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Estimating Soviet Military RDT&E Expenditures

A Technical Intelligence Report

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Estimating Soviet Military RDT&E Expenditures

A Technical Intelligence Report

This paper was prepared by
Office of Soviet Analysis, with data management
support from

SOVA. It was
coordinated with the Directorate of Operations, the
National Intelligence Officer for Science and
Technology, and the National Intelligence Officer
for Strategic Programs

Comments and queries are welcome.

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Estimating Soviet Military RDT&E Expenditures

Summary

Information available
as of 1 April 1986
was used in this report

We have developed and adopted a new method of estimating the Soviet commitment of human, material, and financial resources to military research, development, testing, and evaluation (RDT&E). We attached low confidence to our previous methods because they were based on a small number of intelligence reports on aggregate levels of RDT&E spending and the share devoted to the military. Our new method, the resource cost method, identifies, tracks, and costs specific RDT&E activities that support the Soviet military, encompassing the kinds of activities incorporated in the definition of US military RDT&E spending. The new method employs internal and external consistency checks and develops measures of uncertainty.

In the resource cost method, we compile evidence on all facilities that we have identified as undertaking military RDT&E. We include each facility's function, subordination, manpower, and size (floorspace). [

] we then estimate the cost of military RDT&E at each facility by resource expenditure category: wages; materials; equipment purchases; capital repair; capital construction; and travel, training, and other operating costs. The sum of these resource costs is our estimate of total Soviet military RDT&E expenditures. To take into account the numerous uncertainties in our data, we estimate a reasonable range of error for each resource cost factor and derive a confidence interval for our estimates.

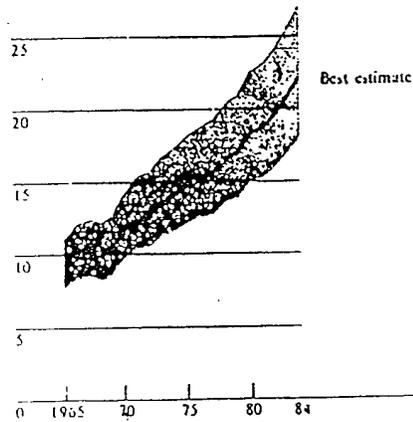
Our research using this new methodology indicates that the USSR maintains the largest military RDT&E establishment in the world. We estimate that:

- The Soviets have about 1,500 organizations performing some military RDT&E.
- About 3 million people—just over one-half of all Soviet RDT&E personnel—are engaged in military RDT&E.
- Soviet military RDT&E expenditures in 1984, measured in constant 1982 rubles, totaled about 22 billion rubles, and we have 90-percent confidence that the actual value is between 18 billion and 27 billion rubles (see figure 1). In 1984 military RDT&E accounted for about 20 percent of the ruble value of total Soviet defense spending and about 3 percent of gross national product.

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Figure 1
Estimated Soviet Military RDT&E
Expenditures, 1965-84

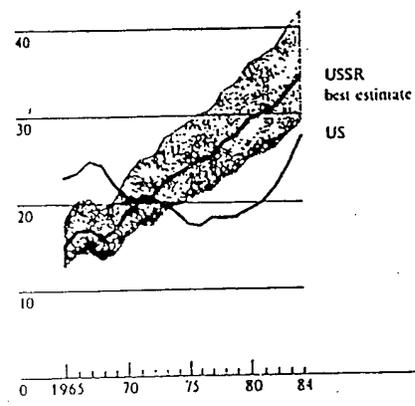
Billion 1982 rubles
30



The 90-percent confidence interval in the chart averages
+20% -15 percent of our best estimate for each year.

Figure 2
Estimated Dollar Value of Soviet Military
RDT&E and US RDT&E Outlays, 1965-84

Billion 1984 dollars
50



The 90-percent confidence interval in the chart averages
+20% -15 percent of our best estimate for each year.

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- For the 1965-84 period, growth in military RDT&E spending averaged about 4 1/2 percent, while growth in facilities and personnel averaged almost 3 1/2 percent.

We convert our ruble estimate to dollars (in constant 1984 prices) to reflect what it would cost the US RDT&E establishment to deliver a comparable flow of RDT&E services. We estimate the value of Soviet military RDT&E in 1984 exceeded comparable US spending by over 20 percent. We estimate that between 1975 and 1984 the Soviets expended the equivalent of about \$290 billion, or about 45 percent more than the US outlay of \$200 billion (see figure 2). These comparisons show the magnitude and trends of military RDT&E activities in the Soviet Union and the United States, but they do not represent the relative effectiveness of these efforts or the capabilities of the weapon systems developed by the two countries.

We have also estimated Soviet resources committed to total (military and civilian) RDT&E using a modified resource cost method based on adjusted Soviet published manpower statistics and cost factors and other information derived from our military RDT&E estimate. We estimate that in 1984 the Soviets had about 5 million people employed in total RDT&E and spent between 30 billion and 43 billion rubles. Thus we believe that Soviet military RDT&E accounts for just over one-half of total Soviet RDT&E employment and some 60 percent of expenditures. During the 1965-84 period, expenditures and manpower for total RDT&E grew at a slightly slower rate than outlays and manpower in the military RDT&E sector. Consequently, the share of RDT&E resources used in military RDT&E has been growing since 1970.

Our new estimates of Soviet military RDT&E expenditures differ in overall level and trend from our previous estimates, most recently cited in National Intelligence Estimate 11-12-83 (14 December 1983, *Prospects for Soviet Military Technology and Research and Development*). During the 1965-84 period, our new estimate indicates RDT&E expenditures grew at an average annual rate of about 4 1/2 percent, while the previous estimate's rate was almost 7 percent. Our previous estimate generally falls within the confidence interval of our new estimate. We think that our new method and estimates—using considerably more data and validated by a number of consistency checks—are more reliable than our previous estimates. The new estimate also indicates that military RDT&E accounts for about one-fifth of total Soviet defense spending rather than for our previous estimate of one-fourth.

The resource cost method uses extensive data on Soviet military RDT&E organizations and programs, but we are continuing research and data collection to refine and improve our estimates. We continue to seek additional information about these topics:

- Organizations undertaking military RDT&E—including their physical size, number of workers, and amount of military RDT&E performed—and how their activities have changed over time.
- Spending practices for military RDT&E by individual facilities and groups of organizations, in particular:
 - Wages and bonuses for various occupations.
 - Equipment investment and retirement.
 - Material and prototype costs.
- Productivity and efficiency of Soviet RDT&E organizations compared with the US RDT&E establishment, including each phase of RDT&E. This assessment would be used to improve the ruble-dollar ratios that we use to convert our expenditure estimate into dollars.

Moreover, we need to integrate new data on the impact of Gorbachev's reforms in RDT&E management and organization.

Although the overall levels and long-term trends they show are reasonable, we know that our assumptions result in artificially smooth and steady growth trends. We also may be underestimating spending levels for recent years because we are more likely to fail to identify facilities that have recently initiated or stepped up military RDT&E. Our confidence is greater in our ruble estimates than those in dollars because we use an approximate measure of comparative US and Soviet efficiencies in RDT&E to derive dollar estimates. We are investigating ways to remedy these shortcomings, and we plan to use the resource cost method to estimate RDT&E expenditures that support military missions, branches of service, and phases of RDT&E. These breakdowns will provide—among other benefits—additional consistency checks on the validity of the estimates.