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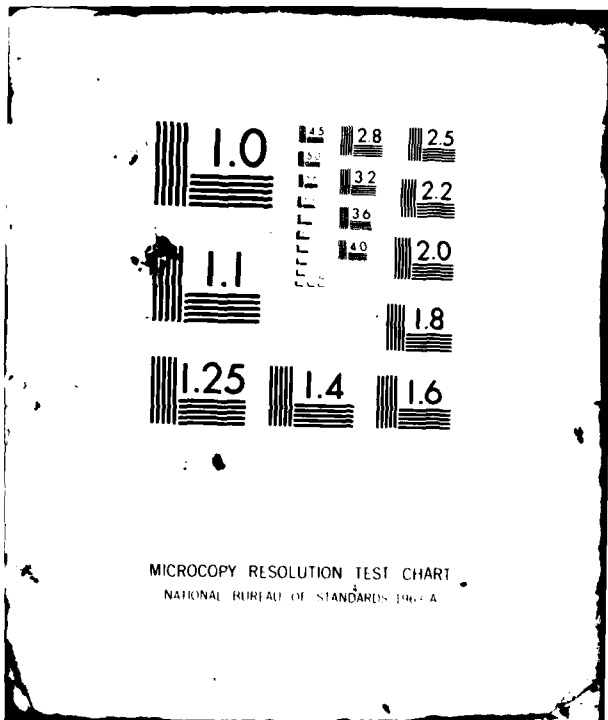
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CIA ESTIMATES OF SOVIET MILITARY EXPENDITURE

Statement Prepared for the Subcommittee on
Oversight of the House Permanent Select Committee on Intelligence

Abraham S. Becker

August 1980

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that the USSR refuses to divulge the level, structure or trend of its total military expenditure. The totality of quantitative information released by the Soviet government in any year on the activities of its military establishment is a single figure, state budget expenditures on "defense." [1]. In 1960, Khrushchev revealed the size of the armed forces in several years, but no such figures have been released since then. Indeed, the volume of information on military expenditures has narrowed compared to the 1940s, when "defense" was broken down by commissariat or ministry and outlays on internal security forces were also reported. No figures on weapons production, procurement, structure of outlays, size of inventories, or the like have been reported for any year since World War II. The single military expenditure figure published annually by the USSR is almost universally rejected in the West as a true indicator of total Soviet spending.

Soviet secrecy has the paradoxical power in some minds of undermining the utility of any independent estimates of Soviet military expenditure. In this writer's hearing, a prominent Soviet Americanologist once berated American Sovietologists for "exploiting" Soviet secrecy to concoct distorted estimates of the Soviet defense effort. More soberly, the Stockholm International Peace Research Institute judged the U.S.

[1] In the negotiations over the SALT II treaty, the Soviet side for the first time provided data on the numbers of strategic systems intended to be regulated by the treaty. ("Memorandum of Understanding Between the United States of America and the Union of Soviet Socialist Republics Regarding the Establishment of a Data Base on the Number of Strategic Offensive Arms," in Department of State, SALT II Agreement, Selected Documents No. 12A, Washington DC, June 1979). Figures on deployments along the central front were provided by the Warsaw Pact side in the discussions on Mutual Force Reductions, but these data have been regarded by the West as deliberately understated.

estimates "very uncertain." The figures were not necessarily inflated, for

the scale and momentum of Soviet military activities can hardly be described as modest. The point is that comparative expenditure figures play an important role and the figures being used lack credibility.

Considerable efforts are now being made in the United States to improving estimates of Soviet military expenditure. However, no major improvement in the credibility of data on Soviet military expenditure can be expected unless that country officially provides more information than is currently available. [2]

Thus, appraisal of Soviet military policy and activity is hindered by extreme Soviet secrecy--"extreme," at any rate, in the view of Americans accustomed to the openness of the U.S. military record. [3] Yet, some significant barriers to Western comprehension of the scope and pace of the Soviet defense effort may be self-erected rather than Soviet-imposed. The difficulties are in part technical, and this is another reason, unconnected to Soviet secrecy, that the subject seems mysterious.[4] Unfortunately, as the issues are debated in the public arena, the genuine technical complexities are magnified by distortions of the facts, and the public confusion is compounded. An English journalist reported that "Hidden Figures Baffle Western Experts,"[5] but the

[2]SIPRI, World Armaments and Disarmament. SIPRI Yearbook 1976, MIT Press, 1976, pp. 132-33.

[3] The advent of satellite photography has resulted in penetration of some Soviet security barriers, but "national technical means" are not a panacea. Satellites cannot photograph the interiors of factories or estimate costs and prices.

[4] For example, comparisons of Soviet and American military expenditure are seen as based on "esoteric ruble/dollar conversion ratios." Robert W. Komer, in the exchange, "Soviet Strength and U.S. Purpose," Foreign Policy, No. 23, Summer 1976, p. 41

[5]Roger Boyes, in the Financial Times, October 25, 1978.

experts must be baffled even more by his "explanation" of current CIA methodology--e.g., that dollar prices for Soviet equipment are "converted into 1955 roubles (using specialized Rand studies on conversion rates for civilian machinery comparable to military hardware) and are finally turned into current roubles." Even General Daniel Graham, formerly the Director of DIA and a principal critic of CIA methods and estimates, was under the impression that ruble-dollar price ratios were used in estimating dollar costs of Soviet hardware procurement.[6] Under these conditions, the informed public has a right to feel confused.

Technical complexity also means that an honest effort to evaluate competing claims by the experts requires painstaking examination of sources and methods. Unfortunately, this does not take place. The details of the estimates made by the intelligence community are not made public for security reasons, but few trouble to pick their way through the supporting structure offered by the nongovernment critics writing in the public domain. Nevertheless, the availability of the latter estimates, contrasted with the security screen imposed by the intelligence community, tends to raise suspicion and distrust of the intelligence estimates.

Such skepticism was considerably strengthened by the CIA's announcement in the spring of 1976 that the Agency had erred and was now doubling its estimate of Soviet military outlays in rubles as well as of the proportion of Soviet GNP allocated to military expenditure. The

[6]Lt. Gen. Daniel O. Graham, USA (ret.), "The Soviet Military Budget Controversy," Air Force Magazine, 59:5 (May 1976), p. 34.

revision of the estimates had been in train for at least a year or more, in the course of which a number of government agencies were pressing to review CIA procedures. At the height of the excitement, a senior CIA official reported to his chief that "the only people in Washington not presently engaged in the study of costing of Soviet defense are the people in the GSA charforce. I expect to hear from them momentarily." The GSA charforce did not weigh in, but CIA's announcement of the revision triggered a chorus of frank disbelief that the reasons for so sharp a change were those stated by the Agency. Doubt was also cast on the CIA's explanation of the scope of the change, particularly the claim that no increase in physical size of the Soviet forces was implied.

Participants in the public debate on Soviet military expenditure have often taken explicit and controversial positions on the reality of the Soviet "threat" and the desirability of increased U.S. defense spending, so that conceptual and methodological issues have seemed incidental to the main bout. In the early 1970s the principal concern with the validity of CIA procedures came from those who were convinced that the estimates were too low. Citing an estimate of the Soviet defense share of GNP of 9 percent, Joseph Alsop declared: "If this thing is true, of course, the Soviet-American balance of power cannot be changing radically, and there is nothing much to worry about. The only trouble is that evidence has been steadily accumulating that this comforting official theory is quite untrue." [7]

[7] Joseph Alsop, "Soviet Defense Spending," Washington Post, January 9, 1974

The basic criticism from the other end of the spectrum has been that estimates of Soviet military outlays are used as political instruments by what Daniel Yergin has called the "arms coalition"--"these people, both inside the government (particularly in the Defense Department and the Congress) and outside, who believe that the Soviet Union is an ever-expanding menace." [8] Exaggeration of the Soviet "threat" may have other political purposes, but to some left critics, the effort reflects direct or indirect economic interests: "It is correct to say that part of what is going on here involves not so much the defense of the United States as the defense of the defense budget." However, the argument continues, even if the members of the arms coalition speak from sincere conviction, they distort and exaggerate Soviet military strength in order to drive up U.S. expenditures. [9]

The differences in outlook from which the estimates of Soviet military expenditure are viewed were sharply established by the varying reaction to the CIA's 1976 announcement. To "hawkish" critics, this was not only confirmation that they were correct all along, but fresh confirmation of the Soviet dedication to a drive for military superiority over the United States. To Representative Les Aspin, on the other hand, the revised figure showed that "it will be much more difficult for [the Soviets] to expand much further without pushing their people to the

[8] Daniel Yergin, "The Arms Zealots," Harper's, June 1977, p. 66.

[9] Ibid., p. 67. See also Louvan E. Nolting, "Soviet Arms in the Pentagon Mirror," The Nation, February 21, 1972, p. 238. In the New York Times, November 2, 1975, John Finney's Sunday Review article was headed "Soviet Might Grows and Grows at U.S. Budget Time." According to the Center for Defense Information (The Defense Monitor, 5:3, May 1976, p.4) "in some respects...it is official U.S. policy to encourage increases in Soviet military spending, while at the same time pointing with alarm to any increase in Soviet spending."

wall." [10] On the one side, unhappiness with CIA "underestimation" of the Soviet threat was only partly eased by the doubling of the ruble estimates. On the other side, critics were inclined to view the revisions in CIA dollar estimates of Soviet defense made during 1974-75 with great suspicion and to attribute the 1976 announcement on the ruble change to extreme pressure from the Pentagon. [11]

Attacks on the estimates of Soviet military expenditure from both ends of the political spectrum reflect the political significance of the estimates: they have an important causal bearing on U.S. military outlays. Secretary of Defense Harold Brown noted that "the general magnitude of the Soviet defense effort, and the continued uncertainties in international relations, account to a considerable extent for the size and composition of the U.S. defense budget." [12] The turnaround in U.S. defense spending, after a considerable period of post-Vietnam decline, is attributable in large part to concern about the Soviet military buildup, for which the estimates of Soviet military outlays provide a capsule summary. Reporting on the budget debate in mid-1976, a journalist declared: "One of the most convincing arguments the Pentagon made in pushing for a record budget [this year] was that a CIA assessment

[10] "Comparing Soviet and American Defense Efforts: A Fact Sheet from the Office of Rep. Les Aspin," April 1976. See also TRB in the New Republic, March 18, 1978: "...ultimately the load [Russia's economic problems] put on the peasants and workers may do more than the SALT talks to reduce armaments."

[11] Edward Aerie (pseud.) "'Dollarizing' the Russian Forces," The Nation, July 23, 1977, pp. 78-81. Cf. Daniel Yergin, "The Arms Zealots," pp. 72-73: "What apparently happened was that, in the period 1974-76, the CIA's analysts had buckled under to pressure from other agencies..." Aerie even accused the CIA of doctoring the physical quantities of Soviet forces.

[12] Annual Report To Congress, February 2, 1978.

disclosed the Russians were outspending Americans by as much as 60 per cent." [13]

Some participants in the national discussion have questioned whether estimates of Soviet military expenditure are at all relevant to U.S. budgetary decisionmaking. The director of the Congressional Budget Office declared that "US spending decisions are more appropriately made on the basis of how national objectives will be served than on the basis of how our spending will compare with that of the USSR." Further, she seemed to argue, the comparisons are unnecessary: "...budgets are, in an important sense, little more than a summary of other data. We can perceive changes in military capability without the aid of defense cost calculations." [14]

As I will argue below, cost comparisons are useful and indeed unavoidable. For the reasons outlined, such comparisons will therefore continue to be a focus of dispute among those who hail or decry the recent figures because they support the case for larger U.S. defense spending. The resulting donnybrook between skeptics and viewers with alarm often produces more confusion than enlightenment. It has proved to be extraordinarily difficult to walk the thin line between simplistic

[13] James Coates, "Defense Budget Advocates Will Score If Defector's MiG Really is Russ' Best," Chicago Tribune, September 10, 1976, p. 5.

[14] Letter from Alice Rivlin to Rep. Brock Adams, July 21, 1976. The balance of Congressional opinion is to the other side, although R. James Woolsey ("Real Real Growth for Defense," Washington Post, 14 April, 1980, p. 11) complains that "what the Soviets are doing about buying guns" has been no more than an item of secondary interest. "The lack of attention to this at budget time in the press and in much of Congress is a habit of some years' duration, due in part to the Pentagon's having lost so much credibility in the Vietnam era that people shy away from discussing 'the threat'."

declarations on "spending gaps" and equally simplistic dismissal of the estimates as meaningless. Perhaps the task is impossible. However, as long as the subject remains important, it will continue to be desirable to try to clarify the public debate by careful treatment of complex issues. I hope that our discussion today will contribute to that goal.

Military Expenditure, Military Power and Comparative Size

Estimates of Soviet military outlays are made for four main purposes--comparison with U.S. expenditure to indicate relative size, determination of the structure of Soviet outlays in various breakdowns, measurement of the rate of change of total Soviet expenditure and its components, and estimation of the "burden" of Soviet defense, prominently by juxtaposition of total military expenditure to some measure of aggregate national output. Most of my comments are directed to the issues of "sizing," which have evoked the greatest public controversy. Some summary judgments with respect to the other three purposes are listed in the next section.[15]

President Ford once derided the alarmist view of larger Soviet forces by an analogy with sports: "Would you say a football team was better than the Dallas Cowboys just because it had more players on the roster?"[16] The President did not discuss the differences in "rules of

[15]I have discussed a number of the main problems of these estimates in my "The Meaning and Measure of Soviet Military Expenditure," in Soviet Economy In A Time of Change, Joint Economic Committee, U.S. Congress, Vol. I, October 10, 1979, pp. 352-366; taken from Arthur Alexander, Abraham Becker and William Hoehn, Jr., The Significance of Divergent US-USSR Military Expenditure, N-1000-AF, Santa Monica, Calif., The Rand Corporation, February, 1979.

[16]Speech in Canyon, Texas, April 10, 1976.

the game" between war and football, which might have pointed, among others things, to the absence of limitations on the number of personnel that may be introduced at one time onto the battle field as compared with the playing field. But a much more important issue is implied in the analogy. If armies fought each other as often as football teams scrimmage in the stadium and under equally controlled conditions, few would engage in military "bean counting" and there would be no need to measure comparative military expenditures. The underlying purpose of such calculations is appraisal of relative military capabilities, and these would be gauged by the results of the military engagements. Fortunately, that scientific opportunity is denied us, and we are reduced to appraising the potential threat by the measuring tools available. Our tool kit should, obviously, be equipped with calipers for a variety of physical measurements. However, value aggregates, as a means of combining dissimilar entities in overall summary measures, have great utility as well. The most general of all means that might be used to combine military apples and oranges is money prices. Moreover, all other substitutes, such as "firepower" or "military utility," are difficult to estimate and, ultimately, inherently subjective. Therefore, value measures are not just useful but in fact unavoidably necessary for comprehensive assessments.

At the same time, most analysts agree that a comparison of national levels of military expenditure is not a measure of relative military capability. This is largely because military capabilities are a function of all forces in being--an inventory concept--while military expenditure at best records increments to forces-- a current flow concept.

Even inventory values could not capture all the important features of military capability, such as degree of alertness, quality of command, strength of national will, not to speak of those elements of the external environment in which combat actually takes place that may make the difference between victory and defeat. Military expenditure comparisons are, therefore, measures of relative resource costs in a particular time interval. The longer the interval, the more the comparisons approach measures of relative force inventories. Thus, indicators of cumulative outlays over a decade are more interesting clues to changes in military capability than expenditure ratios for any given year. However, it would still be desirable to publish explicit estimates of relative inventory values along with the expenditure ratios to underscore the differences.

The comparative expenditure estimates published by the Agency have an additional and oft-discussed limitation. The data on relative size of the Soviet and American defense activities are based on dollar valuations--actual U.S. outlays versus estimated dollar costs of Soviet activities. Critics of the estimates have often pointed out that the size comparison may be made in rubles as well--actual Soviet outlays versus estimated ruble costs of U.S. activities. By the familiar reasoning connected with the "index number problem," the USSR/US size ratio is expected to be lower in the ruble than in the dollar valuation. The Agency has always acknowledged the validity of this argument and has several times indicated that crude calculations of the "ruble-ruble" ratio do show a smaller Soviet size advantage than the "dollar-dollar" ratios. More than likely, less aggregated, more detailed calculations

of a ruble-ruble ratio would reduce the Soviet size advantage still further. How much further is difficult to tell without actually doing the calculations.

CIA has justified its relative neglect of the ruble-ruble valuation on the grounds that highly disaggregated calculations are made difficult if not impossible by the existence of U.S. military hardware which the Soviet Union does not produce and would have great difficulty reproducing.[17] For such "unique products," the estimated ruble cost would be very high or even infinite. The resulting USSR/US size ratio would be very small or even indefinable.

A comparison cannot be defined, let alone computed, when the price of the good in one country is infinite. In the case at hand, it seems doubtful that the set of goods for which this is true is very large, but difficult problems are also posed where ruble costs for U.S. military hardware would be finite but unusually large. To some extent, the difficulty may be circumvented by costing close substitutes, although this may result in some distortion of the results. It has also been argued

[17]It is probably fair to say that apart from the technical issues involved in the "unique product" problem, there is very little pressure from the Executive or Legislative branches for ruble-ruble calculations. The general attitude was probably expressed by retired Maj. Gen. George J. Keegan, Jr., then the Air Force's Assistant Chief of Staff, Intelligence, in a March 22, 1976 memo to the major air commands:

It might be possible to provide like estimates of both U.S. and Soviet programs in rubles, but the utility of such a measurement is questionable at best as far as U.S. planners are concerned. How much the two countries spend in rubles is rather meaningless to us, since we don't spend rubles, but it might be of extreme interest in the Kremlin...

(Cited in Air Force Magazine, 59:9, September 1976, p. 128.)

that the Agency's standard of cost comparisons should be changed--in the dollar-dollar case, from estimating the U.S. cost to replicate a specific, actual Soviet good or service to obtaining (or estimating) the dollar price of a U.S. good or service that matches the Soviet in performance. Apart from the probably high cost involved, such a switch would entail wrestling with a different set of technical problems: for example, determination of the performance parameter to be used for comparison when there are multiple parameters pointing in different directions; or adjusting prices based on performance comparisons for several dimensions of quality differences. Finally, it might also be suggested that the Agency simply exclude the unique products, assuming these are small in number, from both the U.S. and USSR totals, in order to produce a detailed ruble-ruble calculation. The latter should, of course, be matched with a dollar-dollar comparison of the same scope.

Whatever the validity of these arguments pro and con, the index number problem will remain a factor of some importance in assessing the Agency's comparative size estimates. There is evidence that the gap between dollar-dollar and ruble-ruble ratios has been decreasing over time. If Soviet military expenditure were to continue to rise at 3-5 percent a year while the U.S. defense budget stabilized, the differences between the two ratios would soon matter very little. However, U.S. military outlays have been increasing since 1977, and are likely to do so in the future, perhaps at an accelerating pace. If only for this reason, the ruble-ruble problem could not be ignored.

The Agency's comparative size calculations are intended to serve carefully defined and limited ends, as Agency publications and its

Congressional testimony have reiterated frequently. Controversy and misunderstanding may continue to bedevil these estimates, no matter how lengthy or prominent the accompanying caveats, for reasons suggested in the first section of this paper. [18] With regard to the less partisan critique focused on the issues discussed here, it seems appropriate for the Agency to review the conceptual and methodological problems of size comparisons and to make such a study public. That would go part way toward clarifying the public debate.

[18]Regrettably, leaders of the intelligence community have, on a few occasions, contributed to public misunderstanding by loose phrasing. Testifying before the Congressional Subcommittee on Priorities and Economy in Government of the Joint Economic Committee, General Graham as Director of DIA asserted his complete mistrust of efforts to compare Soviet and American military expenditure: "Any attempt to measure the efforts of a command economy such as the U.S.S.R.'s in terms of the currency of a free economy such as ours is doomed to produce misleading results." (Allocation of Resources in the Soviet Union and China--1975, p.93.) Preceding him by several days in the same forum, Director of Central Intelligence William Colby responded to Chairman Proxmire's comment, that "a gross estimate between what they spend and what we spend is of very limited value," as follows:

I could not agree more, and I do not think my associates could agree more with you. We do this because of demand for it, obviously, but we are highly conscious of the fact that comparative military assessments depend on many, many more factors than the dollar-ruble comparison (emphasis supplied; ibid., p. 26).

Mr. Colby was clearly intent on drawing attention to the need for a variety of other "net assessments" apart from military outlays, but in journalistic translation "both intelligence officials...expressed considerable skepticism about the value and validity of intelligence estimates making dollar comparisons of defense efforts of the United States and the Soviet Union." (John W. Finney, "Proxmire Decries Arms Gap Views," New York Times, October 27, 1975.)

Rubles and Ruble-Dollar Ratios

I can be briefer with regard to the Agency's estimates of Soviet military outlays in rubles:

1. CIA estimates are derived in a "building-block" approach that is, with the exception of RDT&E values, almost entirely independent of Soviet statistics. Ruble values of some aggregates may be estimated by other procedures focusing on published Soviet financial and production statistics and directed at the value of total Soviet defense (budgetary analysis) or procurement of military hardware (machinery production analysis). However, these alternative procedures cannot provide disaggregated estimates that enable calculation of the structure of expenditure by mission, organization, or even cost element. Hence, on these grounds alone the direct costing approach is indispensable. Also, the alternative approaches involve difficult estimation problems of their own. Nevertheless, the alternative approaches may provide valuable cross checks on the accuracy of the direct costing estimates. For this reason, the former should be called "complements" rather than alternatives. It is to be hoped that CIA will continue to maintain at least a minimum level of effort pursuing the complementary approaches.

2. The previous section considered the meaning and utility of dollar costing of Soviet defense for the purposes of comparative "sizing." In such comparisons dollar values of Soviet activities are a computational end in themselves, to be used in juxtaposition with U.S. actual outlays. This seems well understood, but the role of dollar prices in estimating ruble values of Soviet defense is apparently less clear. In the CIA estimating procedure, no ruble value of a Soviet activity is

determined by manipulation of dollar costs, if ruble data are available directly. Translation from dollar costs is resorted to, primarily with respect to procurement, when ruble prices and values are unavailable. Until the unlikely time that the USSR opens its defense books, it will be necessary to estimate some elements of the Soviet military package in dollars and then translate them into rubles in order to compile ruble values of Soviet defense. By common consent such totals are regarded as useful data for analysis and policy guidance.

3. The direct-costing approach is most vulnerable at this point, the application of ruble-dollar ratios, as was demonstrated by the doubling of CIA ruble estimates in 1976. In the intervening years considerably more attention has been paid to expanding and refining the ruble-dollar data base. However, a new problem is on the horizon. CIA ruble estimates are framed in terms of 1970 prices, now a decade behind us. Depending on the rate of price change in the military and civilian sectors of the USSR, even accurate CIA ruble figures at constant prices are becoming increasingly remote from actual values at current ruble prices. It is current-price values that bear most directly on the assessment of the burden of Soviet defense. There are significant problems involved in transferring to a new price base, but this should be high on the Agency's priority list.

4. Very few critics of the CIA argue that the estimates of Soviet defense in 1970 prices are now overstated. There is more discussion of understatement, which may take place by undercounting or underpricing of direct defense activities. Given the limitations of "national technical means" and the "building-block" approach, some systematic error of

undercounting may be endemic, although it may be more or less balanced by pricing errors in the other direction. It is difficult to see why systematic underpricing (again, in 1970 prices) should take place, whether from directly available ruble price and cost data or from translation from dollar costs via ruble-dollar ratios, unless it can be shown that Agency ruble estimates for 1970, the base year of its time series, are significantly understated. Apart from whatever indications of appropriate control totals may be gleaned from the alternative approaches mentioned above, a conclusion on this score is likely to be largely subjective. In a different vein, it has been argued that total Soviet defense is understated by the amount of the costs levied on other parts of the economy to sustain the priority treatment accorded to the defense sector.[19] These are indirect costs of the Soviet defense effort, although they would have to be considered in assessing the size of the Soviet defense burden.[20]

Summary

To summarize the chief points of this abbreviated assessment of the CIA estimates:

1. The Agency's estimates are and will probably continue to be imbedded in controversy because of Soviet secrecy, the Agency's

[19]Gur Ofer, "The Opportunity Cost of the Nonmonetary Advantages of the Soviet Military R&D Effort," R-1741-DDRE, Santa Monica, Calif., The Rand Corporation, August 1975, and the same author's forthcoming Rand study, "The Relative Efficiency of Military Research and Development in the Soviet Union: A Systems Approach."

[20]This also requires conversion of estimates at prevailing or established prices into factor costs, with familiar problems occasioned by the deficiencies of the Soviet price system.

reluctance to disclose sensitive sources and methods, genuine technical complexities, and the political sensitivity of the results.

2. Although military capability is multi-dimensional and must be evaluated by a number of different indicators, value measures, both expenditure and inventory, are useful and necessary.

3. Dollar-dollar size comparisons should be complemented by ruble-ruble counterparts. The difficult conceptual and empirical issues of developing ruble-ruble estimates need careful and public examination.

4. Approaches to estimating ruble values of Soviet defense that rely on Soviet economic statistics may be useful complements to the direct costing methodology and should be regularly updated.

5. The most significant vulnerability of direct costing is ruble-dollar ratios. At present, the main danger of error arises from the increasing remoteness of the weight year of the Agency's constant price calculations. Transition to a more recent set of constant price weights should be a priority concern of the intelligence community.

6. Some undercounting bias in the estimates is possible or even likely, given the limitation of the methodology and current intelligence methods, but there is little present evidence that the shortfall is significant.

Regular critical scrutiny of what is, after all, a vast and complex measurement apparatus is the best guarantee of accurate and meaningful estimates. One can only hope that future critiques, however rigorous, will be free of the partisan warfare that has been so prevalent in the past.

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