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September 1988

The RAND Corporation

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by Keith Crane and Deborah Skoller

The Council for Mutual Economic Assistance (CMEA) provides an institutional framework in which the Soviet Union and its East European allies conduct their economic relations. One of the goals of this organization has been to increase economic integration among the member states. An important policy instrument employed in the pursuit of this goal has been specialization agreements. This article assesses the efficacy of this instrument in promoting economic integration.

DEFINITION

Specialization and cooperation agreements are the primary policy instruments employed in the CMEA to implement specialization in the production of manufactured goods, especially machinery and chemicals. Specialization agreements are treaties under which one of the participating countries agrees to satisfy the needs of the group for a particular product and the other (nonspecializing) countries agree to either limit or stop production of the product. Cooperation agreements involve two enterprises from different countries in the production of a single commodity. One enterprise usually supplies the other with components. Specialization and cooperation agreements differ in that cooperation stresses direct relations between producers, whereas specialization does not. Nonetheless, the two types of agreement are

¹This comment draws on material in: Keith Crane and Deborah Skoller, *The Effectiveness of Specialization Agreements Within the CMEA*, R-3518, The RAND Corporation, Santa Monica, February 1988.

frequently intertwined. References in the East European press tend to lump the two into the same phrase, "specialization and cooperation agreements," with no attempt to distinguish between them. For this reason, we generally do not differentiate between the two below.

Specialization agreements are designed to encourage countries to develop a comparative advantage in the production of particular commodities by constructing plants that exploit economies of scale, developing technical expertise through learning by doing, and concentrating research and development in the industry of specialization. They were created to surmount barriers to specialization arising from the system of trade in CMEA. Because the CMEA does not trade in convertible currencies, trade is conducted under a quasi-barter system. Because prices are determined administratively, not by markets, the relative values of different traded goods are not reflected in prices. Consequently, CMEA members, especially the East Europeans, try to balance trade flows by commodity group so as not to suffer losses from trading goods in high demand for less valuable commodities. This system leads to wide product assortments and little specialization. Policymakers hoped that by signing agreements designating countries as specialized producers, greater specialization could be encouraged.

Specialization agreements stipulate the types of products and direction of trade among the participants, but they do not set down detailed trade arrangements. These are incorporated in the annual trade accords. Items included in specialization and cooperation agreements appear as separate items in the long-term and annual trade accords.²

²Dezso Soky, "The Results, Directions and Problems of Industrial Cooperation and Specialization," *Vilaggazdasag*, September 17, 1976, pp. 1-3.

Somewhat surprisingly, the provisions of agreements are legally binding on the enterprise only if incorporated into the annual trade accords.³

Specialization agreements usually are signed for five years or five-year increments (10 years, 15 years, etc.), coinciding with five-year plan periods.⁴ This permits the participating countries to implement investment decisions made on the basis of the specialization agreement and to recoup investment costs, but it also allows the importing country to revoke an unsatisfactory agreement.

In general, specialization agreements are separated into two classes: intergovernmental agreements that are signed by representatives of the central government, up to and including the premier, and intersectoral or interdepartmental agreements that are usually signed by branch ministers. Intergovernmental agreements cover specialization and cooperation measures that affect the design and manufacture of new types of products of great economic or technological interest. For example, the Long-Term Agreement on Multilateral Specialization and Cooperation in the Production and Mutual Deliveries of Equipment for Atomic Power Stations (June 28, 1979) is an intergovernmental agreement.⁵ Such programs involve very large investments by the participating countries and may lead to the creation of new industries.

³Yelena Lyakina-Frolova and Vladislav Kuvshinov, "Legal Aspects of Direct Ties," *Foreign Trade*, November 1985, pp. 9-13.

⁴Economic Commission for Europe, *Analytical Report on Industrial Cooperation Among ECE Countries*, United Nations, Geneva, 1973, p. 54.

⁵Lyakina-Frolova and Kuvshinov, 1985.

Intersectoral or interbranch agreements cover more mundane articles, such as tractors.⁶ They involve exchanges between the same industrial branch in two or more countries. For example, in the Zetor tractor agreement between Poland and Czechoslovakia, tractors are exchanged for tractor components or other types of tractors, not for raw materials or other types of machinery.⁷ These types of agreement are of lesser institutional importance because they are concluded by the branch and foreign trade ministers.

HISTORICAL DEVELOPMENT

Specialization agreements first appeared in CMEA in the early 1950s. Two were made in ferrous metals and bearings in 1956. However, specialization agreements did not become important policy instruments until the late 1960s. In 1968, shortly after the opening of its Volga automobile plant, the Soviet Union signed a series of bilateral agreements with Hungary, Bulgaria, and Poland whereby these countries agreed to manufacture parts for automobiles produced in the new plant. In 1969 one of the most important agreements, the Multilateral Governmental Agreement on the Development, Production and Application of Electronic Data Processing Equipment, was signed, leading to the creation of an integrated CMEA computer industry.

⁶Lyakina-Frolova and Kuvshinov, 1985.

⁷Budnikowski, Adam and Marek Kulczycki, "Wspolpraca produkcyjna krajow RWPG a system kierowania gospodarka," *Handel Zagraniczny*, No. 9, 1977; Irena Cieniuch, Barbara Durka, and Jerzy Marciszewski, "Wspolpraca produkcyjna Polski z krajami RWPG," *Handel Zagraniczny*, No. 8, 1977.

Table 1

NUMBERS OF SPECIALIZATION AGREEMENTS IN CMEA, BY COUNTRY

	1975(a)	1976(a)	1977(a)	1986(b)
Bilateral Agreements				
Country				
Bulgaria	8	64	121	150
Czechoslovakia	156	180	180	430
The GDR	305	305	362	243
Hungary	114	161	162	194
Poland	156	160	220	267
Romania	39	63	106	124
USSR	76	105	123	330
Sub-total	419	519	637	888
Multilateral Agreements	57	89	98	331
Grand Total	476	608	735	1211

(a) Jozef Kowalkewski, "Wspolpraca przemyslowa krajow RWPG," *Handel Zagraniczny*, November 1980, pp. 16-25.

(b) Crane and Skoller, 1988, p. 26. These figures were tallied from references to specialization agreements in the commercial literature. Some errors and omissions were inevitable in this tally. We believe our figures for Czechoslovakia, Hungary, Poland, Romania and the USSR are most accurate because we were able to obtain commercial publications for these countries. We believe that our numbers for the GDR are probably underestimated because we were unable to obtain a trade journal from this country.

A major campaign to sign specialization agreements began after the signing of the Complex Program on Integration in CMEA in 1971. The number of agreements has risen from a few tens in 1970 to several hundreds in 1977 to over a thousand in 1986 (Table 1). Trade in products falling under specialization agreements increased from less than 1 percent of total intra-CMEA trade in 1970 to more than 20 percent by 1976.

The Intergovernmental Commissions on Economic, Technical and Scientific Cooperation play the primary role in drawing up and implementing specialization agreements. These bilateral commissions exist between every pair of countries in CMEA. The organs of CMEA also play an important role in the elaboration of agreements. For example, the Standing Commissions, organized by industry, work out concrete recommendations concerning specialization in particular industrial sectors and facilitate necessary additional investments.

DISTRIBUTION

The pattern of agreements by country tells an interesting story. In 1977, the Soviet Union participated in 90 percent of all multilateral agreements, almost as many as any other country in CMEA, but the smaller, more industrial countries participated in many more bilateral agreements. The GDR participated in nearly three times as many bilateral agreements as the USSR; and Czechoslovakia, Hungary, and Poland all participated in more agreements than the Soviet Union. Although these ratios have changed in recent years, our own tally continues to show Czechoslovakia participating in substantially more bilateral agreements than the Soviet Union (Table 1).

In the case of multilateral agreements such as those on computers, robotics, and nuclear power, the Soviet Union is the driving force. These programs often involve products that fall under COCOM restrictions and are of strategic importance. Other such agreements are in areas such as energy or food that had high priority in the Soviet Union at the time of signing. The Soviets reportedly discourage multilateral agreements solely among East Europeans for political reasons.

The figures indicate, however, that the Soviet Union is not the driving force behind most bilateral specialization agreements. The smaller countries appear to use bilateral specialization agreements at the interbranch level to a greater extent than does the Soviet Union. A possible explanation for the popularity of bilateral agreements among these countries is that because of their limited domestic markets, they may be less able to exploit economies of scale. In an effort to eliminate inefficient production lines, they initiate more agreements. Many of these specialization agreements cover small product ranges of specialized machinery. For example, the GDR, Czechoslovakia and Poland have extensive bilateral and trilateral agreements for the production of different types of construction equipment, agricultural machinery and even railroad track-laying equipment. These intersectoral, bilateral agreements allow the participating countries to stop the production of small series of complicated equipment at which they are not particularly efficient.

EFFECTIVENESS

If specialization agreements have led to an increase in economic integration, their introduction should have been followed by changes in the allocation of goods. The percentage of production sold to the partner country or the percentage of total consumption imported from it should have risen following the conclusion of an agreement.

In many cases, however, the participating countries may have been increasing trade before signing a specialization agreement. Thus, increases in the percentage of production exported to or consumption

imported from the partner country are not sufficient evidence to prove that a specialization agreement has increased economic integration. More telling would be a shift in the trend toward increases in these percentages. For example, if Romania had doubled the rate of increase in the share of total output of locomotives exported to CMEA after the conclusion of the specialization agreement on diesel locomotives in 1976, it could be argued that the agreement was a success.

Using a simple model, we have attempted to test the hypothesis that specialization agreements induce such changes. We assume that integration (the percentage of production exported or consumption imported) follows a time trend. After a specialization agreement is signed, this trend should shift upward if the specialization agreement has been effective. We assume that any shift (change in the slope) would be picked up by a multiplicative dummy variable equaling zero before the signing of the agreements and following a time trend after signing. If the coefficient of this variable is positive and significantly different from zero, we reject the hypothesis that the specialization agreements did *not* increase economic integration. If it is negative and significantly different from zero, we reject the hypothesis that the specialization agreement *increased* economic integration. Other results are indeterminate.

The mathematical form of the model is

$$Y = A + B_1 X \text{ TIME} + B_2 X \text{ DUM} + e \quad (1)$$

where Y is a univariate transformation of the percentage (P) of output exported to the partner, namely $\arcsin (P/100)^{1/2}$; TIME is equal to the year minus 1969; DUM is a multiplicative dummy variable for time, taking the value of zero before an agreement was signed and TIME afterwards; and epsilon is the error term (the usual assumptions are made concerning its distribution). The coefficient of DUM, B_2 , captures changes in the time trend in Y following the agreement and was used to test for increases in the rate of change in Y.

Because specialization is a two-way process--the importing country pledges to rely on the exporter for more of its consumption of the product--we also tested for increases in economic integration in importing countries. The regression model in Eq. (1) was used to characterize integration in terms of imports as a percentage of national consumption. In this regression, Y is the arcsin of $(C/100)^{1/2}$, where C is the percentage of total consumption imported from a partner in a specialization agreement.⁹ The variables on the right-hand side of the equation are the same.

Because CMEA countries record trade flows in deviza currencies whose value bears little relation to domestic currencies, we confined ourselves to testing for increases in integration in trade in commodities given in physical units--i.e., motor vehicles, railroad

⁸This transformation is commonly applied to proportions to stabilize variance (S. Weisberg, *Applied Linear Regression*, 2nd ed., John Wiley & Sons, New York, 1985, p. 134). If the dependent variable is not transformed, hypothesis tests involving parameter estimates are distorted.

⁹Consumption = production - exports + total imports.

equipment, agricultural equipment, machine tools, and some chemicals. The data generally extended from 1960 to 1985 and were taken from the statistical yearbooks of the CMEA countries. Statistical data published by these countries were very uneven, and there were substantially more series from Czechoslovakia, Hungary, and Poland than from the other countries. This problem of bias is partially mitigated by the use of mirror trade statistics. For example, Polish data on locomotive imports from Romania were used to test for the effects of a specialization agreement on Romanian exports of locomotives to Poland.

Our analysis provided little evidence that specialization agreements have contributed to economic integration. The trend toward exporting a higher percentage of output or importing a larger share of consumption increased in only 11 cases after the signing of a specialization agreement. In 32 cases, it actually decreased; export and import shares frequently declined. In view of these results, it is very difficult to argue that specialization agreements have significantly contributed to economic integration in CMEA. Although in some cases the percentage of output traded or consumption imported increased after the signing of specialization agreements, trade flows fluctuated widely. Participating countries have often been quick to reduce imports or exports during periods of austerity despite the existence of agreements.

We also found that specialization agreements do not appear to have induced marked increases in the share of components in CMEA trade. They often act as a drag on technological innovation despite the technical superiority of many specialized products over the domestically produced goods they replace. Finally, specialization agreements have not

contributed to the multilateralization of trade flows. Countries continue to tie trade under specialization agreements to offsetting deliveries of components or products produced by the same industry, because no effective price system has been introduced permitting trade negotiators to compare the value of products produced by one industry with those produced by another. We have concluded that specialization agreements have not been successful in achieving many of the policy goals for which they were designed.

RAND/P-7477

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