STAT

1 July 1982

MEMORANDUM FOR: Deputy Director for Intelligence

FROM: Director of Central Intelligence

SUBJECT: PFIAB Meeting - 8 July 1982

For the PFIAB meeting I would like to be updated on the two estimate judgments which seem to raise the most questions, namely, the level of Soviet military expenditures and Soviet oil prospects. I have your paper of 28 June and concur in the idea of postponing the Community estimate of the Soviet oil prospects until the first quarter of 1983. Meanwhile, I would like to get a comparison of the prevailing estimates, ours, DIA's and the key private estimates circulated. On that score I would like to know the result of briefing of and consultation with Senator Schmitt in response to his offer to provide Soviet oil estimates which he claims have been closer to actual experience than ours.

William J. Casey

We need to have something to you NLT 1400 TODAY!

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A Ruble Cost Comparison of US and Soviet Defense Activities

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Comparison of US and Soviet defense activities when both are measured in rubles shows that the Soviet total exceeded US outlays by 30 percent in 1979, whereas the difference is 50 percent when the measurement is made in dollar terms. Thus, whatever the currency used to measure defense activities, the Soviet resource commitment to defense is substantially larger than that of the United States.

The Index-Number Problem

Because dollars are the natural basis for discussion by US policymakers, CIA comparisons of the overall size of the Soviet and US defense activities have traditionally been made in dollar terms. The Agency derives its estimates of the dollar costs of Soviet defense activities by applying US prices to detailed estimates of Soviet military activities. To state one country's activities in terms of another country's currency will exaggerate somewhat the size of the first country's effort. This phenomenon—called the "index-number problem"—has been the basis of some criticism of CIA attempts to compare Soviet and US defense costs.

The index-number problem refers to the inevitable difficulty in comparing economic activity in any two countries. To make such a comparison, the activities must be measured in common terms—specifically, they must be stated in a single currency. Since either currency can legitimately be used, the comparison can be done in two ways—which lead to different results. The essence of the index-number problem is that no unique result is possible in such an economic comparison among countries.

The prospects for making meaningful economic comparisons are not quite as bleak as this might suggest, however. The direction of the index-number bias in any single comparison is easy to identify, and the two complementary comparisons provide a logical range within which a meaningful difference lies.

The direction of bias is associated with differences in relative resource costs. In producing any collection of goods and services, such as defense, a country tends to use more of resources that are relatively cheap and less of those that are relatively expensive. The choice will differ in another country with a different resource endowment.[1] If the defense activities of a country with abundant supplies of cheap labor are priced in the currency of another country where labor is more scarce and expensive, that pricing will overstate the manpower resources devoted to the first country's defense establishment. If the defense activities of a country with relatively limited and expensive supplies of capital goods are priced in the currency of another country where capital is relatively abundant and less expensive, the pricing will understate the hardware resources devoted to the first country's defense establishment. Leaders of the first country, with cheap labor and expensive capital, will naturally choose a mix of defense resources that emphasizes manpower, and the result of using the second country's currency in a comparison is to exaggerate the size of the first one's defense costs.

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As a result of differences in resource endowments, dollar comparisons of US and Soviet defense activities tend to inflate the size of Soviet costs relative to those of the United States. Manpower is relatively expensive in the United States, and the relatively high dollar wages somewhat exaggerate the size of Soviet defense activities, which are more manpower-intensive than those of the United States. Of course, comparisons can also be made in ruble terms, using Soviet price and wage data to cost US defense activities. Such ruble comparisons inherently exaggerate the level of US activities relative to the Soviet level—the reverse of the distortion that occurs in dollar comparisons.

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[1] A country may be more spendthrift (pay less attention to relative resource costs) in defense than in other sectors.

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Neither way of comparing US and Soviet defense activities—dollar costs or ruble costs—can avoid distortions totally, but the picture they provide together gives a reliable indication of relative sizes of defense activities in the two countries. The true size of the Soviet resource commitment to defense relative to that of the United States is likely to be no less than the ratio shown by ruble cost comparisons and no larger than the ratio shown by dollar costs. 25X1

Analytical Approach

A ruble estimate of US defense activities measures what it would cost, in constant 1970 rubles, for the Soviets to produce and man a military force of the same size and with the same inventory as that of the United States and to operate that force as this country does. To maintain consistency with the dollar estimates, we have used the same definition of national security activities that we used in dollar estimates. 25X1

For practical reasons, in calculating the cost of US defense activities in rubles we did not use the direct costing methods we use in calculating Soviet activities in dollars.[2] Instead, we developed the substitute methodology described below.

Resource Categories. Ruble costs for US defense activities were calculated by major resource categories—research and development (R&D), procurement, construction, operation and maintenance (O&M), and personnel. Personnel costs were derived by a direct-costing methodology because Soviet pay and allowance data were available. The other four categories were derived by multiplying the US dollar resource accounts (called resource identification codes or RICs by the Department of Defense) by appropriate ruble-dollar ratios.

The Defense Department organizes US defense costs into more than 80 separate RICs. These RICs cover each kind of activity (for example, personnel, O&M, or procurement of tracked vehicles) and each service (including the guards, reserves, and defense agencies). An "account" such as aircraft procurement for the Air Force can include a diverse group of weapons and weapon components—all types of aircraft, air-to-air missiles, and major spare parts. 25X1

Ratios. Ruble-dollar ratios (developed originally to convert Soviet defense activities from dollars to rubles in those cases where we were not able to derive ruble values directly) were used to convert US dollar outlays to rubles. The original ratios applied to specific Soviet product groups—aircraft, electronics, missiles—that did not necessarily correspond to the US resource "accounts." To solve this problem we constructed new composite ruble-dollar ratios. These are weighted averages of the basic product group ratios, the weights representing the share of total costs of each product group in the particular resource account. 25X1

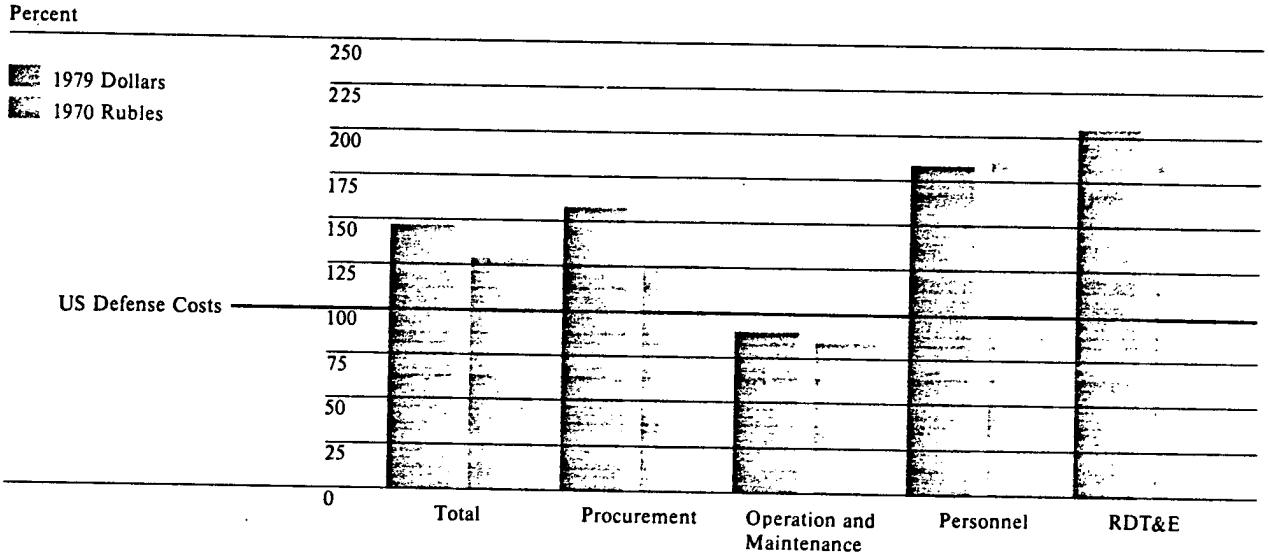
Procurement. Procurement presented a special problem. There are some items in the US weapons inventory—the F-15, for example—that the Soviet defense industry could produce only at extremely high cost because the quality or technology of the system is beyond present Soviet capabilities. To bring the ruble price for these items up to an appropriate level, we either adopted the ruble-dollar ratio appropriate to a Soviet weapon system of a later generation (which is higher) or increased the basic product group ratio by 20 percent. (The 20-percent differential is derived from a study of merchant ships.[3]) This adjustment was applied to an entire procurement account if there was in that account at least one weapon system in which the United States has such an advantage. Thus, this increase in ruble price tended to overstate the costs to produce, man, and operate the US force in rubles. 25X1 25X1

Personnel. Ruble personnel costs were calculated by a direct cost methodology. We distributed US servicemen into the four active services and into 21 ranks 25X1

[2] For the dollar estimate, we ask appropriate US manufacturers what it would cost them to produce a given Soviet weapon. For the ruble estimate, the practical limitations are obvious: direct costing would require us, for example, to ask a Soviet aircraft manufacturer the ruble cost of producing an F-15.

[3] A sample of US and Soviet merchant ships costed in both dollars and rubles found that the ruble-dollar ratio for US ships was approximately 20 percent higher than the ratio found for Soviet ships. The 20 percent is believed to reflect the more sophisticated technology embodied in US ships—which if produced under Soviet conditions would be relatively more expensive. The technology in merchant ships is fairly simple, however, and the 20-percent differential may be low when applied to advanced technologies. 25X1 25X1

Soviet Defense Costs as a Percent of US Defense Costs in 1979



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ranging from general to private. The manpower in each rank was multiplied by appropriate ruble rates of pay and ruble allowances for clothing, food, and medical care. Guards and reserves were turned into full-time equivalents based on the hours of paid drill and then multiplied by the average rates of pay for Soviet officers or enlisted men (we have no detailed rank structure for US reserve forces).

Ruble Cost Comparisons

Whether measured in dollars or in rubles, Soviet defense costs exceeded US spending by a considerable margin in the late 1970s (see graph). Total Soviet defense costs in rubles were 30 percent greater than those of the United States in 1979; measured in dollars they were 50 percent greater. That is, the Soviet "lead" in total defense costs measured in dollars is 1.15 times the lead measured in rubles.[4] This spread between the ruble and the dollar comparisons for defense is much narrower than similar calculations for other sectors of the economies of the two countries.

[4] This 1.15 is derived by dividing 1.5 by 1.3.

For instance, in the case of production of consumer durables, the US advantage measured in rubles is almost twice the US advantage measured in dollars.[5]

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The spread between costs measured in rubles and dollars is narrower for defense than for consumer durables because of the relatively greater degree of similarity between the mix of defense outlays for the two countries. In particular, the two armed forces operate with similar equipment-manpower ratios. The USSR has much more manpower, but it also acquires much more equipment each year than the United States does. The basic similarity in structure of the two forces is dictated more by military considerations—they are preparing to confront each other—than by economic considerations. With such a basic similarity, relative defense costs measured in dollars will differ little from those measured in rubles.

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[5] Franklyn Holzman, *International Security Review*, Spring 1980, p. 89.

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The difference between the dollar and the ruble estimates was greatest for procurement—Soviet costs exceeded US costs by 60 percent in dollars and 25 percent in rubles. It was least for personnel—Soviet costs exceeded US costs by 85 percent, whether calculated in dollars or in rubles. The larger range in procurement reflects the USSR's relative disadvantage in producing the high-quality, technologically advanced US equipment. The lack of difference in personnel costs means that differences in the distribution of the ranks between the two forces are offset by differences in the relative rates of pay among the ranks. Soviet resource costs measured in either dollars or rubles exceed comparable US costs for every resource category except operations and maintenance. Here, the United States pulls ahead, reflecting the high cost of US petroleum, oil, and lubricants, the large US civilian payroll in defense, and high maintenance costs.

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A Test of the Method

The assumptions made about the degree of the US lead in technology and quality were necessarily subjective. Therefore, a sensitivity test was made to analyze the effect of these assumptions on the total comparison. For this test the ruble-dollar ratios applied to the RDT&E accounts and selected procurement accounts were raised by another 25 percent.[6] Even with this large change, the ruble cost of Soviet defense activities was still 15 percent above that of the United States in 1979.

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[6] Not all procurement accounts were affected, since in 1979 the United States had a clear quality and technology advantage for only certain weapon systems. In those accounts that were affected, however, the procedure required that the additional US advantage be applied to all systems in that account even though this country is not necessarily superior in all of them. For instance, the whole procurement account for Air Force aircraft was raised—not just the ruble costs of F-15s but also those of simpler aircraft such as F-5s, A-10s, and C-130s.

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