

Dollar figures for arms aid: means of derivation; limitations on significance; valid uses.

PRICING SOVIET MILITARY EXPORTS

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Understandably, the USSR has been reluctant to disclose the magnitude of its military exports, either in monetary or in quantitative terms. The U.S. intelligence community has estimated that such exports to non-communist underdeveloped countries totaled about \$3.5 billion during the period 1956-1966. A review of the various approaches to the fixing of this dollar value and its components, the ambiguities that the figures embody, and their residual significance and usefulness may be of interest for the methodological and conceptual problems it illustrates.

Market Price for Weapons

Sometimes the aggregate value of a military aid agreement, that is the dollar or sterling price the Soviets set on the arms and equipment in question, becomes known to U.S. intelligence and can be used directly. More generally the deliveries of equipment, which are in large part subject to intelligence observation, must be tabulated and prices assigned to each kind of item in order to arrive at the total. The assignment of prices is a complex process. In those few instances when Soviet and U.S. equipment items are similar enough in mission and capability to make cost comparisons meaningful, the Soviet prices have been calculated on the estimated cost of production in the United States. For the most part, however, they are derived from a representative sample of Soviet equipment list prices in dollars or sterling that has been garnered from clandestine sources. Thus the U.S. estimates of the monetary value of Soviet military exports, whether obtained in aggregate or piecemeal, are predicated largely on Soviet-originated list price data.

The problem is that estimating the dollar value of military deliveries must be no less difficult for the Soviet pricers than for U.S. analysts. In view of the divorce between internal and external prices in communist countries and with official exchange rates which only im-

perfectly reflect parities in purchasing power, all communist countries have been obliged to value their foreign trade transactions on the basis of prevailing world market prices. (This has been the case for intra-communist trade as well as for exchanges with non-communist countries, so that an East European official once jokingly remarked to British economist Alec Nove that even after the world revolution it would be necessary to preserve one capitalist country: "Otherwise how would we know at what prices to trade?") But given the absence of meaningful "market" prices for military equipment, especially for obsolete weapons or unique and highly sophisticated hardware, the USSR's list prices must be at best only a very crude approximation of the dollar value of its military equipment.

Then the Soviets compound the ambiguities by inconsistencies in the terms of their arms deals. Although virtually all their sales are on long-term, low-interest credit and the list prices do not appear to differ greatly from client to client, virtually all recipients of Soviet arms have received substantial and widely varying discounts. Yemen and Afghanistan, for example, have been given discounts of 95 percent and 75 percent respectively, making virtual grants of Soviet arms aid to them; Algeria, Iraq, Syria, and the UAR have had discounts averaging from 48 to 63 percent; and at the low end of the spectrum Indonesia has received little more than 25 percent discount while India, as far as we can determine, has received none at all.

The Politics of Discounting

The motives behind this selective discount policy are obscure. It has been suggested that weaponry, particularly when it is either obsolete or redundant to the needs of the Soviet or other Warsaw Pact armed forces, has little or no alternative use, so the USSR can afford to be generous in its pricing. This argument seems less convincing now that considerable discounts have been granted on increasing quantities of late-model and highly sophisticated equipment delivered to underdeveloped clients in recent years—in some instances equipment not yet delivered in quantity to East European countries.

Has the USSR made substantial discounts from its list prices in order to gain entrée into arms aid markets? If so, one would logically expect that this motive would lose its force as military establishments in such countries as the UAR become totally equipped with Soviet weaponry and dependent on Moscow for technical support and spare parts. But discounts have continued even to such captive markets.

Moscow's policy of selective discounting could reflect its assessment of a recipient's ability to pay. If so, it seems to have miscalculated grossly the repayment prospects of most of its military aid recipients, and especially its largest clients, the UAR and Indonesia. Both countries have repeatedly requested and begrudgingly been granted rescheduling or moratoria of their military aid obligations. This proposition would also raise a question why the USSR does not give any outright grants of military aid, although admittedly the potential leverage afforded by repayable credits would be a consideration.

Finally, the various levels of Soviet discounts may simply be an expression of political favoritism. Yet it would be difficult to rationalize a Kremlin political preference scale which would place India at the bottom for military aid discounts but accord it highest priority for economic aid.

Although no single one of these suggested motives for the discount practices is overly persuasive, it does seem reasonable to think of Soviet calculations as compounded out of all of them, yielding a flexible pricing policy that is responsive to buyer resistance, ability to pay, political favoritism—and considerations of what the traffic will bear.

Foreign Trade "Residuals"

Another possible way to arrive at the aggregate dollar value of the military exports may be provided by lacunae in official Soviet foreign trade statistics. In each year since 1955 the sum of Soviet exports to individual countries, as given in these statistics, has fallen short of the announced global total of exports. The unexplained "residuals" have averaged about \$175 million a year, ranging as high as \$450 million in 1962. The Soviets, although undoubtedly aware of these incongruities in their foreign trade statistics, have remained conspicuously silent about them. Since 1965, however, they have provided a breakdown of foreign trade by major geographic area which has enabled us to charge almost the entire value of the residuals to trade with noncommunist underdeveloped countries.

Intelligence offices and others¹ have hypothesized that the bulk of these export residuals may in fact represent the dollar value of Soviet

¹ See, for example, *Estimating Soviet Military Aid Deliveries: A Possible Alternative Method*, CIA/RR A. ERA 65-2, November 1965 (S/NF), and O. Hoeffding, *A Possible Measure of Soviet Military Exports to Noncommunist Countries*, Rand Memorandum RM-4611-PR, February 1966 (S).

exports of military equipment, either under credits or, to a far lesser extent, for cash.² The a priori arguments that can be adduced in support of this hypothesis seem persuasive, to wit:

In the years preceding 1955, when there were no known deliveries of military equipment to underdeveloped countries, the residuals were negligible. In each year since then they have been substantial and they are associated with the underdeveloped countries, to which the Soviet military exports then began to be directed.

Official Soviet trade data include a comprehensive commodity breakdown of Soviet exports to underdeveloped countries but give no listings for the substantial quantities of military equipment known to have been delivered to them.

Inclusion of the value of cash and credit military exports in the Soviet aggregate figures would be consistent with the Soviet practice of excluding "merchandise delivered under agreements to provide aid free of charge to foreign countries."

It would make good sense statistically to include, even in such oblique fashion, the aggregate value of military credit and cash sales because the payments on them (largely in commodities) would be included in Soviet import statistics.

The reporting of aggregate military exports, undistributed by country of destination, would be in conformity with general practice in the West, which treats the value and composition of military exports to individual countries as confidential but may reveal aggregate value on a global or area basis.

Finally, it is difficult to imagine what other category of exports of this magnitude Moscow would wish to avoid identifying by type or country of destination.

Quantitative Check

Two tests of the validity of the hypothesis would be (1) how close the total of Soviet military aid deliveries during the period 1956-66 (as estimated by U.S. intelligence) is to the cumulative total of residuals during these years, and (2) how good the correlation is between

² A small portion of the residuals could be accounted for by exports to countries with which there were no bilateral trade agreements and trade was less than 2 million rubles.

U.S. estimates of Soviet military exports by year and the annual trade residuals.

The U.S. estimate for the entire period 1956-66, we noted, was approximately \$3.5 billion on the basis of Soviet list prices. It has been estimated, largely from information supplied by clandestine sources, that roughly 56 percent of this total was payable in cash or through long-term credits; the remainder was represented by discounts from established list prices, i.e. constituted virtual grants. The cumulative trade residuals for the ten-year period total \$2 billion. If this figure, excluding the discounts as "aid free of charge," represents the cash-credit portion of military exports, i.e. roughly 56 percent of the total, the dollar value of the total delivered would be \$3.6 billion, remarkably close to the independent intelligence estimates.

Between annual export residuals and U.S. estimates of annual military exports the correlation is inconclusive up to 1962—perhaps because substantial quantities of arms were exported from East European countries, all or in part on Soviet account,³ perhaps because of the lower reliability of U.S. estimates during the early years—but since 1962 the relationship has been quite close:

	Trade Residuals (\$000,000)	Export Values Not Discounted (percent) ⁴	Derived Totals (\$000,000)	Independent Estimates (\$000,000)
1962	450	53.4	843	839
1963	203	48.0	423	576
1964	219	69.7	314	276
1965	270	73.9	365	341
1966	368	75.2	489	455
Totals	1,510	62.0	2,434	2,487

There is some error involved in applying discount rates per agreement to actual deliveries during the same year (Soviet military aid agreements are implemented rapidly, but it is unlikely that all goods actually moved during the year in which each agreement was signed), but the direction of change and even the absolute dollar values of the annual military exports as reached by the two methods are nevertheless in convincingly close agreement.

³ East Europe, primarily Czechoslovakia and Poland, delivered more than \$450 million worth of military equipment to underdeveloped countries during 1955-60.

⁴ I.e., ratio of credit/cash portion to total value.

Uses and Limitations

The dependence of intelligence analysts on Soviet list price data in deriving dollar values of Soviet military exports—prices which may be just Moscow's crude appraisals of the market values of the equipment and from which its negotiators readily grant substantial discounts—detracts from the reliability of such estimates as a meaningful index of the "real" value of Soviet arms shipments. Systematic efforts to calculate the cost of items of equipment in terms of what it would cost to produce them in the United States, although perhaps conceptually more meaningful, have been bedeviled by a host of data procurement and comparability problems. Such uncertainties notwithstanding, the intelligence estimates based on Soviet list prices (since these prices do not appear to differ markedly from year to year or among client countries) do provide a consistent standard against which to gauge the trend of Soviet military deliveries over time and as distributed among the underdeveloped countries.

The uses to which the intelligence community can put the arms aid data derived from trade residuals are somewhat more limited. They reveal only the amounts payable in cash or credit for the Soviet military equipment; they enable us to distribute the exports neither by country of destination nor by type of equipment; and the Soviet foreign trade statistics from which they are derived become available only six to nine months after the end of the calendar year. They nonetheless, in giving the value of military exports for which repayment is expected, provide useful insights into the balance-of-payments impact of Soviet military aid on both the USSR and its underdeveloped clients as a group. They also provide a check on the accuracy of the independent estimates of the dollar value of the exports.