past negotiated quantities and prices, hence limiting the advantage via trade-expansion opportunities from product development.

**Production Structure.** Access to low-cost imported raw materials and assured exports regardless of production costs were advantageous in the short run: they shielded domestic enterprises from exogenous disturbances and facilitated consistently high output levels and acceptable financial results. In the long run, however, structural change was avoided. Continued access to cheap crude oil and natural gas from the USSR throughout the 1970s and into the 1980s was the main cause of neglect of energy conservation. And the ease of disposing of manufacturing output in the USSR meant that it was not necessary to upgrade output mix and process technologies in line with world market standards. Production activities were maintained that were not viable in non-CMEA trade relations. The separation of the domestic economy from changes in world relative prices and from technological innovation over time ossified the industrial structure, making industries increasingly uncompetitive outside bilateral CMEA agreements. As a consequence of this lack of contact with the world market, enterprises were often almost exclusively dependent on CMEA transactions.

**Incentive Structure.** In the CMEA trading framework, price incentives to increase exports were eliminated via the practice of determining trade flows ex ante in the intergovernmental bilateral protocols, and via the valuation of traded goods in domestic prices after neutralizing all "windfall"

gains and losses through price equalization. Lack of financial rewards and assured export sales also discouraged product development.

**Price Formation.** Apart from a few homogenous commodities for which prices are publicly quoted, the Bucharest pricing principle has been unworkable. This is particularly so for manufactures, where products are rarely comparable, reliable price information is nonexistent, and sheer numbers overwhelm any attempt to apply the principle.<sup>14'</sup> The procedures amount to an open invitation to resort to deceptive information practices and excessive bargaining, although the price equalization mechanism compensates enterprises for "losses" in comparison with domestic prices, neutralizing the most effective watchdogs for proper pricing. More dysfunctional practices have reportedly occurred. For example, prices were adjusted retroactively in order to correct ex post imbalances. Or "unrealistic" or otherwise objectionable prices for some deliveries were offset by price concessions for other goods. In the absence of price negotiations between the directly affected parties -- export producers and import recipients -- the conception of trade as having entailed "commercial" transactions is suspect.

Even if international prices could have been determined, application of the Bucharest principle may have been inappropriate on efficiency grounds. World market prices reflect market power, scarcity, and opportunity cost at the degree of convertibility and multilateralism prevailing in the broad market. As long as the same conditions did not apply inside the CMEA, market clearing prices within the CMEA were quite different. World market prices, even if determined accurately, were a poor guide to CMEA's "opportunity costs" as long as it was a "closed" region.

**Payments System.** The CMEA was not a "payment union" since national currencies were excluded from CMEA transactions and the TR lacked key functions of money that would have made a genuine instrument of payment. The lack of currency and commodity convertibility restricted the payment system even bilaterally. Settlement of unplanned credits in ex post imbalances was difficult or impossible in the short run and could not necessarily be achieved in the long run.

**Convertibility.** There was some convertibility in three special cases:

First, under the rules of bilateral trade between the USSR and Finland, Finnish exporters could sell their export receipts (in roubles) to the Finnish National Bank at the official Soviet exchange rate (Oblath 1986). However, the total amount for conversion was tightly controlled on the Finnish side through export licenses, which were established via a planning procedure that closely resembled that used among the CMEA countries. Under such conditions, bilateral balance was assured, and the settlements amounted to clearing in all but name.<sup>15'</sup>

Second, the USSR and Bulgaria, Poland, and Czechoslovakia permitted firms with "direct links" (that is, cooperating under long-term contracts) freely to convert funds from one national currency into the other at special "investment exchange rates." This privilege was limited to transactions specified in the contract.

Third, some CMEA countries shifted part of their CMEA trade from accounting in TR to accounting in convertible currency. However, this amounted merely to a change of the unit of account in bilateral clearing unless imbalances could be settled through transfer of CC. Even if this were part of the arrangement, such transfers were often restricted to preagreed

"swings." Such pseudoconvertibility made sense only if all deliveries under this mode of settlement were mutually agreed to be considered "hard."

In none of these three cases was there convertibility in the usual sense that this concept is understood in the West in international monetary transactions.

**Exchange Rates.** Exchange rates between national currencies and the TR had no apparent rational basis.<sup>16/</sup> There is evidence that, at least for some countries, exchange rates were computed as the ratio of total exports valued at domestic prices to the value in TR for some base period, which makes the exchange rate a historical "purchasing power parity" rate computed for exports. Even so, such a ratio would reflect centrally regulated trade, and not market values or comparative costs.

Mismatches of cross-rates were prominent and a natural consequence of the system. As an example, in the summer of 1987, the National Bank of Hungary's exchange rate for CC transactions was 47 forint/\$. For CMEA trade, the commercial rate was 28 forint/TR; in combination with the IBEC rate of 0.65 TR/\$, the implicit forint rate under the CMEA regime was only 18 forint/\$. Differences in relative prices (overpricing of Hungarian manufacturing exports and underpricing of Soviet raw materials) and offsetting price adjustments elsewhere reduce the discrepancy, but a significant difference remains.<sup>17/</sup>

**Macropolicies.** Centrally planned economies neither have nor need a macroeconomic policy framework for managing internal and external balance. Macrobalance is maintained through central micromanagement of all transactions. In addition, the principles of the CMEA expressly excluded any obligation for international coordination or for cooperation on other than microeconomic matters as specified via bilateral treaties. Because of limitations on functions (automatic creation and contraction of aggregate TR stocks through aggregate temporary imbalances in the accounts of IBEC; the lack of currency reserves and fungibility), the common currency was unsuitable for regional monetary coordination or management. Also, the CMEA view of fiscal policy as an instrument for financing budgetary expenditures made cross-country coordination less relevant than when fiscal policy is directed at internal demand management.

**Currency Links.** Trade under the CMEA regime and convertible currency trade were procedurally separate. This separation frequently invites misconception. On the assumption that convertible currency is "more valuable" than TR,<sup>18/</sup> it would appear to be advantageous to shift hard exportables from the CMEA to CC markets. However, even if protocols were to permit this, there is no necessary gain. Under CMEA trading practices, an export reduction tends to trigger a matching export reduction by the trading partner, to avoid export surpluses and also as retaliation against breach of commitment. This response, in turn, makes it necessary for the initiating country to counter the decline in CMEA imports with additional imports from convertible-currency sources, which requires matching export proceeds in CC. The net result may or may not be beneficial for the initiating country in terms of CC savings. The outcome depends on the real exchange ratios for products deleted from CMEA exchange.

**Imported Inputs.** There is a related effect via imported inputs used in export production. Hungarian data on the import content of exports appear in Table 4. These estimates, derived from input-output data, reveal that Hungary transferred three times as much of convertible currency incorporated in exports to CMEA countries as it received in return (25.6 percent vs. 8.5 percent). While the numbers are dated, there is no reason to assume drastic change over time in Hungary's case or

differences in principle in other CMEA countries. Trade agreements could take account of such export-embodied currency arbitrage through special arrangements for exports with a high CC content, by supply in kind by the export-recipient country or by direct reimbursement for CC outlays. In many instances, however, this was not feasible; there were consequently proposals to idle CMEA export capacity if CMEA exports of a good constituted a net drain on the convertible currency balance (see Koeves 1985).

**Table 4. Hungary: Imported Input Content of Export (1974)**

		TR Regime	CC Regime
Inputs imported from:	TR Regime	11.2	8.5
	CC Regime	25.6	21.5

Source: Peksi (1981).

## V. EVALUATION

As the preceding analysis has shown, the traditional CMEA regime was no random accumulation of ad hoc rules. It exhibited a great deal of internal logic, although it was not derived from a comprehensive theoretical blueprint. It evolved heuristically over several decades of bureaucratic trial-and-error. As a result, the institutions of the traditional CMEA regime were fundamentally consistent in several directions. First, its rules were compatible with one another. Second, systematic interdependencies were internalized, that is, the principles and rules of the regime were consistent with the model of traditional central planning from which the CMEA regime was derived, and within which it initially operated, and, to a somewhat lesser extent, were consistent even with the "modified" version of central planning. But frictions started to emerge once the interdependent framework of central planning was compromised through partial reforms of other systemic rules. And third, in order to conduct mutual trade, the member countries adopted matching -- essentially identical -- rules and procedures for CMEA trade planning, implementation, and settlement. Conversely, unilateral changes out of step with other countries would create frictions. These, in turn, resulted in a need to introduce corrective measures, thereby leading to further frictions and inconsistencies. The CMEA regime, in short, was in a powerful way self-perpetuating for systemic reasons alone. In the 1980s, however, these consistency properties increasingly became shackles to reforms.

Due to its consistency, the CMEA regime was effective in handling a large volume of trade without breakdowns or excessive cyclical disruptions. But in addition to stifling system reform, it exhibited two other defects that became even more obvious.

First, the need to resort to complex procedures to make model principles operational, along with built-in incentives to maintain the bill of traded goods set in intergovernment protocols, eliminated virtually all short-run flexibility, and subjected medium-run changes to cumbersome bilateral negotiations.

Second, the CMEA model did not contain any provisions that would ensure an efficient pattern of trade. The principal reason for this defect was that the model did not reveal static gains from trade,

let alone establish a feedback between gains and economic decisions. The most obvious inefficiency of mutual trade – the disadvantaged position of the USSR derived from its specialization in exports of hard raw materials and imports of soft manufactures, with biased price formation practices – became increasingly evident.

For the Six, this pattern implied a short-term advantage and served as an incentive to retain and strengthen underlying production structures, regardless of changes in trade patterns and relative prices in competitive markets. Furthermore, the monopolistic domestic and regional sellers' market removed all incentives for producers to keep up with international standards of product and process technology and to develop effective marketing know-how and infrastructures outside the CMEA. These mutually reinforcing, cumulative effects became evident in a secular decline of exports to competitive markets and a down-market shift of export mix. (Table 5 illustrates the long-term loss of world market shares and of international competitiveness.) Thus, with several decades of symbiotic relations within the CMEA and with the sheer weight of intraregional transactions, a pervasive "structural dependency" developed between the member countries. Even so, the degree of dependency varies. The USSR can divert a large share of exports of raw materials to CC markets (either in the West or for convertible currency payment by former CMEA countries) in the short run; the obverse is not the case, since the results of structural, technological, and marketing defects can be corrected only in a complex process of modernization and learning extending over an unknown length of time.

**Table 5. World Export Shares  
(Percentage)**

	1970	1980	1987
<b><u>Eastern European Six</u></b>			
Share in world exports, total trade	6.8	4.5	4.7
Share in world exports, engineering products	0.79	0.7	0.43
Share in world exports, high and advanced technology engineering products	0.25	0.14	0.11
Share of high and advanced technology products in engineering exports	31.3	26.8	25.9
<b><u>Asian NICs: (Korea, Taiwan, Singapore, Hong Kong)</u></b>			
Share in world exports, engineering products	1.0	3.9	6.3
Share in world exports, high and advanced technology engineering products	0.49	1.73	3.21
Share in world exports, technology in engineering exports products	50.8	44.5	50.9

Source: ECE Economic Survey of Europe in 1989-1990, New York (1989).

## VI. THE END OF THE CMEA

By 1987, proponents of system reform saw the traditional CMEA regime as fraught with rigidities and inefficiencies and as a serious obstacle to progress. The 1987 session of the Council of Ministers passed a resolution advocating transformation of the CMEA from the old concept of "plan coordination" to a "market" framework. The 1988 Council Session discussed a new "collective concept" for the creation of a "unified market." Its main objective, set out by the chairman, was:

. . . to overhaul the integration mechanism and to construct a qualitatively new model of intracommunity cooperation centered on the creation of a single market of the CMEA member countries, complete with free movement of goods, services, and other factors of production. The need of such a market stems objectively from the logic of economic reforms in the individual socialist countries, which are centered on the promotion of commodity-money (i.e., market) relations.<sup>20</sup>

However, halfhearted discussions about fundamental reform of the CMEA regime or of the modalities of a new regional market concept remained academic. No further official move was made until the 45th Council Session met in Sofia in January 1990.<sup>21</sup> Even during that decisive meeting, there was no tangible progress toward fundamental reform of the CMEA. The USSR announced its decision to switch, by January 1991, to an undefined framework of CC accounting and to some form of convertibility among members, abrogating the traditional mode of operation.<sup>21</sup> In the absence of serious efforts to salvage elements of the legally still existent CMEA regime, it became generally accepted that the CMEA would vanish, unceremoniously, by January 1, 1991.

A successor organization -- referred to as the "Organization for International Economic Cooperation" (OIEC) -- may be created during 1991. Its draft statutes reportedly limit its mandate to "consultation and advisory functions" and permit "open" membership, that is, joining the the OIEC and other regional organizations would not be mutually exclusive. In addition to former members of the CMEA, Yugoslavia and the extended Federal Republic of Germany (as the successor of the GDR) may be invited to join.

The process of defining feasible and reasonably efficient transition arrangements (see the final section below) has spurned proposals for innovative institutional solutions superseding the CMEA. The most widely discussed one is the creation of a "Central European Payment Union" (CEPU), patterned roughly on the European Payment Union (EPU) of the 1950s.<sup>22</sup> The basic idea is to pool members' scarce currency reserves -- the chief constraint to full marketization of trade including a shift to currency convertibility -- and to economize on use by maximal clearing within the union. The USSR, as the structural creditor within the group, would have to receive settlement of its aggregate surplus in fungible convertible currency under terms at least as favorable as the gain from switching to CC trade on its own. Such an arrangement, to operate effectively, would require (1) a common agency with considerable power to set rules, control adherence, and impose conditions, and (2) creation of an initial pool of convertible currency from contributions of members and/or others. Since there is a lack of wide political backing for either condition among the affected countries -- mainly due to limited mutual trust, a CMEA legacy -- the window of opportunity for this option seems to have closed.



## VII. TRANSITION TO A POST-CMEA WORLD

In addition to the combined shocks of stabilization policy, repercussions of the Gulf crisis, and the collapse of trade with the former GDR, the East European countries (the "Five" since dissolution of East Germany) face a major shock from the dismantling of the CMEA system of trade and payments. The CMEA adjustment shock has, in turn, two components: terms-of-trade adjustment and the downward adjustment of trade flows.

Terms-of-Trade Adjustments. The termination of the CMEA should result in the correction of the historically distorted price ratio between raw materials and manufactures discussed earlier. As the Five are heavily dependent on energy imports, and have averaged more than 80 percent of their energy imports from the USSR, these imports are normally considered the major factor in the distortion. For crude oil (indicative also for prices of oil derivatives, gas, electricity, and coal), the numbers below illustrate the situation:

**Table 6. Crude Oil Prices, 1988-90**  
(Arabian light, in \$/b)

	1988	1989	1990		1991	
			July	August		Total (est.)
Year average	13.7	16.3	14.8	25.8	23.2	--
Preceding five year average	19.8	17.5	--	--	16.9	16.8

Source: World Bank.

Under CMEA's pricing rule, the reference price would drop below the spot world market level only during the second half of 1990, in the wake of the Gulf crisis. This suggests that the oil pricing formula has not been the prime cause of Soviet terms-of-trade losses. Conversely, if manufactured exports of the Five to the USSR in exchange for crude oil had long been priced at world market levels, the USSR would not have had terms-of-trade losses prior to the Gulf crisis but, rather, a moderate gain. The primary cause of losses must therefore have been the excessively high price level for manufactures.<sup>221</sup> A forthcoming study of the OECD estimates the terms-of-trade effects for the 1980s as shown in Table 7.

Up to 1989, the numbers represent realized terms-of-trade gains of the Five vis-a-vis the USSR. For 1990, however, the numbers indicate the gains that would occur if delivery volumes of 1989 would remain unchanged. But since deliveries declined in 1990, while in the second half of the year Soviet oil shipments to CMEA countries were increasingly billed in actual CC prices, the balance of payment losses of the Five from abrogation of the CMEA rules would be substantially lower than the elimination of the "implicit subsidies," shown above, suggests. Even more elusive would be an extrapolation to 1991, due to expected further contraction of CMEA trade and particularly of crude oil deliveries by the USSR. Nevertheless, the orders of magnitude leave little doubt that the combined effect of dissolving the CMEA regime and higher crude oil prices will be a major shock for the Five.<sup>221</sup>

**Adjustment of Trade Flows.** Soviet energy exports are the residual of domestic production and consumption, equivalent to around 20 percent of production in 1989. As production is dropping and domestic consumption stagnating, the size of this residual has declined substantially since 1988 (by 5 percent for the first nine months of 1990 compared to the same period in 1989; by another 10 percent for 1991). In 1990, the USSR changed its allocation policy in anticipation of the new CMEA rules and in response to its own balance of payment problems. Earlier, volumes of deliveries to the Five were kept stable and adjustment was made in convertible currency exports. In early 1990, however, the USSR reversed the priority. Deliveries to the Five started to drop sharply and the year as a whole may average 15-25 percent below 1989 levels.<sup>26/</sup> Informal estimates for 1991 indicate a further decline, perhaps to one-third of the 1989 levels.

**Table 7. Estimates of Implicit Soviet Subsidies<sup>26/</sup>**  
(in billions of current US\$)

	1982	1987	1988	1989	1990			Percent of GDP
					(a)	(b)	(c)	
Hungary	2.6	0.1	-0.1	1.0	1.1	1.9	2.6	3.4
Bulgaria	3.7	0.2	-0.1	1.4	1.6	2.7	3.7	7.1 (1989)
Czechoslovakia	4.9	0.2	-0.2	1.8	2.1	3.5	4.9	7.0 (1989)
GDR	5.9	0.3	-0.2	2.2	2.5	4.2	5.9	n.a.
Poland	4.3	0.2	-0.2	1.6	1.8	3.1	4.3	5.0
Romania	0.4	0	0	0.1	0.2	0.3	0.4	n.a.
CMEA Six	21.7	1.0	-0.9	8.1	9.4	15.6	21.8	n.a.
Five (ex. GDR)	15.9	0.8	-1.1	5.8	6.8	11.4	15.9	n.a.

(a) based on oil price of \$15.8/barrel

(b) based on oil price of  $(\$15.8 + \$26.0)/2 = \$20.9/\text{barrel}$

(c) based on oil price of \$26.0/barrel

Source: Michael Marrese, OECD, forthcoming; GDP: World Bank estimates.

As a result of the terms-of-trade adjustment and reduced Soviet crude oil exports, the volume and value of intra-CMEA trade are expected to fall. A second volume effect is likely in manufactured exports to the USSR. The USSR could use the convertible currency receipts from raw materials exports left after its debt service payments to switch to imports of higher quality and/or lower prices by buying from CC countries. Since the available export supply of the Five can arguably not be diverted easily to other markets, a sizable share of their exports would collapse. Alternatively, the USSR could demand delivery of fully competitive manufactures as a condition for continued supply of fuels and other crucial raw materials. In this case, the Five would have to divert some of their exportables from OECD markets to the USSR, thus reducing their own capacity to maintain import from convertible currency markets. In this case some present trade of the Five with OECD markets would be destroyed.<sup>27/</sup> The USSR, in contrast, is likely to be a net gainer in either case: the income effect of improved terms with CMEA countries and increased convertible currency revenues

will expand its trade and improve its capacity to import "hard" goods from the most suitable sources. Estimates suggest that the balance will be heavily on the side of destruction of intraregional trade. For 1990 the volume of Soviet exports to the Five is expected to average 10-15 percent less, and of imports some 8-10 percent less. For 1991 informal Soviet estimates suggest a volume of trade with the Five at around 50-60 percent of the 1989 level. The resulting contraction of total exports of the Five feeds back on the level of output through multiplier effects of unknown strength, amplifying the contraction from the stabilization program.

The Limits of Short-Run Adjustment. As mentioned, an important determinant of the approach to trade regime reform and of the closely connected issue of currency convertibility is the level of currency reserves.<sup>28/</sup> For this reason the decision to use the exchange rate as an anchor for price stabilization was feasible for Poland and Yugoslavia but may not be for, say, Bulgaria, Romania, or the USSR. There is no rigorous yardstick for what constitutes sufficient reserves -- for instance, sufficient to defend the anchor rate until inflationary momentum has been halted. Alternatively, countries could switch to floating rates with market clearing levels. But without the reserves for some degree of management of the market rates, the inflationary and budgetary repercussions could be highly destabilizing. In market economies, an often invoked rule-of-thumb is that for a country of high performance rating, reserves should be no lower than two months' supply of imports; for countries of lower standing the reserves should cover at least four months. Applying even these rather vague rules to the transition of East European countries runs into formidable statistical and conceptual problems.<sup>29/</sup>

A critical factor in connection with the above discussion of the CMEA adjustment shock is "export responsiveness," a composite of several factors beyond "price elasticity of supply" in the common definition. First, even in this narrow behavioral sense, and even if firms can be made to respond normally to profit incentives, sustainable responsiveness is constrained on the downside by a "reservation price" (for example, prime cost of production). Second, the lingering legacy of structural dependency under the CMEA regime is likely to hamper effective competitiveness until firms have caught up technologically and in marketing. And third, more than just supply-side responses are involved in imperfect markets where buyers respond primarily to the specifications of the product and the standard of associated services rather than to prices -- that is, for most high value manufactures. In sum, "getting the prices right," while clearly a necessary condition for inducing a positive response to the dissolution of the CMEA through appropriate trade diversion and expansion, is not likely to be sufficient beyond a narrow range of transactions.

Many analysts are pessimists about quick and sustainable positive results from trade reform, on the basis of arguments sketched above.<sup>30/</sup> To them, the collapse of East Germany's industry -- due to the lack of competitive output and of the capacity to sell at a price reflecting resource costs -- seems to offer a particularly telling story about the pervasive short-term constraints created by structural dependency. Other analysts take an optimistic stance.<sup>31/</sup> Only three countries -- Poland, Yugoslavia, and Hungary -- could at this point be regarded as possible test cases. The volume of their convertible currency exports is expected in 1990 to increase by 34 percent, 12 percent, and 10 percent, respectively. While extreme export pessimism seems to be refuted by these early observations, the period under new trading rules is too short and the evidence too soft to determine whether this is the beginning of a trend or merely a statistical blip.

Transitional Arrangements Among CMEA Countries. The pronounced principles of CMEA relations after January 1, 1991 are (1) accounting in convertible currency, and (2) use of actual world market

prices. It is less clear, however, what these principles amount to in the real world. As past practices have shown, "accounting in convertible currency" can range from a mere change of unit of currency denomination for unchanged bilateral clearing to a transition to full currency convertibility. And the meaning of the "shift to world market prices" can range from a change of procedures of administrative price setting to complete devolution of price decisions to informed traders. Only implementing the principles will reveal their real content.

An instantaneous transition to free trade rules would be optimal on theoretical grounds. Given the pervasive structural dependency syndrome, however, a quick, radical solution may not be feasible, for it is likely to lead to a rapid collapse of exports to the USSR without synchronized expansion of exports to alternative markets. Apart from negative impact on output and employment, this would lead to sharp reduction of the capacity to import. Furthermore, a radical shift in trade patterns may not be best, because the resource endowments of the Five and USSR do complement each other and their energy transport infrastructure already exists. Finally, geographic and cultural proximity and technical standards give the Five a competitive advantage against newcomers in the Soviet market. This is in sharp contrast to the Five's difficulties in gaining or expanding a share in Western markets. As a result, a "transition period" is widely thought to be desirable.

The year 1991 is frequently referred to as the first year of the "transition period" to full multilateral convertibility and unconstrained trade. Yet no definite commitments are reported regarding the features and length of the transition period. All subsequent observations are thus mere inferences from scattered and unofficial evidence. Nevertheless, the shared perception of CMEA's defects supports this proposition: it is in the Soviet interest to keep the transition period short, while the Five have an interest in an extended transition, to cope with their more severe adjustment shock. An important implication is that the transition regime will probably cover exclusively bilateral relations between the USSR and each of the Five. A likely complication for such bilateral arrangements is the unclear division of competence for trade and payments between the Union and the republics of the USSR. For the limited trade among the Five, an immediate switch-over to OECD-type trading rules may be likely.

From what is presently known, the emergence of two distinct sets of rules seems most probable. The first regime is frequently referred to as the domain of "indicative lists"; in the aggregate it is expected to amount to roughly one-third of the value of 1990 transactions between the USSR and the Five. It will consist of commodities specified in advance in bilateral agreements but will leave to firms the determination of quantities and prices. Some Soviet raw material exports will probably be covered by this regime in exchange for "priority" food products and manufactures of acceptable quality. The second regime will consist of transactions carried out under the same rules as CC trade. The size and coverage of each of the two regimes will be negotiated bilaterally and may initially differ substantially from country to country.<sup>27</sup>

Important features of the first regime will be the overall balancing framework, the mechanism of settlement, and the features of currency convertibility. From what is known, there are likely to be line-of-credit provisions and agreements on settlement of bilateral imbalances through transfer of CC within agreed limits. Thus, while currency convertibility may be restricted, the scope for bilateral commodity convertibility will be greatly extended. The regime will require minimal reserves of CC.

The evolution of transition regimes is at this juncture even more elusive. Present thinking seems to be that commodity coverage will progressively shift from the first to the second regime until at some point full trade liberalization and full currency convertibility has been reached. Like the initial scope of the two regimes, the path and pace of transition may be different between different pairs of countries. Obvious factors relevant in this context are commitments from existing long-term specialization agreements and the availability of sufficient currency reserves on both sides.

## ENDNOTES

1. This paper is a revised and extended version of the earlier paper, "The CMEA System of Trade and Payments: Today and Tomorrow" (1990).
2. CMEA trade and payment agreements could in principle be multilateral. But the difficulty of negotiating multilateral agreements with the degree of specificity dictated by the CMEA procedures of contracting and settlement makes them an exception in practice. The references to "bilateral" throughout this paper refer to this de facto rather than legal restriction to bilateralism.
3. Data on intra-CMEA trade are inherently weak. Primary data are largely based on idiosyncratic pricing and exchange rate conventions that differ from country to country and over time, and they are normally "adjusted" in secondary sources by methods that are not always well-documented. Thus, national trade aggregates over both trade regimes and all indicators based on aggregates are merely indicative for orders of magnitude, and the scope for intercountry or intertemporal comparisons is severely limited. Specifically, overvaluation of the TR tends to exaggerate the CMEA shares.
4. "Ruble trade" is merely an approximation of CMEA trade; some CMEA trade transactions are denominated and cleared bilaterally in CC (and, thus, are only superficially different from ruble trade), and a small percentage are denominated and actually "paid" in CC through transfer of fungible funds. On the other hand most trade with other socialist countries and some LDCs is denominated and cleared bilaterally in CC.
5. As will be evident at the end of this section, the CMEA regime is not, as often thought, a random collection of "irrational" practices. It rather exhibits a great deal of internal logic and overall consistency, although its logic is different from that underlying the conventional theory of international trade, and corresponds to the model of central planning from which it is derived.
6. Barter trade is, with the exception of a few large cooperative deals, not feasible for informational reasons. Under a pure barter arrangement, the number of specific commodity exchange ratios is  $n(n-1)/2$ , where  $n$  is the number of commodities. For  $n=100$ , the number of ratios is 4,950. For any realistic number of commodities, and extending the same pattern to every pair of countries, the number of ratios quickly approaches infinity (McKinnon 1979).
7. According to an alternative definition, "hard" goods are those for which a shortage exists within the CMEA, and "soft" are those in surplus within the CMEA. Both definitions yield largely identical results but there can be notable differences. For example, most agricultural products are "hard" according to the second definition but "soft" according to the first because of inability to access alternative markets.
8. Probably for no other element of the model is the difference between principle and practice as wide as that regarding relative priorities. The preferred practical response to such shortages was, at least through the 1980s, to default in bilateral agreements as long as retaliation in the form of withholding deliveries from the other side did not create prohibitive costs. Penalties for violations of protocols or contracts were often difficult to enforce.

9. Price equalization is used here as a generic term. The actual arrangement could work in a variety of ways, for instance, through the use of foreign trade "multipliers" or through "coefficients" in actual accounting, or through procedures that seemingly amount to a multiple exchange rate system. In each case, the purpose and effect are essentially the same as discussed above. An example of the actual outcome is the Hungarian "producers' turnover tax," discussed in endnote 16.
10. This commonly overlooked fiscal role of the exchange rate through the mechanism of price equalization is analyzed in the Annex. In stark simplification, three cases can be distinguished:  
(1) If the external transactions are in balance both in TR and in domestic currency, then the net balance of price equalization is zero regardless of the exchange rate; (2) If the external transactions are in balance in TR prices (i.e., if the rules of bilateral clearing are strictly adhered to) but not in domestic currency, then the aggregate net balance of price equalization has a specific (positive or negative) value, reflecting the sign of the aggregate domestic imbalance, regardless of the exchange rate; and (3) If external transactions in TR prices are not in balance (i.e., if either a credit is involved or if trade planning/management misses the balancing target), then exchange rate adjustment changes the (positive or negative) net balance, but not the TR imbalance. In either of the last two cases, changes in domestic prices of traded goods affect directly the size of the aggregate equalization balance entering the budget.
11. Evaluation coefficients were reportedly used in some countries for this purpose. Most popular was the ratio of domestic currency units earned or spent per TR for a specific transaction. This coefficient is not, however, a measure of domestic resource cost, given pricing and exchange rate practices. Moreover, since the exchange rate between national currencies and the TR (which theoretically sets the dividing line between "efficient" and "inefficient" transactions) is in some instances reportedly a past ratio of currency valuation of all export transactions for a previous period, i.e., the weighted average of all specific transactions, the analysis would be circular.
12. As discussed below, even if world market prices were precisely known and product differences could be ignored, the Bucharest principle is still logically flawed, since these external prices differ from the opportunity cost within the CMEA.
13. "The issues of economic leverage, exploitation, and subsidies were very troublesome in the Soviet-East European relationship. The East Europeans uniformly felt held back and constrained by the ties with Moscow, and the Soviets considered the East Europeans as ungrateful. In every crisis, these issues came quickly to the surface, along with charges and counter charges.." (Dawisha 1988, p. 90). According to the same source, the aggregate implicit transfers from the Six to the USSR were around \$14 billion (at the official exchange rate) for the period 1945-53, comparable with Marshall Plan deliveries to Western Europe. Estimates of transfers in the opposite direction, which combine the effects of biased prices and the overvaluation of the TR, range as high as \$80 billion for the period 1971-80 (p. 88). There is evidence of continuing "subsidies" in Soviet oil deliveries -- in spite of drastically lowered \$-reference prices -- due to the overvaluation of the TR. In addition to these "hidden" subsidies, the USSR accumulated an aggregate trade surplus with the Six in the order of \$50 billion between 1971 and 1986 (Machowski 1988, p. 440); a substantial portion was not part of formal credit arrangements and hence for all practical purposes uncollectible.
14. For example, CMEA cooperation in production and trade of ball bearings reportedly recognized some 50,000 distinct specifications. This lack of reasonably detailed and reliable information makes past claims of some CMEA countries to have based domestic prices on "world market prices" utterly

implausible, and the notion of an administrative price reform on such basis highly suspect.

15. Presumably similar arrangements were in force for Finnish trade with other CMEA countries. This solution supports a key contention of this paper: CMEA trade requires compatible rules on both sides, even if these are alien to the internal system.
16. "The exact guidelines underlying the determination of exchange rates in CPEs are quite obscure and sources differ on their rationale" (van Brabant 1987, p. 201). Van Brabant (1985), and Wolf (1988), among others, give an introduction into the dizzying array of exchange rate concepts used in practice or for analytical purposes; evidently there is a good deal of confusion among Eastern economists as well. The concept of "exchange rate," thus, is very "soft" throughout this paper, and in the context of the CMEA in general.
17. PlanEcon Report Vol. V, No. 32-33, p.2 arrives at a numerically compatible evaluation: "[Using] ... typical operational commercial cross-exchange rates in countries with fairly realistic commercial exchange rate (Hungary and Poland) [the cross-rate] was only \$0.48/Ruble, or less than one-third of the official rate" of 1.53 \$/R. The overvaluation of the TR implied in the comparison of the main text ( $47/18 = 2.61$ ) is in the same order of magnitude. The reference to "fairly realistic" seems to imply that PlanEcon considers the imputed rate between \$ and Ruble a reasonable estimate of a "realistic" rate. In the same context, and relating to Soviet oil exports to the Six, PlanEcon observes: "No wonder the East Europeans have refused to walk away from this 'nominally overpriced' bargain." The Hungarian "differential producers' turnover tax" also reflects the gain from unrealistic exchange rates, and at the same time illustrates the roundabout way in which the institution of price equalization can work in practice. In order to prevent Hungarian importers of Soviet crude from enjoying a "windfall," a special tax is levied that captures the difference of the actual import value (computed according to CMEA rules) and the price of competing crude oil from CC markets and paid at the official exchange rate applicable for CC transactions. The very fact of this tax supports again the presumption of continued subsidies transmitted through the CMEA exchange rate rules and disproves the validity of the claim that crude oil from the USSR is "overpriced."
18. Convertible currency appears to be more valuable because of the "overvaluation" of the TR. However, under the rules of the CMEA regime the exchange rate between domestic currency and the TR is all but irrelevant as a policy variable. More important is the fact that export proceeds in convertible currency are, in contrast to those in TR, fully convertible. This fungibility permits convertible currency proceeds to be allocated to imports that yield the highest economic return.
19. Georgi Atanasov, Chairman of the Council of Ministers, during the 44th CMEA Council Session, Prague, July 6, 1988. FBIS-EEU-88-130, July 7, 1988, p. 15.
20. It is unclear whether the ideas and concepts being floated for a "reformed CMEA" -- for an efficient regional integration in the mirror image of the EC in Western Europe, as it were -- added up to a workable model. They have become irrelevant in the wake of political changes during 1989-90.
21. An agreement in principle on these changes had already been reached between the USSR and Hungary in late 1988, and discussions on similar changes had taken place between the USSR and Poland.
22. More elaborate expositions are presented, for instance, in ECE (1989) and van Brabant (1990).



23. This conclusion rests on the assumption that such terms-of-trade losses did indeed occur. This is now generally accepted within CMEA countries and among the majority of Western observers.
24. Official Hungarian estimates suggest a deterioration of the terms of trade with the CMEA of about 30 percent by 1991. The resulting balance of payment losses due to the CMEA transition are estimated to be in the order of \$600-700 million for 1991 at pre-Gulf prices, compared to a balance of payments deficit of \$150-200 million for 1990. Any increase of the price per barrel of \$1 would translate into an additional loss of \$80-100 million.
25. Sizable repayments in kind (crude oil) from Iraq to the USSR for past credits, which were in part to be rerouted to other CMEA countries, aggravated the shortfall.
26. Alternative estimates for 1989-90 -- all estimates involve unknown margins of error due to the need to resort to short-cut methods -- arrive at numbers of similar orders of magnitude.
27. The size and pattern of actual adjustment will depend upon the specifics of the "transition" arrangements between each of the Five and the USSR, discussed at the end of this section.
28. The proposed Central European Payment Union, mentioned in the last section, is designed as a multilateral solution to this very problem.
29. On the purely statistical level, there is no consensus whether imports from the CMEA should be included or not. More substantive are the conceptual issues. For instance: reported official reserves may be supplemented by large unused external stand-by commitments and lines of credit and can be backed further by understandings regarding arrears of debt-servicing obligations. These additional resources ultimately determine whether the level of reported official reserves is "sufficient." Furthermore, the reserve cushion necessary for an economy facing unresolved systemic issues seems much larger than for an economy that needs only fine-tuning of existing policies with predictable responses.
30. The most thorough work in this area has probably been carried out by the ECE. In its 1989 report it presents statistical evidence that the East European countries' exports of manufactures have a high and rising degree of "market similarity" with the "southern tier" countries of the EC as well as a high and rising degree of "product similarity" (the same can probably be presumed for the NICs), and concludes that the static effects of European integration have been negative by 1986, particularly for textiles and machinery, the two most important export categories. See ECE, Economic Survey for Europe in 1988-1989, NY 1990; Chapter 2.5 (pp. 64-86).
31. J. Sach (1991), for instance, considers the emphasis of the unknown time dimension of adjustment of export "a rehash of the discarded structuralist doctrines, once so ruinously applied to Latin America."
32. Initially a separate category of "mutually balanced" trade was considered with both quantities and price set in advance through bilateral negotiations, and with the "indicative list" restricted to deliveries of somewhat lower priority.

## Annex 1

## Price Equalization

## Computation of Total Net Price Equalization

Net Price Equalization:

$$(1) \quad NPE = XPE + MPE$$

(XPE: Export price equalization; MPE: Import price equalization)

$$(2) \quad XPE = \sum (qXi + pXi' * r) - \sum (qXi * pXi)$$

(for eXport item i: qXi: quantity; pXi': TR price; pXi: domestic price r: exchange rate)

$$(3) \quad MPE = \sum (qMi * pMi) - \sum (qMi * pMi' * r)$$

(for iMport item i: qMi; quantity; pMi: dom price; pMi': TR price)

$$(4) \quad NPE = r * [\sum (qXi * pXi') - \sum (qMi * pMi')] - [\sum (qXi * pXi) - \sum (qMi * pMi)]$$

$$(5) \quad NPE = r * TB' - TB$$

(TB': Trade balance in TR; TB: Trade Balance in domestic currency)

## Interpretation

If the two systems of relative prices  $pXi'$ ,  $pMi'$ ; and  $pXi$ ,  $pMi$  were identical, then  $TR'$  and  $TR$  would differ by the same factor as the relative prices, i.e., by  $r$ , and PEF is always zero.

As stated in the main paper, the relative price systems are NOT equal, and one has to consider several cases:

*Case 1:* if  $TB' = 0$  and  $TB = 0$ ,

Then NPE is automatically zero, regardless of the exchange rate;

*Case 2:* if  $TB' = 0$  and  $TB \neq 0$ ,

then NPE has a definitive fixed value, regardless of the exchange rate; the value of NPE is equal  $TB$ ;

**Case 3:** if  $TB' \neq 0$  and  $TB = 0$ ,

then the size and sign of NPE can be positive or negative depending upon both the size and sign of  $TB'$ , and the exchange rate;

**Case 4:** if  $TB' \neq 0$  and  $TB \neq 0$ ,

then the size and sign of NPE can be positive or negative depending upon both the size and sign of  $TB'$ ,  $TB$ , and the exchange rate.

### **Conclusions**

As  $TB'$  and  $TB$  can be equal only by accident, Case (1) can be ignored. Similarly, as  $TB = 0$  would require a calibration of the whole domestic price system, while it does not (have?) a major economic significance, it can be expected to occur only by accident; Cases (1) and (3) can therefore be ignored. Case (2) describes the outcome in the case of perfect match and realization of balanced trade plans; and in this case the exchange rate is irrelevant. Case (4) is the most likely real case of either planned imbalances of CMEA trade or accidental imbalances resulting from deviations between *ex ante* and *ex post* quantity and/or price assumptions. In this instance a change of the exchange rate alone, while not establishing balance, changes the size and can change the sign of NPE. However, since it is consolidated with the budget, the only effect of exchange rate is fiscal. Nevertheless, as a serious domestic price distortion, for instance a substantive under-pricing of some important import categories, do affect NPE, a supplementary adjustment of domestic prices can contribute to correct a highly negative result for NPE; reportedly this is what happened in Poland in the early 1980s when domestic food prices were by large margins below international prices.

In all cases any change of  $r$  changes ALL payments made to or received from producers of exports and consumers of imports.

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