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A Comparison of Soviet and US Defense Activities, 1971-80

An Intelligence Assessment

CIA HISTORICAL REVIEW PROGRAM
RELEASE AS SANITIZED

~~Secret~~

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A Comparison of Soviet and US Defense Activities, 1971-80

An Intelligence Assessment

*Information available as of 1 June 1981
has been used in the preparation of this report.*

This assessment was prepared by _____ " _____ Office of
Strategic Research. It was coordinated with the
National Intelligence Officers for Strategic Programs,
General Purpose Forces, and USSR/Eastern
Europe, and with the National Intelligence Officer at
Large. Comments and queries are welcome and
may be directed to the Chief

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Note: This publication is a classified supplement to an unclassified paper titled Soviet and US Defense Activities, 1971-80, issued in January 1981. The key judgments are essentially the same as those in the earlier paper.

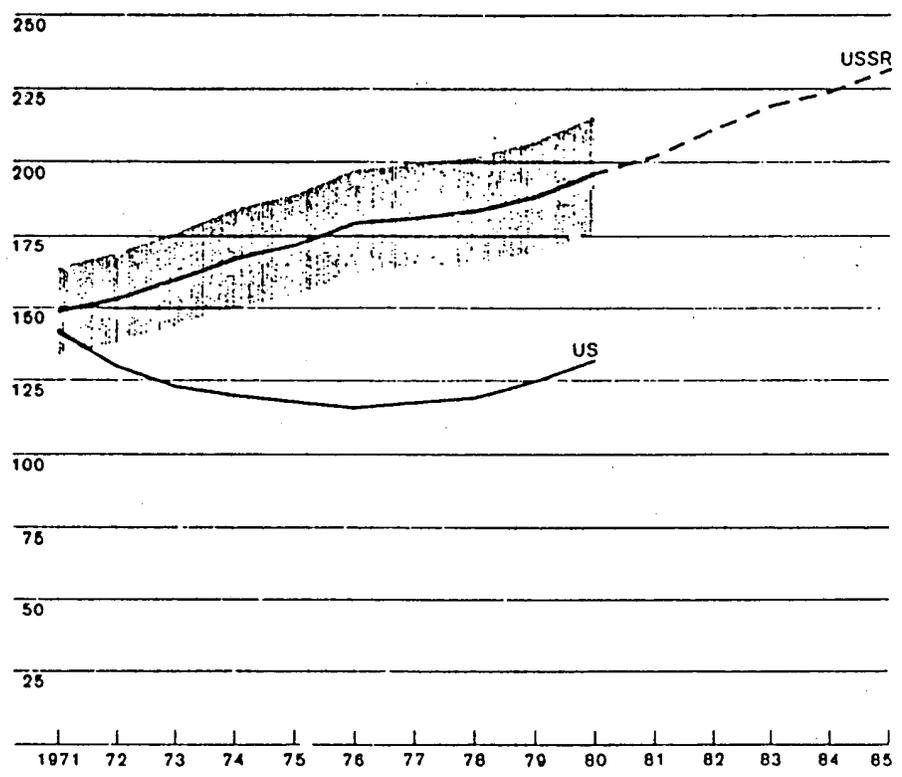
The reader is cautioned that the dollar cost estimates used in this comparison of Soviet and US defense activities must be viewed in terms of the limitations and the conceptual framework explained in the Introduction, pages 1-8.

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US and Soviet Defense Activities

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars



Note- The confidence band in the chart is calculated as ± 10 percent of our estimate for each year

A Comparison of Soviet and US Defense Activities, 1971-80

Overview

Total Defense Program For the 1971-80 period, the estimated cumulative dollar cost of Soviet defense activities (excluding pensions)—that is, the cost of reproducing them in the United States—exceeded cumulative US defense outlays by 40 percent. The trends in defense activities of the two countries were dissimilar for the first two-thirds of the period, but they have been more comparable since then.

- When expressed in constant 1980 US prices, the trend of the annual dollar costs of these Soviet activities was one of continuous growth throughout the period, averaging 3 percent per year. Growth was evident in nearly all the major elements of the Soviet defense establishment.
- In contrast, US outlays in constant dollars declined continuously from 1971 through 1976, at an annual average rate of almost 4 percent per year. Since then, however, most elements of the US defense establishment have grown. The average growth rate of total outlays since 1976 has been 3 percent per year.

As a result of these trends, the estimated annual dollar costs of Soviet defense activities exceeded comparable US outlays by a widening margin in every year from 1971 to 1976. For the rest of the period, the absolute difference stayed relatively constant. For 1980 the estimated Soviet dollar costs were \$195 billion—50 percent higher than total US outlays.

In sum, the USSR has committed substantially more resources (measured in terms of dollar costs) over the period than has the United States. This is true for total defense activities and for almost every component of that total as well. Further, the growth rates of these Soviet activities from 1971 to 1980 have generally exceeded the corresponding rates for similar US defense activities. Our estimates of selected individual weapon systems production and manpower, which are included in the paper, confirm this view.

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Resource Category Comparisons

Examining the estimated dollar costs of the resource categories—investment, operating, and research, development, testing, and evaluation—yields the same conclusions as examining the estimated total costs. The estimated Soviet dollar costs for each of these categories exceeded their US counterparts both for the 1971-80 period and for 1980. For investment and RDT&E, they were 75 and 50 percent higher, respectively, than corresponding US outlays for the period. Estimated Soviet dollar operating costs were 25 percent more.

The Soviet pattern for each resource category is one of continuous growth; the US pattern is one of continuous decline until the middle 1970s and growth slightly greater than the Soviet rate since then. We project the dollar costs of Soviet resources will continue to grow through 1985.

Military Mission Comparisons

The estimated dollar costs of Soviet and US defense activities can also be compared in terms of missions—strategic, general purpose, and support. The estimated dollar costs of Soviet strategic forces were three and a quarter times corresponding US outlays over the period; the estimated costs of Soviet general purpose forces were 60 percent larger. Only for support forces did US outlays exceed estimated Soviet dollar costs over the decade.

Each Soviet major mission grew throughout the decade, and we project this growth will continue through the mid-1980s. US outlays for each of the three major missions fell until the middle 1970s, but they have grown since then.

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A Comparison of Soviet and US Defense Activities, 1971-80

Introduction

Purpose

The goal of this study is to make aggregate comparisons of US and Soviet defense activities. Because the military forces of the two countries are composed of such diverse units, a simple comparison based on numbers alone is not very useful. Such a numerical comparison generally ignores differences in design and performance. For example, comparing US and Soviet tactical air forces using only order-of-battle data has limited meaning. A complete comparison of the two forces would require examining other activities (training, for instance) which are difficult to measure in physical terms

One way to summarize such diverse activities is to assign to each some suitable value that captures its relative worth and then calculate the weighted sum. For defense activities, a weighted value in common use is the cost of resources devoted to each activity. These costs can be calculated in any currency, but given the two countries involved in this comparison, dollars seem the most logical choice.¹ Dollars capture both the quantity and quality dimensions of the forces we are trying to measure.

Therefore, in this paper we measure the annual flow of resources devoted to defense in terms of dollars. Specifically, this paper presents estimates of what it would cost, using prevailing US prices and wages, to produce and man a military force of the same size and with the same weapons inventory as that of the USSR and to operate that force as the Soviets do. The principal effects of inflation have been removed from all costs and outlays by displaying the defense activities of each country in constant dollar terms

In addition, this paper provides information on US and Soviet order of battle, production, and manpower to supplement the dollar estimates. This information, the additional detail in the cost estimates, and more recent data distinguish it from the unclassified dollar cost comparisons released in January of 1981

¹ We also make these comparisons in rubles. See page 8

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Definitions

The following US activities and their Soviet counterparts are included in the cost comparisons in this report:

- National Security programs funded by the Department of Defense.
- Defense-related nuclear programs funded by the Department of Energy.
- Selective Service activities.
- The defense-related activities of the Coast Guard.

The following are excluded from the comparisons:

- Military retirement pay, which reflects the cost of past rather than current military activities.
- Soviet space activities that in the United States would be funded by the National Aeronautics and Space Administration.
- Military assistance (except for the pay and allowance of uniformed personnel) and foreign military sales.
- Civil defense programs.
- Veterans' programs.
- Soviet Internal Security Troops, who perform police functions, and Soviet Railroad and Construction Troops, who are not directly involved in national security matters.

The physical quantity data for weapon systems contained in this paper are of two types: delivery data, which refer to the quantities of selected weapon systems procured by the end of the calendar year, and order-of-battle data, which refer to the existing inventory of weapon systems in active units at a given time (the middle of the calendar year for the Soviet Union and the end of the fiscal year for the United States).¹

Methodology

The dollar costs of all Soviet defense activities except RDT&E are developed by identifying and listing Soviet forces and their support apparatuses. Our model contains a description of about 1,100 distinct defense components—for example, surface ships, ground force divisions, and air regiments—and our latest estimates of the order of battle, manning, equipment inventories, and new equipment purchases for those components.

To detailed estimates of physical resources, we apply appropriate US prices and wage rates. This procedure is complex, but in general we do the following:

- For procurement, we estimate what it would cost to build equivalent items in the United States at prevailing dollar prices for materials and labor (including overhead and profit), using US production technology and

¹ In 1976 the fiscal year was changed from a July-June timespan to October-September. Therefore, the end of the fiscal year is 30 June for the 1971-76 period and 30 September thereafter.

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assuming the necessary plants and supplies would be available. Thus, the dollar costs are based on US manufacturing efficiencies.

- For operation and maintenance, we apply dollar prices to estimates of the labor, materials, spare parts, overhead, and utilities required to operate and maintain equipment the way the Soviets do.
- For military personnel, we first estimate the military rank of the person in the United States who would be used to perform the functions of each Soviet billet and then apply the appropriate US pay and allowance rates to that job.

The results are then aggregated by military mission and by resource category

The costs of duplicating the Soviet RDT&E effort in the United States are estimated in the aggregate by converting an estimate of the ruble costs into US dollars.

US dollar cost data are in terms of outlays derived from the *Five-Year Defense Program* (FYDP) issued by the Department of Defense in January 1981 and the US budget for fiscal year 1982. The US data have been converted from fiscal to calendar year terms, and defense-related activities of the Department of Energy, the Coast Guard, and the Selective Service have been added to improve comparison with Soviet programs. The outlays for each year have been converted to their equivalent in 1980 dollars using detailed price indexes for each type of military expenditure. The US figures in this report, therefore, do not match actual budget authorizations or appropriations. US order-of-battle data were also derived from the FYDP; US production data were provided directly by the Department of Defense.

The cost data presented here are expressed in constant dollars so that trends in cost estimates will reflect real changes in military forces and activities and not the effects of inflation. Prices used in this paper represent the purchasing power of the dollar for defense goods and services at midyear 1980

Comparisons With Previous Estimates

Estimates of the dollar cost of Soviet defense activities are revised each year to take into account new information and new assessments of the size, composition, and technical characteristics of the Soviet forces and activities as well as improvements in costing methodologies. The US data used for comparative purposes are similarly revised each year to take into account changes in the FYDP and the *Defense Planning and Programming*

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*Categories (DPPC).*¹ Both the Soviet and US price bases are updated annually to reflect the most recent constant price index information available.

This year's estimate of the dollar cost of Soviet defense activities for 1979 is about 15 percent higher than the estimate for that year in last year's classified report. Two-thirds of that increase is the result of changing from a 1979 to a 1980 price base. About half of the remaining one-third represents the effects of our improved estimate of construction activities. Although our cost factors for construction remained about the same, we now have a better understanding of the extent of construction work at military facilities built during the period. The remainder of the increase (about \$3 billion in 1979) results from higher estimates for procurement (aircraft, ships, and missiles) and operation and maintenance (primarily facility maintenance).

There are some differences between the estimates contained in this paper and those contained in the unclassified dollar cost comparison released in January 1981. The most significant of these changes are in US outlays. In the January paper we used estimated outlays for fiscal years 1980 and 1981. Total actual outlays for 1980 are almost \$6 billion more (in current dollars); the revised estimate for 1981 is \$15 billion more. In addition, the unclassified report used a 1979 price base. This paper, as already noted, is in 1980 dollars.

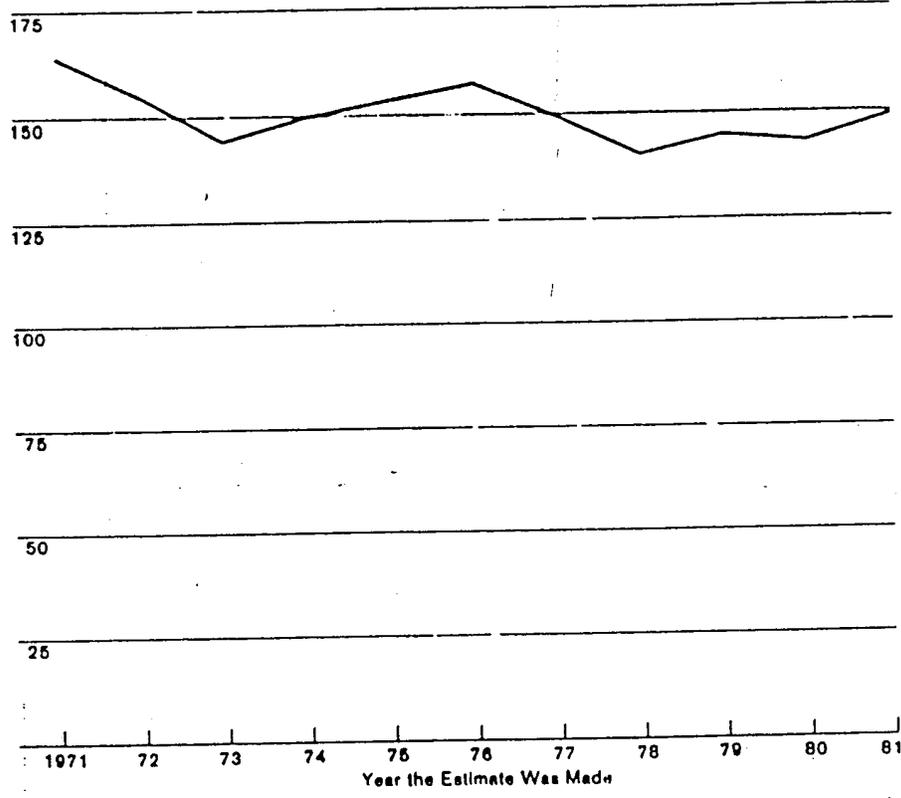
Confidence in the Dollar Estimates

An assessment of how well we estimate the dollar costs of Soviet defense activities must necessarily be subjective, but some statistical techniques are applicable and we do use them to analyze this problem. Our estimates could be erroneous if we incorrectly estimated quantities, qualities, or costs or if we included the wrong set of activities in our definition. One way of measuring the magnitude of these errors is to concentrate on one year (1971, for example) and note how our estimates for that year changed over time. (Each year we make new estimates for every year covered by our data base, using any better information or improved methodologies available.) Presumably, our estimates for any one year would improve as time passes because we should know more about the quantities and characteristics of the weapon systems and facilities produced that year.

¹ The use of the DPPC document is explained on page 21

Estimates of the Dollar Costs of Soviet Defense Activities in 1971

Billion 1980 dollars



This figure shows how our estimates for a single year, 1971, have changed over the past decade. The relatively small variations, in spite of substantial changes in our knowledge of the details of Soviet activities and improved cost methodologies, indicate our estimating procedures are robust and worthy of high confidence.

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If our estimates changed greatly every year—indicating that different analysts, improved data, and new methodologies produce very different results—we could have little confidence in our estimates, especially those for a more recent year. That would be an indication that, even over time, we are not able to discover the "true" values. On the other hand, if the estimates fluctuate only for a few years after we first make them and then by only a small degree, we could feel confident our estimates were substantially correct. Statisticians refer to this desirable property as "robustness." A robust estimate is one that would not change appreciably even if all input errors were eliminated.

The graph shows our total estimate clearly follows the latter pattern. All data have been converted to constant 1980 dollars to eliminate the effects of inflation. We have performed the same test on all the major resource categories and reached substantially the same conclusion—the estimates do show this property of robustness.⁴

Using this and other statistical techniques leads us to believe that the dollar cost estimate for total defense activities is unlikely to be in error by more than 10 percent for each year from 1971 to 1980.⁵ The margin of error can be much wider for some individual items and categories. We are more confident in our estimates for the higher levels of aggregation than in those for the lower levels. At the lower levels, our confidence varies from category to category. Further, we are generally more confident in data that represent trends rather than absolute levels, especially if only a single year is involved.

The table on the next page summarizes the levels of confidence we have in each of the major resource categories arranged in descending order of confidence.

⁴ Construction was the sole exception. Our estimates for construction this year are substantially higher than every previous estimate as recent research allowed us to correct longstanding deficiencies in our data base.

⁵ We are most confident in our estimates for the middle years of the 1970s, because those estimates are based on the most data. Our confidence is somewhat less for the current year and the early 1970s. We are even less confident in the projections we make for the 1981-85 period and the historical data for the 1950s presented on page 14

**Levels of Confidence
in Estimates**

	Percent of 1971-80 Cumulative Dollar Estimate	Confidence
Personnel	30	Very high
Procurement	25	High
O&M	25	Substantial—improved over the last few years, particularly for ships and aircraft
Construction	5	Substantial—improved this year
RDT&E	15	Low—derived using a less certain methodology

All the following data, whether displayed in graphics or tables, are presented as point estimates rather than ranges (or bands). While a range would illustrate the level of confidence we have in each individual estimate more clearly, we know that our users find the point estimates more helpful. The reader should remember, however, that there is an implicit confidence band around each one of these estimates and that the band is generally wider the greater the level of detail.

**Limitations of Dollar
Cost Estimates**

As we have noted, dollar costs can be used to compare the overall magnitudes and trends of the defense activities of the two countries in terms of resource inputs. They have an important advantage over many other input measures—such as the number and types of weapons—in that they permit aggregative comparisons. Dollar cost valuations, for example, take into account differences in the technical characteristics of military hardware, the number and mix of weapons procured, manpower strengths, and the operating and training levels of the forces.

But dollar valuations still measure input rather than output and should not be used as a measure of the relative effectiveness of US and Soviet forces. Assessments of capability must take into account military doctrine and battle scenarios; the tactical proficiency, readiness, and morale of forces; the numbers and effectiveness of weapons; logistic factors; and a host of other considerations. Thus, dollar valuations are instructive as general indicators of changes in the military emphasis of a nation's forces over time. They are not sufficient to portray the comparative capabilities of forces. (The order-of-battle data provided with the dollar estimates will, however, give the reader some additional insight into the relative size and composition of the two forces.)

Dollar costs do not measure actual Soviet defense spending, the impact of defense on the economy, or the Soviet perception of defense activities. These issues are more appropriately analyzed with ruble expenditure estimates.⁴ Dollar costs do not measure relative manufacturing efficiencies in the defense industries. Estimated Soviet dollar costs are estimates of what it would cost US manufacturers to produce Soviet weapons. Thus, the dollar costs for both countries are based on US efficiencies.

Finally, cumulative dollar estimates for any single type of weapon do not represent stock value estimates, which would take into account depreciation, loss, retirement, and previously existing inventories.

Ruble Comparisons

In addition to our dollar estimates, we make aggregate comparisons based on rubles. The procedure requires putting ruble prices on all US defense activities. We obviously cannot do this directly, but we do have a detailed substitute methodology.

Our general procedure is as follows: Pay and allowances are costed directly by dividing each service into 21 ranks from general to private. The manpower in each rank is multiplied by ruble rates of pay, travel, clothing, and so forth. RDT&E, procurement, construction, and operations and maintenance are calculated using ruble-dollar ratios. The dollar value of each of about 80 separate resource accounts is multiplied by the appropriate ruble-dollar ratio. These ruble-dollar ratios themselves are each value weighted, reflecting the importance of different subcomponents of that particular account. The ratios also take into account those areas where we judge US weapons have a significant technological or quality advantage.

The results of all these calculations show that aggregate Soviet defense costs exceeded estimated US ruble costs by 30 percent in 1980.

⁴ The latest ruble expenditure estimates will be presented in an NFAC Intelligence Assessment, *Soviet Spending for Defense: Trends Since 1951 and Prospects for the 1980s*, which will be published in November 1981.

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Total Defense Costs

For the 1971-80 period the estimated dollar costs of all Soviet defense activities (less pensions) exceeded comparable US outlays by 40 percent. The major trends in the defense activities of the two countries were quite different.

- The estimated dollar costs of Soviet defense activities grew continuously throughout the period at an average annual rate of 3 percent with growth in nearly all major missions and resource categories of the defense establishment.
- Annual US outlays fell from 1971 until 1976, but from then until the end of the period they grew at an increasing rate. The growth was particularly fast in procurement; on the other hand, US personnel costs continued to fall until 1979.

As a consequence of these trends, the estimated dollar costs of Soviet defense activities, which were approximately equal to US outlays in 1971, were 50 percent higher in 1980. This differential has remained relatively constant since the mid-1970s.

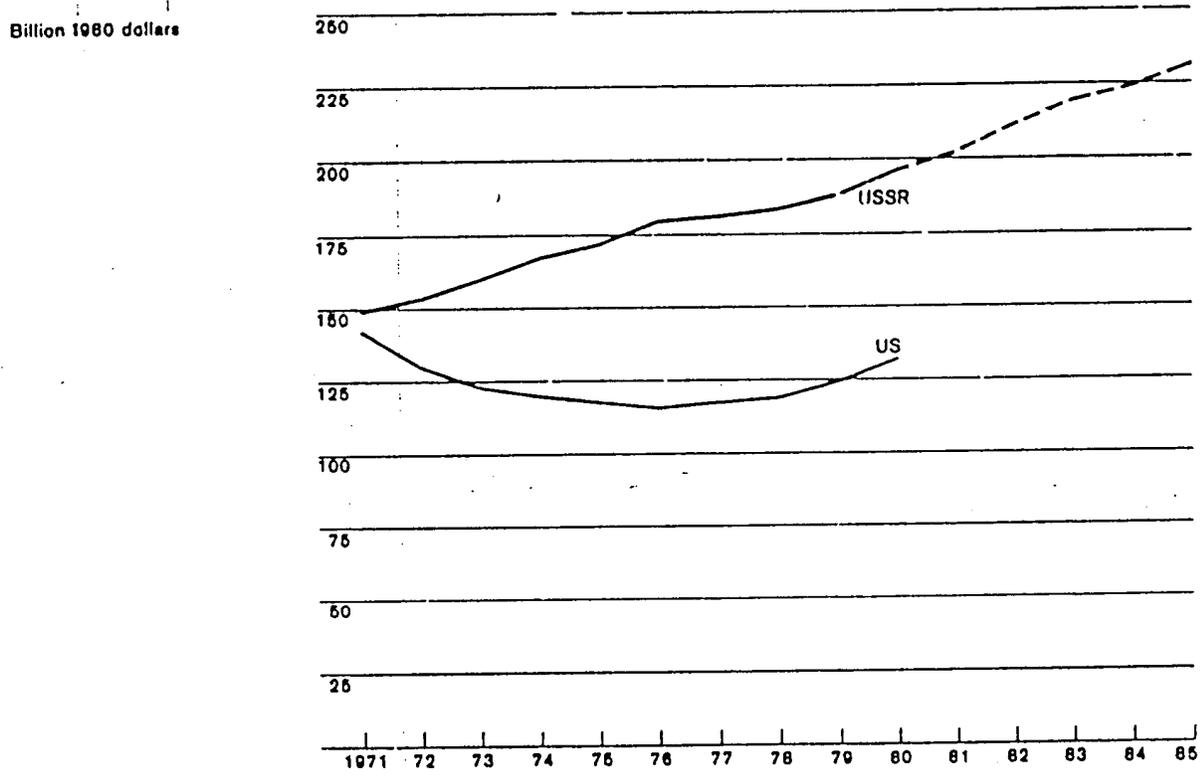
The available evidence suggests that Soviet dollar costs will continue to grow for the next five years at approximately the same rate as they have in the past. This projection, although less certain than our estimate of current defense costs, is based on information about defense programs that are planned or under way.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative	Average Annual Growth Rate (%)
<i>Billion 1980 Dollars</i>												
US	142.0	130.0	123.0	119.9	117.7	115.6	117.4	118.9	124.5	131.9	1,240.9	-0.7
USSR	148.7	153.1	159.7	166.9	171.5	179.2	180.8	183.2	188.0	196.0	1,727.0	3.1

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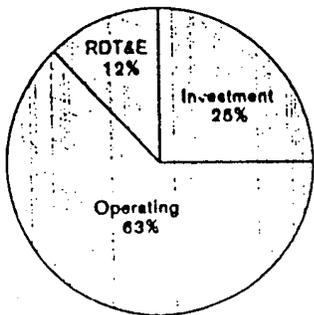
US and Soviet Defense Activities

A comparison of US outlays with estimated dollar costs of Soviet activities

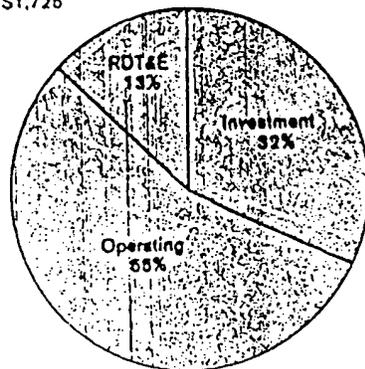


Cumulative, 1971-80

US
Total: \$1,240



USSR
Total: \$1,725



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Other Dollar Aggregations

Our dollar cost methodology has been criticized by some because we apply relatively high US pay rates and allowances to the large Soviet conscript force.¹ Those critics contend that this makes the total Soviet defense establishment look comparatively larger than it really is. The application of US pay rates to Soviet forces is a logically correct procedure for the comparative sizing exercise we are engaged in—each part of the estimate must be calculated according to the same set of rules—but even if uniformed military personnel costs are totally excluded from both sides, the estimated dollar costs of Soviet defense activities exceeded US outlays by 30 percent over the period and by 40 percent in 1980.

Aggregate comparisons including military pensions are not highlighted in this paper because pensions are considered to be the cost of past rather than current defense activities. Nevertheless, we do make detailed estimates of Soviet retirement pay. Our estimate of the dollar cost of Soviet retirement is about \$9 billion for 1980; US outlays for retirement were approximately \$13 billion. US costs are higher despite the currently smaller US manpower force for two reasons: (1) many enlisted men in the US receive retirement benefits; very few do in the USSR, and (2) Soviet officers typically serve longer than their US counterparts before retiring. In fact, because of the demographic history of the Soviet military, there were few military retirees before the 1970s. If we add the dollar cost of retirement to both sides, the estimated total dollar costs of Soviet defense activities would be about one-third more than US outlays over the period and 40 percent more in 1980.

¹ What is meant by "relatively high" is that Soviet soldiers are paid low wages compared to the average ruble wage in the USSR, whereas US soldiers are paid dollar wages closer to the US average.

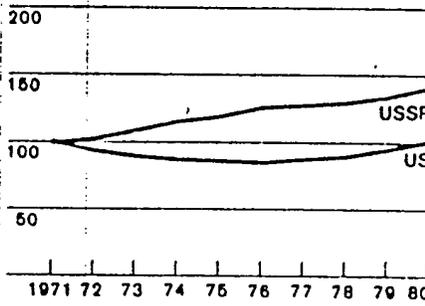
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative	Average Annual Growth Rate (%)
<i>Billion 1980 dollars</i>												
Less personnel												
US	99.3	92.4	88.2	85.8	84.7	83.5	86.1	88.2	93.6	100.3	901.9	0.2
USSR	97.1	100.1	106.1	112.7	116.4	123.3	124.9	126.8	131.1	138.3	1,176.9	4.0
Plus pensions												
US	150.0	138.6	132.2	129.6	127.9	126.4	128.8	130.7	136.7	144.6	1,345.3	-0.3
USSR	154.4	159.1	166.1	173.7	178.6	186.7	188.7	191.4	196.5	204.9	1,800.3	3.2
Less RDT&E												
US	126.0	113.9	107.3	105.0	103.7	101.9	102.9	104.5	109.9	116.2	1,091.2	-0.8
USSR	133.2	136.3	141.4	146.7	149.4	155.1	154.9	155.9	158.7	164.8	1,496.4	2.4

US and Soviet Defense Activities

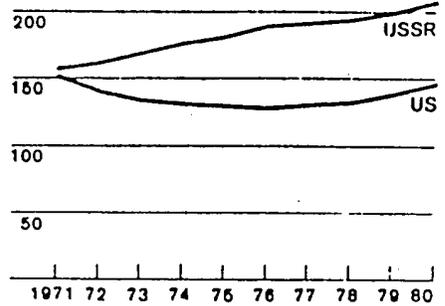
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars

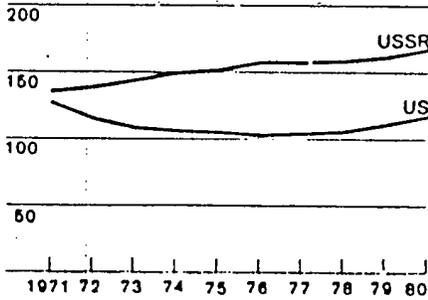
Total Less Personnel



Total Plus Retired Pay



Total Less RDT&E



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Finally, if RDT&E cost estimates (which are less reliable than those for other activities) are excluded from both sides, the estimated Soviet dollar cost exceeds the US total by 35 percent for the period and by 40 percent in 1980.

A Historical Perspective

Although the comparisons in this paper are focused on the 1971-80 period, our data base extends back to 1951. This section takes a brief look at the entire 30-year time span.

We are less confident in our estimates for the 1960s than we are in those for the 1970s and even less confident in those for the 1950s. The production, order of battle, and prices on which our dollar cost estimates depend are particularly uncertain for the 1950s. Because the present US accounting system did not begin until 1962, we have had to estimate the US costs as well for the earlier years. The process of converting these data into 1980 constant prices introduces further uncertainty into both the Soviet and the US estimates.

Over the 30-year period, US outlays for defense were about 4.2 trillion dollars; the estimated dollar costs of Soviet defense activities were 4.0 trillion dollars. Estimated Soviet dollar costs displayed a generally downward trend from 1951 until 1960. This downward trend is caused primarily by falling levels of personnel, a relatively expensive resource in dollar cost terms.¹ Since 1960, total costs have continually grown. Over the whole 30-year period, the average annual growth of estimated Soviet dollar costs was approximately 2 percent per year.

US outlays for defense displayed a rather erratic pattern with little or no growth for the 30 years as a whole. There were three major peaks, each driven by procurement costs—the first was associated with the Korean war, the second with the strategic arms buildup in the early 1960s, and the third, in 1968-69, with the Vietnam war.

US defense outlays thus seem to be in response to external international crises—real (the Korean and Vietnam wars) or perceived (the missile "gap"). Without these crises, US outlays might have been relatively constant over the whole 30 years. In contrast, the estimated dollar costs of Soviet defense activities seem to have their own growth momentum—at least since the early 1960s.

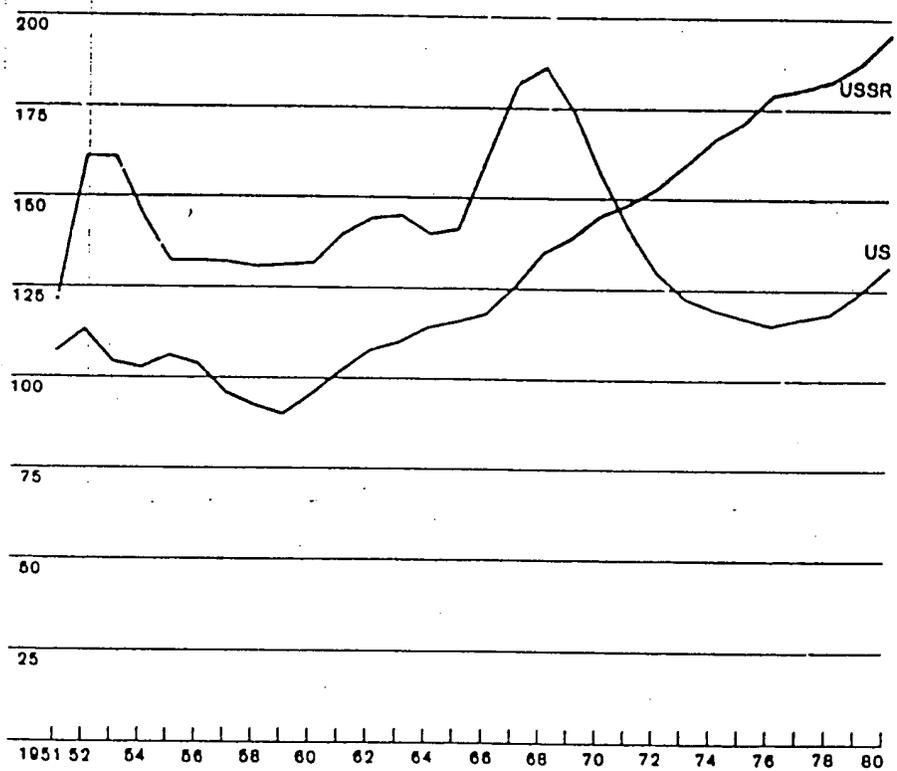
¹ If the estimates are made in rubles, total costs are relatively constant during the 1950s.

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US and Soviet Defense Activities

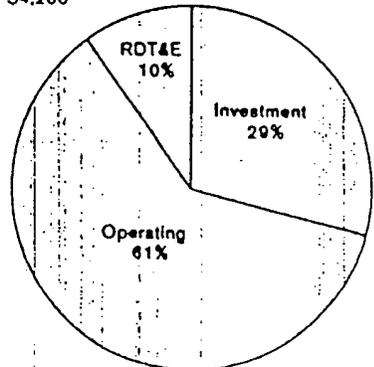
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars

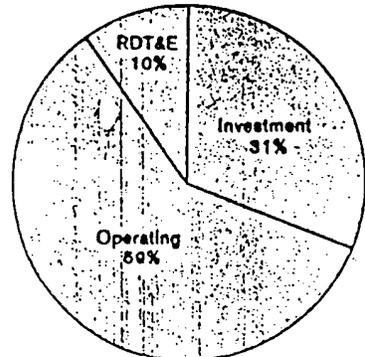


Cumulative, 1951-80

US
Total: \$4,200



USSR
Total: \$4,000



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Soviet Defense Activities by Geographic Regions of Concern

We currently estimate that in 1971 the total dollar cost of Soviet defense activities was 150 billion dollars and that the Soviets had 3.9 million men in their armed forces. By 1980, costs had increased to nearly 200 billion dollars and manpower stood at 4.3 million.

The growth in total costs, averaging 3 percent per year, was in part a response to what the Soviets perceive as the two greatest threats to their national security—the military forces of the NATO countries and those of the People's Republic of China.

Soviet Forces Opposite NATO

Soviet forces opposing those of the NATO countries consist of the following:

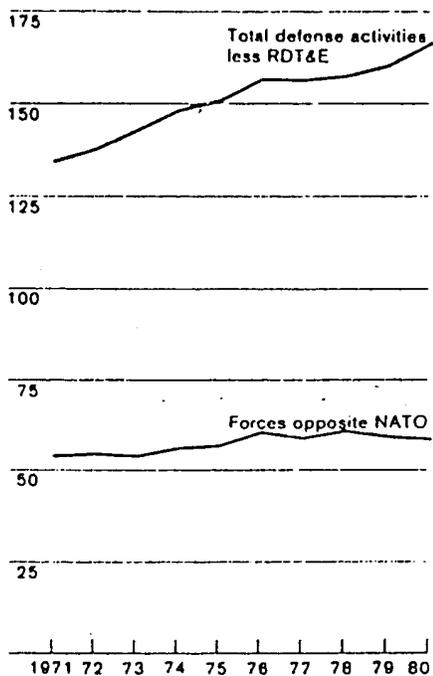
- Ground and Frontal Aviation units in the NATO Guidelines Area (NGA—East Germany, Poland, and Czechoslovakia).
- All Soviet ground forces in Hungary and the Leningrad, Baltic, Belorussian, Carpathian, Kiev, Odessa, North Caucasus, and Transcaucasus Military Districts.
- All Soviet aircraft assigned to Frontal Aviation units located in Hungary and the eight western military districts.
- All medium bombers and transports assigned to the Northwest and Southwest Bomber Commands.
- All transport aircraft assigned to Military Transport Aviation Central units located in the eight western military districts.
- All air defense aircraft, SAM sites, and radiotechnical units located in the eight western military districts.
- All MR/IRBM launchers that can strike targets in NATO.
- All general purpose and peripheral attack naval units assigned to the three European fleets.
- All Border Guards units located in the eight western military districts

In 1971, the estimated dollar cost of these Soviet forces was \$50 billion—\$15 billion for those in the NGA and more than \$35 billion for those in Hungary and the western USSR.* These forces accounted for one-third of the total estimated Soviet cost and about 40 percent of the military manpower. By 1980, the forces in these areas had over 1.6 million men and their dollar costs had risen to nearly \$57 billion—about 30 percent of the total. The growth in these costs amounted to about 1 percent per year over the 10-year period.

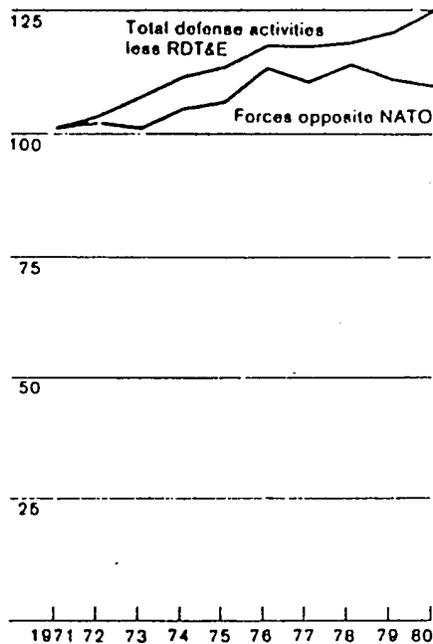
* Estimates given for geographic areas do not include outlays for RDT&E or for command and support functions at either the service or national level. No attempt has been made to allocate these costs geographically.

Estimated Dollar Costs of Soviet Forces Opposite NATO

Dollar Cost
Billion 1980 dollars



Comparative Growth Rates
1971=100



**Soviet Forces
Opposite China**

Soviet units and weapons targeted against China included in this estimate are:

- All ground forces units in the Siberian, Central Asian, Transbaikal, and Far East Military Districts and Mongolia, less one division on Kamchatka, two on Sakhalin, and miscellaneous units located in the far northeast.
- Frontal Aviation aircraft in the four eastern military districts and in Mongolia.
- All medium bombers and associated transport aircraft stationed at Belaya, Spassk-Dal'niy, Ussuriysk, and Zavitinsk NE airfields.
- All transport aircraft assigned to Military Transport Aviation units located in the Transbaikal, Siberian, and Central Asian Military Districts.
- All Air Defense aircraft, SAM sites, and radiotechnical units in the Novosibirsk and Tashkent Air Defense Districts that are located within 300 nautical miles of the China border.
- All SS-20 missile launchers located along the Sino-Soviet border, plus SS-11 Mod 1 and Mod 2/3 launchers at Kostroma, Kozel'sk, Perm', Teykovo, and Yedrovo that are oriented toward China.
- All Z-conversion and G-class peripheral attack submarines in the Pacific Fleet.
- All Border Guard units along the Sino-Soviet border, plus those opposite Mongolia.

We estimate that in 1971 the Soviet dollar cost of these forces was \$13 billion, or about 9 percent of the total. By 1980, costs for forces opposite China amounted to \$20 billion, or more than 10 percent of the total. The growth rate was about 6 percent per year over the period. The number of men associated with units along the border increased from slightly over 400,000 in 1971 to about 575,000 in 1980.

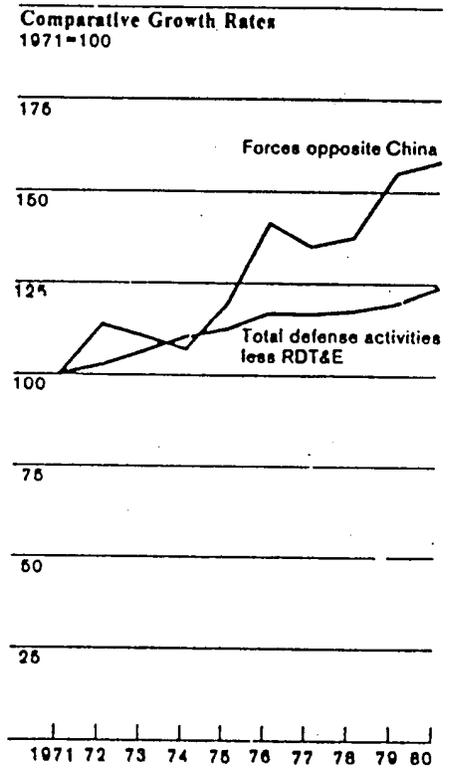
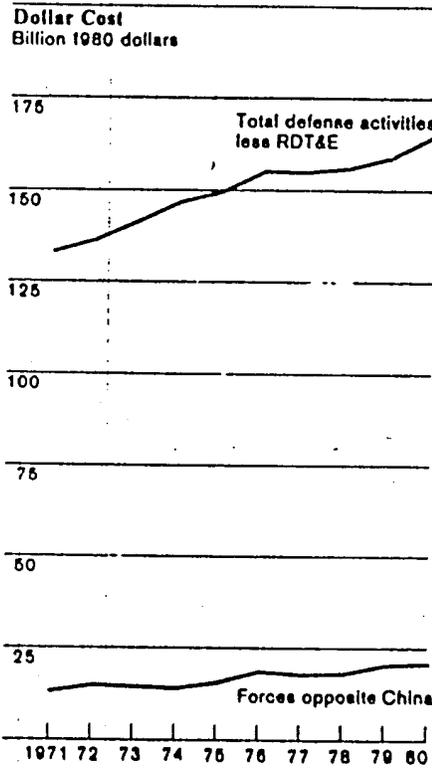
**Soviet Forces in
Afghanistan**

We have also calculated the costs of the Soviet military operation in Afghanistan. These costs amounted to \$2.7 billion in 1980. They include the cost of pay and allowances for the estimated 115,000 Soviet troops committed to operations in Afghanistan, the costs of operation and maintenance of equipment, and the costs of military construction.¹⁰ They do not include the value of weapons and supplies for the Afghan military, of Soviet equipment damaged or destroyed, or of ammunition expended

About \$1.7 billion, or two-thirds of the total, are incremental costs directly associated with the occupation of Afghanistan. The remainder would have been incurred in any case.

¹⁰ Forces committed to Afghanistan include all Soviet forces inside Afghanistan as well as those in adjacent military districts within the USSR which are supporting operations in the country or appear to be at a higher state of readiness as a result of the invasion.

Estimated Dollar Costs of Soviet Forces Opposite China



Resource Comparisons

The comparison of Soviet and US defense activities presented in this section separates defense costs into the following resource categories:

- Investment costs—the dollar costs of activities to replace, modernize, or expand forces through the procurement of equipment, including major spare parts, and the construction of facilities.
- Operating costs—uniformed personnel costs and other costs associated with operating and maintaining equipment and facilities. These are directly related to the size of the forces and their level of activity.
- RDT&E costs—the costs of exploring new technology, developing new weapon systems, and improving existing systems.

Estimated Dollar Costs of Soviet Resource Outlays as a Percent of Comparable US Outlays

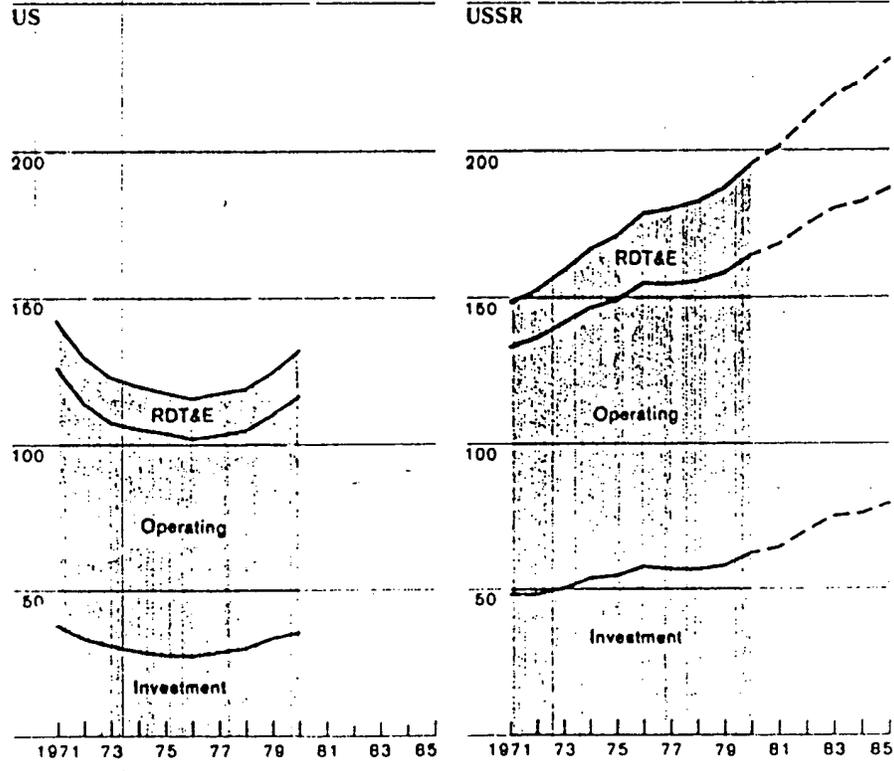
	1980	1971-80 Total
Investment	180	175
Operating	125	120
RDT&E	200	155

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative	Average Annual Growth Rate (%)
<i>Billion 1980 Dollars</i>												
US												
Investment	37.6	33.1	30.7	28.7	27.5	27.2	28.5	29.8	33.3	35.1	311.6	-0.5
Operating	88.4	80.8	76.6	76.3	76.1	74.6	74.4	74.7	76.6	81.1	779.6	-0.9
RDT&E	16.0	16.0	15.7	14.9	14.0	13.7	14.5	14.5	14.6	15.7	149.7	-0.1
Total	142.0	130.0	123.0	119.9	117.7	115.6	117.4	118.9	124.5	131.9	1,240.9	-0.7
USSR												
Investment	48.4	48.3	50.5	54.0	54.9	57.9	57.1	56.9	58.2	62.6	548.9	3.0
Operating	84.8	88.0	90.8	92.7	94.5	97.2	97.8	99.0	100.5	102.1	947.5	2.1
RDT&E	15.6	16.7	18.3	20.2	22.1	24.1	25.9	27.3	29.2	31.3	230.6	8.0
Total	148.7	153.1	159.7	166.9	171.5	179.2	180.8	183.2	188.0	196.0	1,727.0	3.1

Military Resources

A comparison of US outlays with estimated dollar costs of Soviet activities

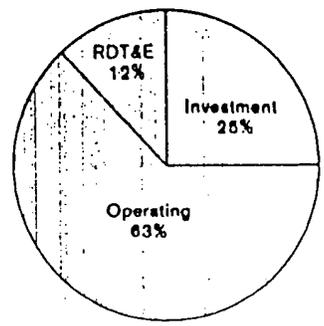
Billion 1980 dollars



Cumulative, 1971-80

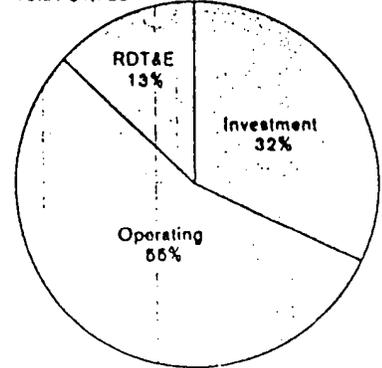
US

Total: \$1,240



USSR

Total: \$1,725



~~Secret~~

Investment Costs

Investment costs can be divided into two subtotals:

- Procurement—the estimated cost of procuring weapon systems and support equipment, including major spare parts.
- Construction—the estimated cost of constructing the required defense facilities.

For the 1971-80 period, the estimated cumulative dollar costs of Soviet investment were 75 percent greater than US investment. Cumulative procurement estimates were 65 percent greater and cumulative construction estimates were three times as great.

The trends in investment costs for the two countries have been dissimilar. Except for a brief plateau in the middle 1970s, Soviet investment costs have grown at a steady rate. US investment fell by 30 percent from 1971 until 1976 but had recovered most of the loss by the end of the period.

Our estimates of Soviet procurement grew by 40 percent over the entire period. Missile procurement doubled; ship procurement grew by 45 percent; and aircraft procurement increased 25 percent. Procurement of land armaments showed no significant change. We show two major procurement cycles for Soviet weapons—one in the middle 1970s and another in the early 1980s. The first was caused primarily by the procurement of strategic weapons; the second by fourth-generation tactical aircraft.

US procurement had almost regained its 1971 level by 1980. Tactical aircraft and land armaments led the growth that took place in US procurement after 1976.

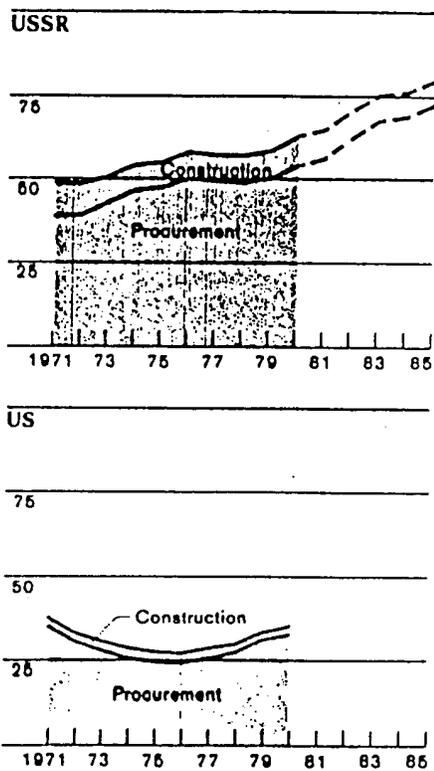
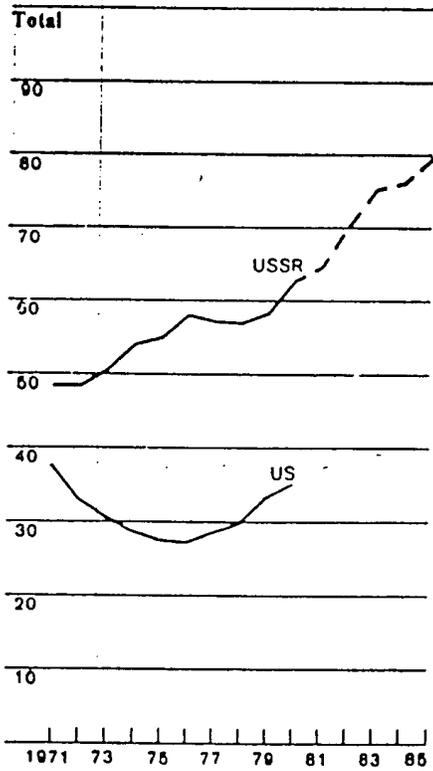
As noted in the introduction, our estimates for Soviet construction costs have been revised. Our new estimates, in which we have substantially more confidence, are approximately 50 percent higher than last year's estimates for construction.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
Procurement	34.9	30.4	27.9	25.8	24.3	24.0	25.5	27.2	30.8	32.5	283.4
Construction	2.7	2.7	2.8	2.9	3.2	3.3	3.0	2.5	2.4	2.6	28.1
Total	37.6	33.1	30.7	28.7	27.5	27.2	28.5	29.8	33.3	35.1	311.6
USSR											
Procurement	38.6	39.0	42.6	46.2	47.2	49.7	49.1	48.5	49.9	53.6	464.4
Construction	9.7	9.3	8.0	7.8	7.7	8.2	8.0	8.4	8.3	9.0	84.5
Total	48.4	48.3	50.5	54.0	54.9	57.9	57.1	56.9	58.2	62.6	548.9

Military Investment

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars



Operating Costs

Operating costs can be divided into two subtotals:

- Uniformed personnel costs, which include food, clothing, travel, and other pay and allowances for active and reserve military manpower. (Retirement pay is not included.)
- O&M costs, which include all costs of operating and maintaining military equipment and facilities.

Over the period, estimated Soviet costs of operating the forces were 20 percent more than corresponding US outlays. Personnel costs were two-thirds more; O&M costs were slightly less.

The estimated dollar costs of Soviet operating activities grew at a relatively steady 2 percent over the period. O&M costs grew faster than personnel costs. The largest O&M increase (over half the total) was in the support mission; the largest personnel cost increase was in land forces.

US operating costs fell until 1977 but have grown 3 percent a year since then. US O&M costs have grown since 1973 and at a particularly rapid rate in the last year. Personnel costs, however, fell until 1978 and showed a larger percentage decrease over the whole period than any other resource category.

The tactical air and naval missions accounted for most of the US O&M increase that occurred after the early 1970s. Most of the personnel cost decrease was in the support mission

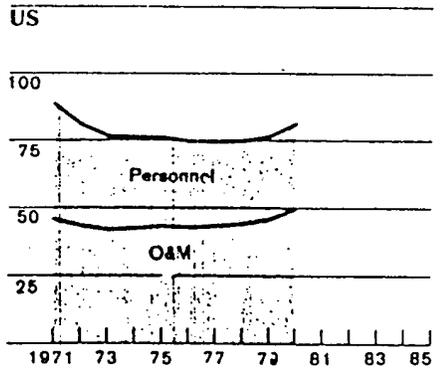
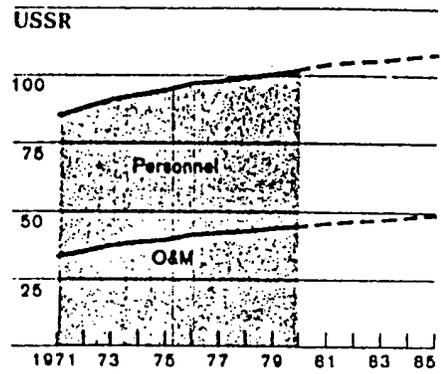
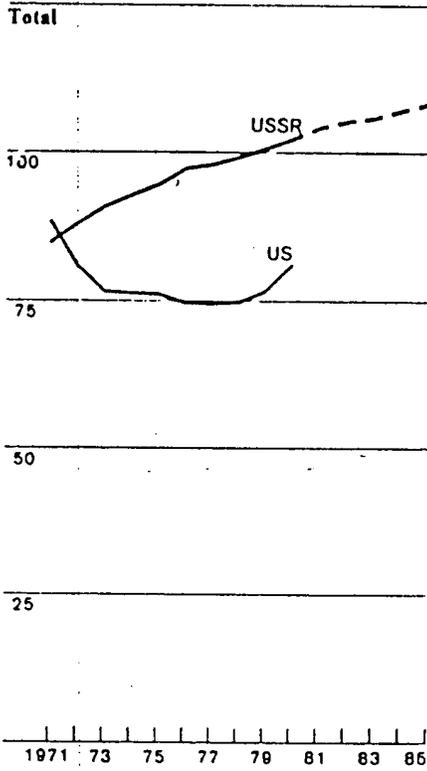
In 1980 estimated dollar costs of operating the Soviet forces exceeded US outlays by 25 percent. Estimated personnel costs were 80 percent higher than US outlays; O&M costs were slightly less.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
Personnel	42.7	37.6	34.8	34.1	33.0	32.1	31.3	30.8	30.9	31.7	338.9
O&M	45.7	43.2	41.8	42.2	43.1	42.5	43.1	44.0	45.7	49.4	440.7
Total	88.4	80.8	76.6	76.3	76.1	74.6	74.4	74.7	76.6	81.1	779.6
USSR											
Personnel	51.6	52.9	53.5	54.2	55.1	55.9	55.9	56.4	56.9	57.7	550.1
O&M	33.2	35.1	37.3	38.5	39.4	41.3	41.9	42.6	43.7	44.4	397.4
Total	84.8	88.0	90.8	92.7	94.5	97.2	97.8	99.0	100.5	102.1	947.5

Operating Activities

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars



~~Secret~~

Research, Development, Testing, and Evaluation

Estimates of the dollar costs of Soviet RDT&E are derived in the aggregate using a less certain methodology and, therefore, should be considered less reliable than the other estimates in this assessment. Nevertheless, the available information

indicate that military RDT&E expenditures were both large and growing during the 1971-80 period. Physical evidence on resources devoted to this effort reinforces this assessment.

Soviet RDT&E continued at a high level in 1980. We have identified some 50 new or modified aircraft, missiles, naval ships, and space systems currently in flight-testing or trials.

Among these are new or improved combat and support aircraft; new or improved ballistic, surface-to-air, antitank, and naval cruise missiles; advanced naval surface combatants and submarines; ground force weapons, including a new tank; and new space systems.

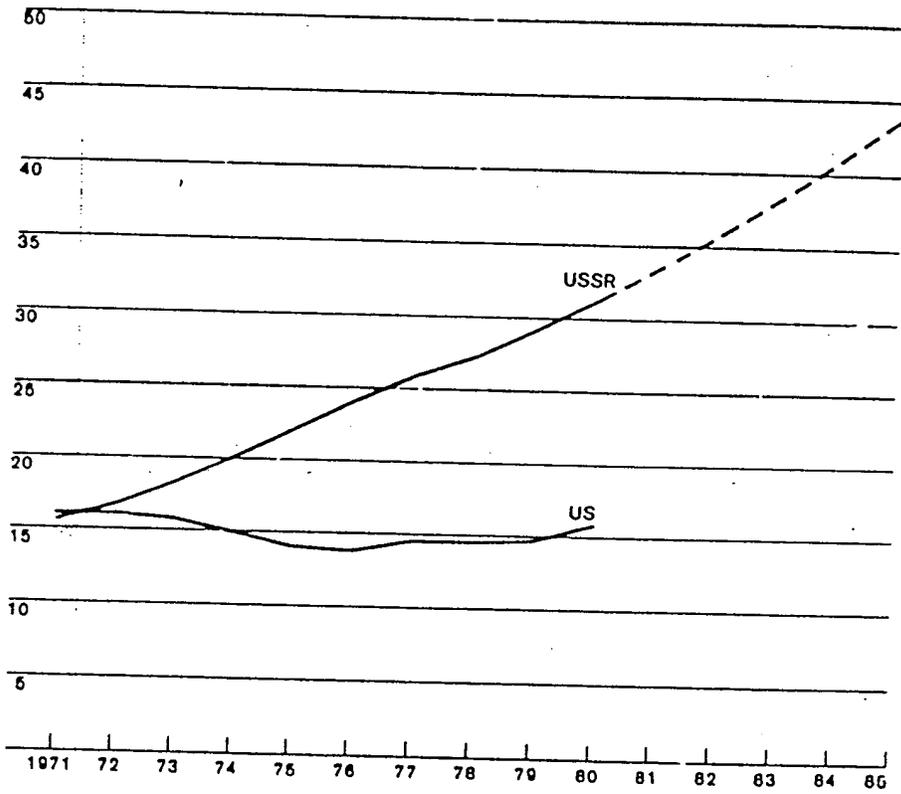
US outlays for RDT&E declined from the beginning of the period until 1976 but then grew so that outlays in 1980 were approximately equal to the 1971 level. In contrast, Soviet costs for RDT&E doubled from 1971 to 1980. For the period as a whole, the estimated dollar costs of Soviet RDT&E activities were 50 percent larger than corresponding US outlays. In 1980 they were twice as large as US outlays.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US	16.0	16.0	15.7	14.9	14.0	13.7	14.5	14.5	14.6	15.7	149.7
USSR	15.6	16.7	18.3	20.2	22.1	24.1	25.9	27.3	29.2	31.3	230.6

RDT&E

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars



Military Mission Comparisons

Mission comparisons presented here are organized in accordance with the November 1980 version of the *Defense Planning and Programming Categories* (DPPC) of the US Department of Defense. This allows the presentation of US and Soviet force and spending comparisons in terms familiar to US defense planners and policymakers. These definitions do not, of course, correspond to the way the USSR organizes its military missions or allocates its defense resources. Further, these dollar costs for mission comparisons do not include any RDT&E outlays. Soviet RDT&E costs cannot be divided by missions, and we are able to estimate only the total (shown in the preceding section).

In the sections that follow we show the major missions divided into each of their components (for example, the general purpose mission is divided into land, tactical air, naval, and mobility forces). Line graphs are used to show the movements of dollar costs over time, and pie charts show the distribution of cumulative component costs between investment, operations and maintenance, and personnel for the 1971-80 period. The 1981-85 projections for the Soviet strategic, general purpose, and support forces are shown in separate sections following the treatment of the 1971-80 period.

There were considerable differences in the trends of the dollar costs for the two countries. The estimated annual dollar cost of Soviet missions grew by about 25 percent over the 1971-80 period.

- The dollar costs of Soviet strategic forces grew by 25 percent, although there was considerable fluctuation of ICBM, ballistic missile submarine, and strategic air defense activities, largely because of the cyclical nature of procurement.

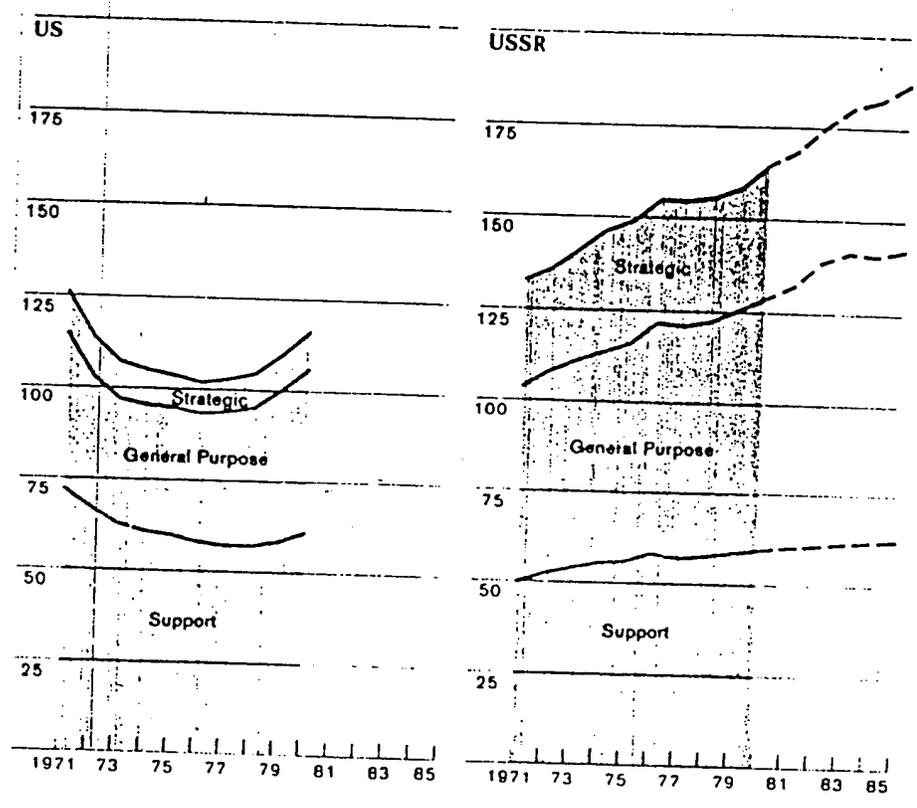
Soviet Defense Missions As a Percent of Comparable US Defense Outlays	Percent	
	1980	1971-80 Total
Strategic forces	345	330
General purpose forces	155	160
Support forces	100	90
Total (excluding RDT&E)	140	135

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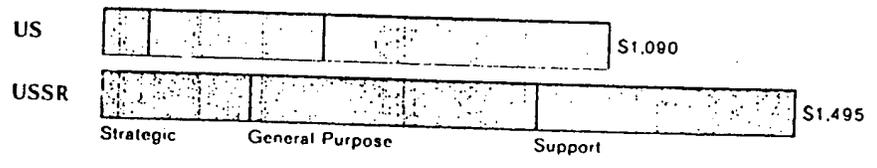
Major Missions

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars



Cumulative, 1971-80
Billion 1980 dollars



- The costs of Soviet general purpose forces grew rapidly over the period (30 percent) primarily due to increased investment for the land, naval, and tactical air components of this mission. This, in turn, was caused by the procurement of increased numbers of more costly systems.
- The costs of Soviet support forces also grew (25 percent from 1971 to 1980) as a consequence of the need to train, supply, and maintain personnel and equipment in the growing strategic and general purpose missions.

US mission activities declined by 20 percent between 1971 and 1976 but then grew until the end of the period. By 1980 the dollar costs had recovered over half their decline.

- Outlays for strategic forces fell by 25 percent between 1971 and 1976 and then grew by 20 percent from then until the end of the period. Leading the increase were the procurement costs of the new Trident SSBN program.
- Outlays for general purpose forces displayed the largest growth since 1976—an average of 6 percent per year. The causes of this growth were the procurement of new tactical aircraft and land arms and increased operations and maintenance costs for the tactical air and naval components of the general purpose mission.

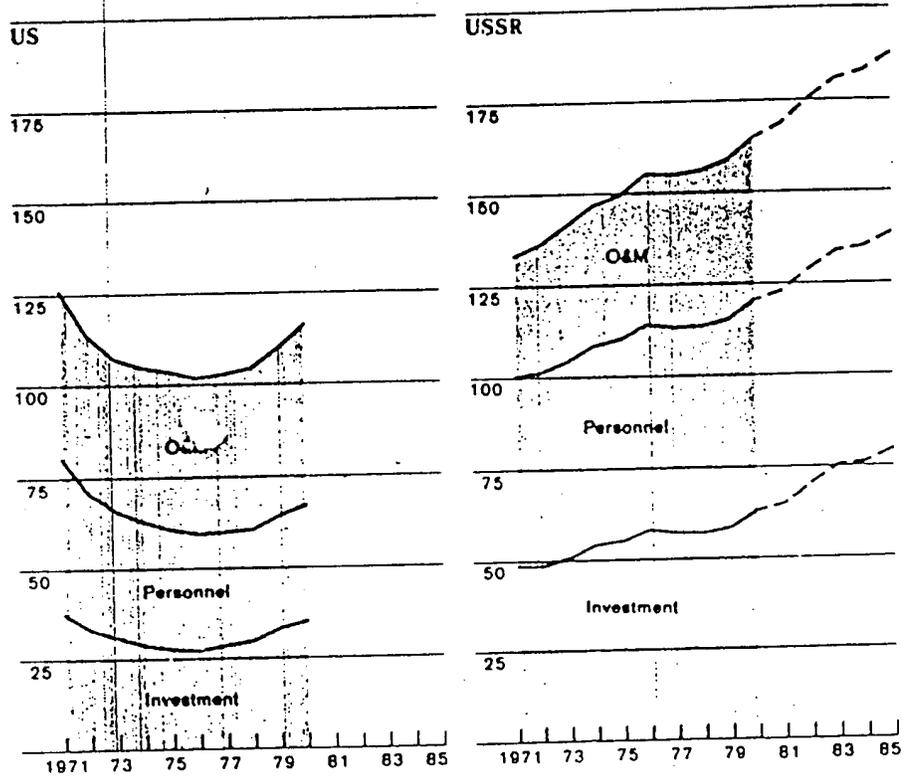
We project considerable growth for both the strategic and general purpose missions of the USSR in the early 1980s. This growth will be led by an increase in investment costs, but O&M and personnel costs will also increase. The peak that will occur in the early 1980s for Soviet general purpose forces will result from a procurement cycle for the fourth generation of Soviet tactical aircraft.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative	Average Annual Growth Rate (%)
<i>Billion 1980 dollars</i>												
US												
Strategic	11.3	11.0	10.4	9.6	8.8	8.5	9.0	9.3	9.9	10.4	98.2	-0.8
General purpose	42.7	36.0	34.1	34.8	35.1	35.4	36.9	38.1	41.6	44.9	379.7	0.8
Support	72.0	67.0	62.8	60.6	59.7	57.9	57.0	57.1	58.3	60.9	613.3	-1.8
Total	126.0	113.9	107.3	105.0	103.7	101.9	102.9	104.5	109.9	116.2	1,091.2	-0.8
USSR												
Strategic	29.2	28.3	30.1	33.0	33.2	33.3	33.6	33.4	33.0	35.8	322.9	2.4
General purpose	53.9	55.7	57.2	58.3	60.2	63.5	64.1	64.8	67.0	69.3	614.0	2.8
Support	50.0	52.3	54.0	55.4	56.0	58.3	57.2	57.7	58.8	59.6	559.4	2.0
Total	133.2	136.3	141.4	146.7	149.4	155.1	154.9	155.9	158.7	164.8	1,496.4	2.4

Major Missions by Resource Categories

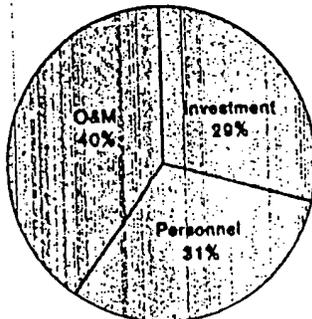
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars

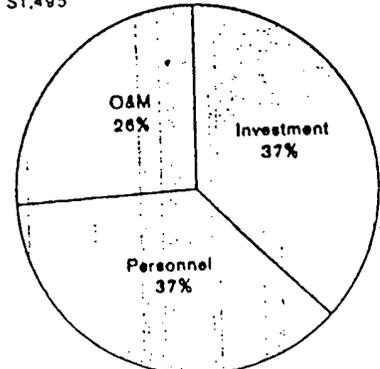


Cumulative, 1971-80

US
Total: \$1,090



USSR
Total: \$1,495



Strategic Forces

Strategic forces are defined to include strategic offense (intercontinental and peripheral attack), strategic defense, strategic control and surveillance, and nuclear weapons. (Although the last is not a DPPC category, we include all nuclear weapon costs with strategic forces.)

Over the period, estimated cumulative dollar costs of Soviet strategic force activities (exclusive of RDT&E) were three and a quarter times as large as corresponding US outlays. If peripheral attack forces, for which the United States has no counterpart, are excluded, the level of Soviet activity for strategic forces was slightly less than three times that of the United States.

Soviet strategic activities during the period were characterized by:

- Improvement of an already large peripheral attack force.
- Continued emphasis on forces for strategic defense against bomber attack.
- Expansion and improvement of ICBM and SLBM forces, resulting in at least rough parity with the United States by the end of the period

US strategic programs, on the other hand, were characterized by:

- Qualitative—as opposed to quantitative—improvement in the ICBM, SLBM, and heavy bomber forces.
- A reduction in the number of heavy bombers.
- The brief deployment of an ABM system that was quickly deactivated.
- A continuing reduction in strategic interceptor and SAM forces

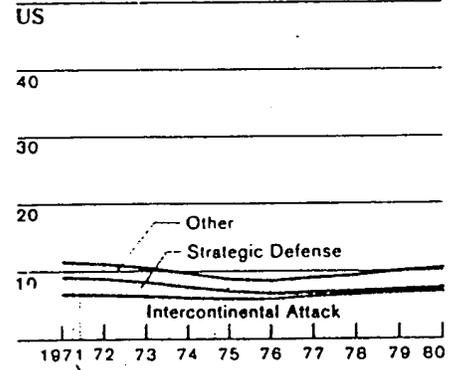
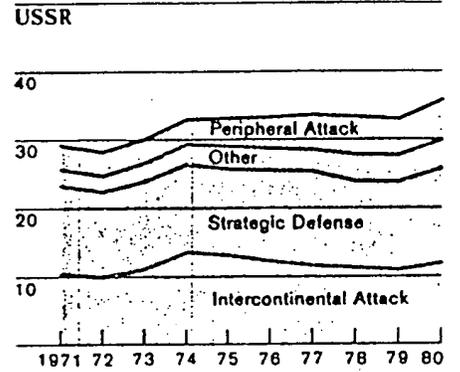
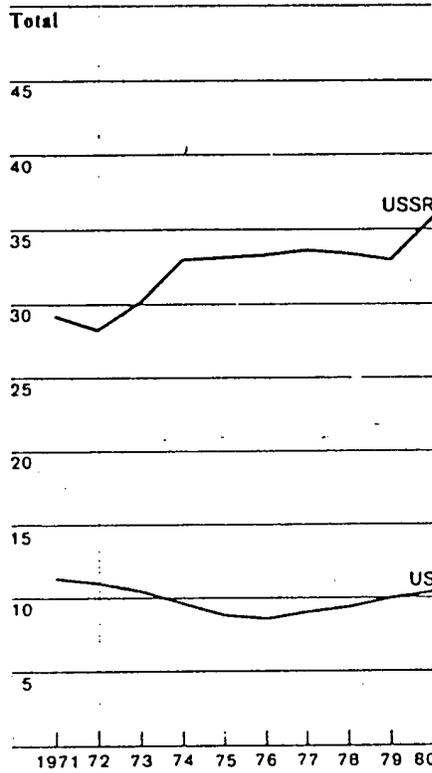
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
Intercontinental attack	6.6	6.5	6.3	6.0	5.9	5.9	6.2	6.4	6.7	6.9	63.5
Strategic defense	2.5	2.3	2.0	1.6	1.1	0.8	0.7	0.6	0.6	0.6	12.7
Other	2.2	2.1	2.1	1.9	1.8	1.9	2.1	2.3	2.7	2.9	22.0
Total	11.3	11.0	10.4	9.6	8.8	8.5	9.0	9.3	9.9	10.4	98.2
USSR											
Intercontinental attack	10.5	10.0	11.1	13.6	13.2	12.3	11.6	11.4	11.0	12.0	116.7
Peripheral attack	3.5	3.6	3.5	3.7	4.1	4.6	5.1	5.6	5.3	5.9	45.0
Strategic defense	12.8	12.4	12.8	12.8	12.5	13.2	13.7	12.5	12.8	13.7	129.2
Other *	2.4	2.3	2.7	3.0	3.3	3.2	3.2	3.9	3.9	4.2	32.0
Total	29.2	28.3	30.1	33.0	33.2	33.3	33.6	33.4	33.0	35.8	322.9

* "Other" includes nuclear weapons and strategic control and surveillance.

Strategic Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

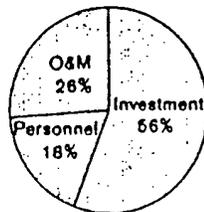
Billion 1980 dollars



Cumulative, 1971-80

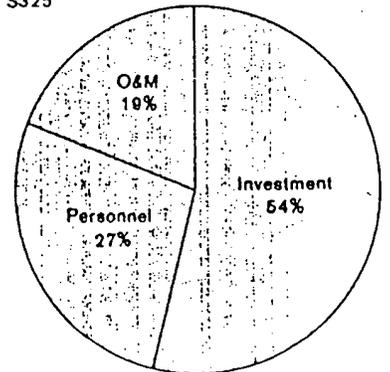
US

Total: \$100



USSR

Total: \$325



~~Secret~~

Intercontinental Attack Forces

This mission consists of all land-based intercontinental ballistic missile forces, intercontinental ballistic missile submarines and the associated missiles, and intercontinental bombers.

Over the decade the estimated cumulative dollar costs of the Soviet intercontinental attack forces exceeded comparable US outlays by 85 percent. In 1980, estimated Soviet dollar costs exceeded US outlays by 75 percent:

- Estimated dollar costs of the Soviet intercontinental attack mission were 15 percent greater in 1980 than they were in 1971; they were considerably larger in the mid-1970s, however, primarily because of the procurement of SS-17s, -18s, and -19s and D-class SSBNs.
- US spending for intercontinental attack forces fell until 1975 as both procurement and operating costs, particularly of intercontinental bombers, were cut. US spending for this mission, however, grew by 4 percent a year from 1976 to 1980 as the US began to invest in the Trident, air-launched cruise missile (ALCM), and B-52 enhancement programs.

As a result of these trends, the USSR during the period:

- Overtook the US in number of delivery vehicles but remained behind it in total online missile reentry vehicles and bomber weapons.
- Overtook and far surpassed the United States in total missile and bomber equivalent throw weight, yield, and equivalent megatons.

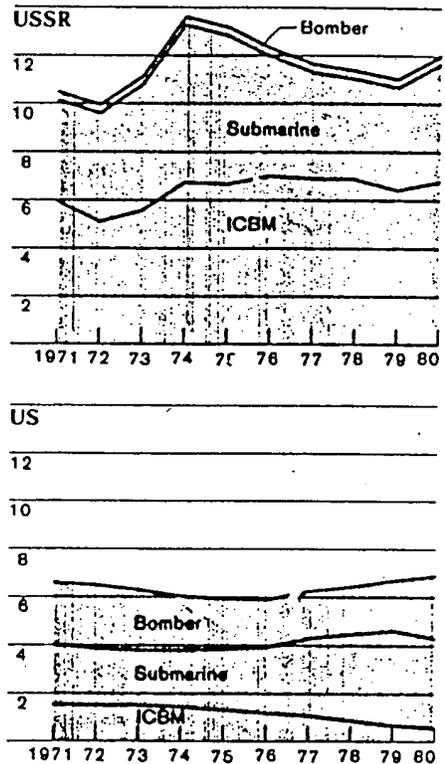
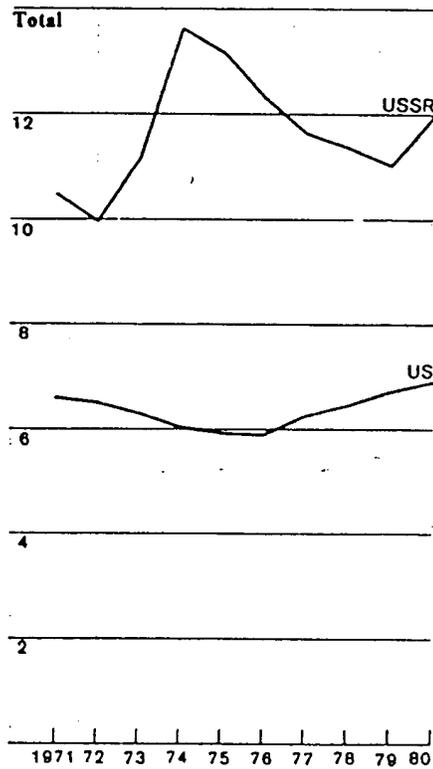
Because investment costs were over half the total for both countries, their trend set the pattern for total costs. Soviet investment displayed the cyclical pattern already noted, while US spending for intercontinental attack forces fell until procurement costs for the Trident SSBN and ALCM caused them to rise.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
ICBM	1.5	1.5	1.5	1.4	1.3	1.2	1.1	0.9	0.7	0.6	11.6
Submarine	2.5	2.4	2.3	2.4	2.5	2.7	3.2	3.6	3.9	3.7	29.1
Bomber	2.6	2.6	2.5	2.2	2.1	2.0	2.0	2.0	2.1	2.6	22.8
Total	6.6	6.5	6.3	6.0	5.9	5.9	6.2	6.4	6.7	6.9	63.5
USSR											
ICBM	5.9	5.1	5.5	6.7	6.7	7.0	6.9	6.9	6.4	6.7	63.9
Submarine	4.2	4.5	5.2	6.5	6.1	4.9	4.4	4.1	4.3	4.9	49.2
Bomber	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	3.6
Total	10.5	10.0	11.1	13.6	13.2	12.3	11.6	11.0	11.4	12.0	116.7

Intercontinental Attack Forces

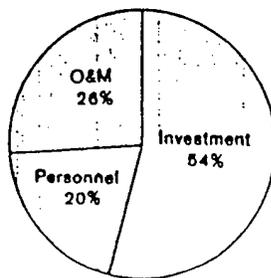
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars

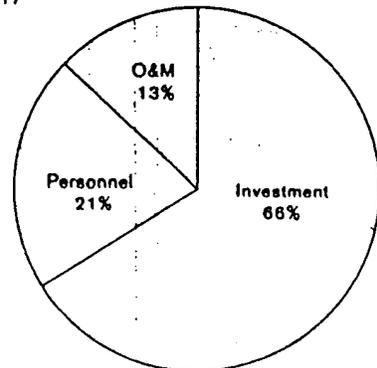


Cumulative, 1971-80

US
Total: \$64



USSR
Total: \$117



~~Secret~~

Intercontinental Ballistic Missiles. The estimated cumulative costs of Soviet ICBM activities for the period were five and a half times as large as corresponding US outlays. In 1980, estimated Soviet dollar costs exceeded US outlays by a factor of 11.

The total number of Soviet ICBM launchers, however, decreased slightly from 1971 to 1980:

- In the early 1970s, the Soviets completed the deployment of SS-9, SS-11, and SS-13 forces and started to deactivate the older SS-7 and SS-8 ICBM launchers.
- In the middle 1970s the Soviets began to replace their original force of SS-9 and SS-11 ICBMs. The single-RV SS-11 was replaced with improved variants (the Mod 2 and Mod 3) as well as two new systems, the SS-17 and SS-19. The single-RV SS-9 was replaced with a new ICBM, the SS-18. Each of the new systems was more accurate, could carry MIRVs, and was deployed in a more survivable silo.
- By midyear 1980, the Soviet ICBM force included approximately 525 SS-11 Mod 2 and Mod 3 variants and 625 SS-17, SS-18, and SS-19 launchers. These, however, took the place of older launchers, so there were 85 fewer launchers in 1980 than there had been in 1971.

The US maintained the same number of ICBM launchers, but improved this force by:

- Replacing remaining Minuteman I missiles and 50 Minuteman II missiles with the more accurate and MIRVed Minuteman III ICBM.
- Retrofitting all Minuteman III ICBMs with an improved guidance system and beginning, in 1980, to retrofit 300 with higher yield MIRVs.
- Hardening the existing Minuteman silos and improving command and control capabilities. Among the specific improvements were better suspension systems for the missiles and ground electronics, debris bins on the launch closures to protect the silos from postattack debris, improved protection from electromagnetic pulses, and more advanced retargeting capabilities.

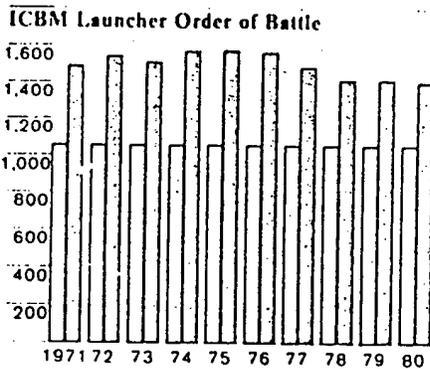
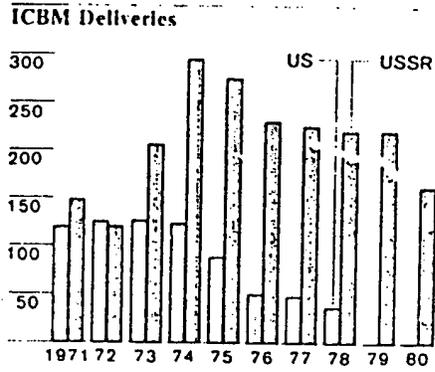
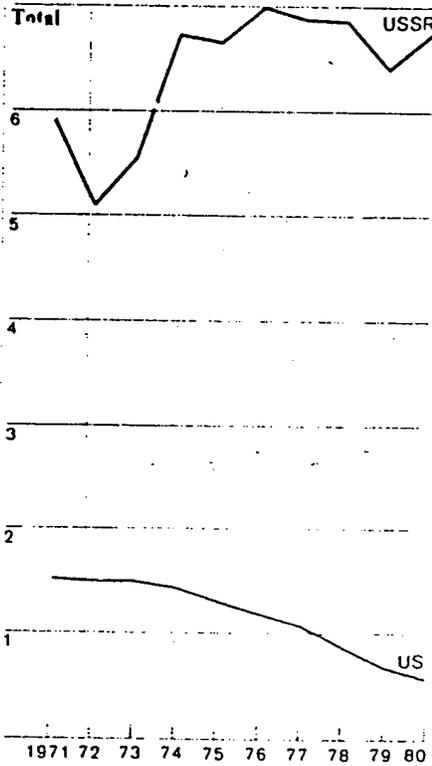
In 1980 US ICBM forces consisted of 550 Minuteman IIIs, each having three RVs; 450 Minuteman IIs with a single RV; and 54 older liquid-fueled Titan IIs with a single RV. The Titan II lacks the accuracy of the Minuteman but carries a larger payload.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US	1.5	1.5	1.5	1.4	1.3	1.2	1.1	0.9	0.7	0.6	11.6
USSR	5.9	5.1	5.5	6.7	6.7	7.0	6.9	6.9	6.4	6.7	63.9

Intercontinental Ballistic Missiles

A comparison of US outlays with estimated dollar costs of Soviet activities

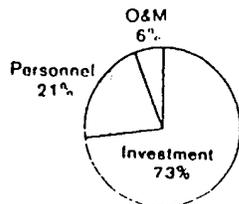
Billions 1980 dollars



Cumulative, 1971-80

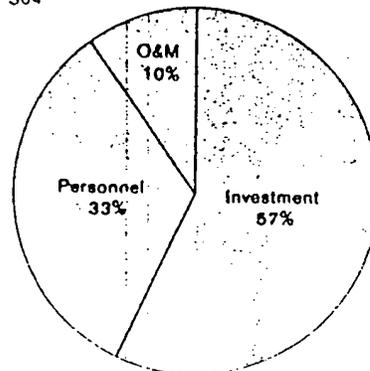
US

Total: \$12



USSR

Total: \$64



Ballistic Missile Submarines for Intercontinental Attack. This category includes all US ballistic missile submarines and the associated missiles and those Soviet ballistic missile submarines and missiles that are believed to have intercontinental, rather than peripheral, attack missions. Also included on both sides are the SSBN tenders.

The estimated cumulative dollar costs of these Soviet activities were almost 70 percent greater than the corresponding US outlays over the period. In 1980, however, the estimated dollar costs of Soviet activities were only 30 percent greater than US outlays for this mission.

Although the estimated dollar costs of Soviet SLBM forces were only 15 percent greater in 1980 than they had been in 1971, the figure fluctuated during the decade in relation to procurement cycles for SSBNs. Procurement of the Y-class SSBN ended in the early 1970s; the procurement of the D-class SSBN peaked in the middle 1970s.

Annual US SSBN outlays were relatively constant from 1971 through 1975 because the procurement programs for the present US SSBN force were completed before 1971. The procurement of new types of SLBMs in the early 1970s kept US outlays from falling. The start of the Trident SSBN program did cause outlays to grow by more than 8 percent a year over the last five years of the period. Delays in the Trident program, however, resulted in a 5-percent drop in outlays for 1980.

As is usually the case for strategic missions, investment costs dominated both the totals and the trends over time for both countries. Estimated procurement costs were especially significant for this Soviet mission

The Soviet ballistic missile submarine force increased by 25 submarines, from 39 in 1971 to 64 in 1980.

- From 1971 to 1975 the Soviet Union deployed an additional 13 Y-class submarines.
- A total of 33 D-I, D-II, and D-III submarines were deployed between 1971 and 1980.
- In 1977, in order to comply with SALT I limitations on the number of modern SSBNs and SLBM launchers, the USSR began to retire the older Y-I ballistic missile submarines as it deployed D-III submarines.
- The first Typhoon-class SSBN was launched in 1980 but has not yet been deployed. Procurement costs associated with this system, however, began in the late 1970s.

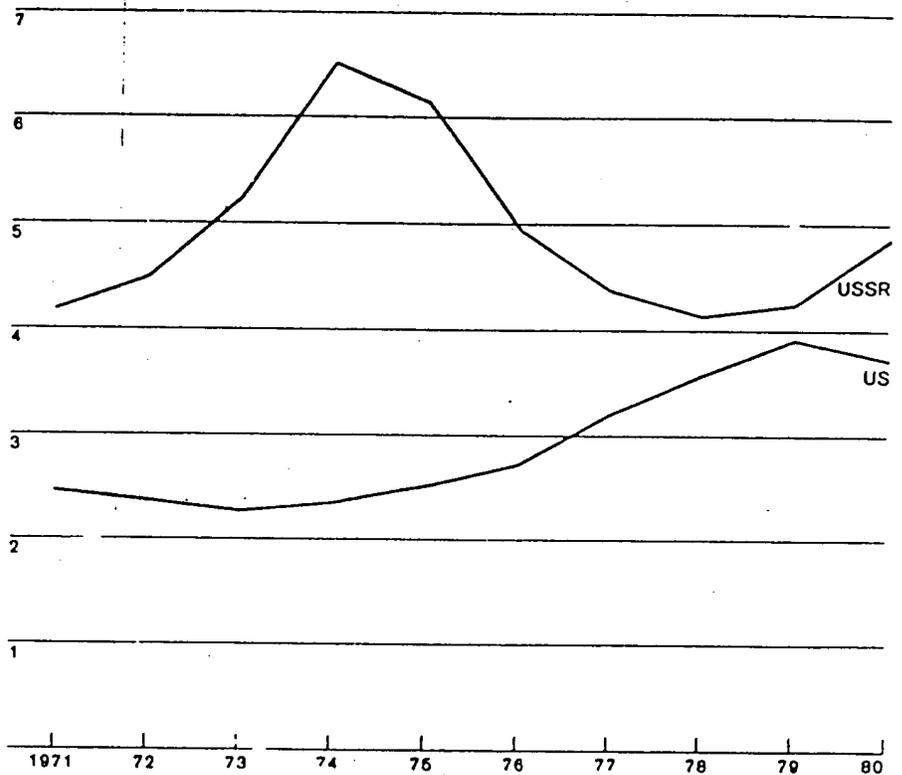
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US	2.5	2.4	2.3	2.4	2.5	2.7	3.2	3.6	3.9	3.7	29.1
USSR	4.2	4.5	5.2	6.5	6.1	4.9	4.4	4.1	4.3	4.9	49.2

~~Secret~~

Submarines for Intercontinental Attack

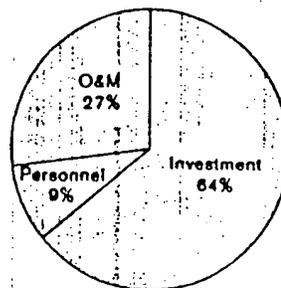
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars

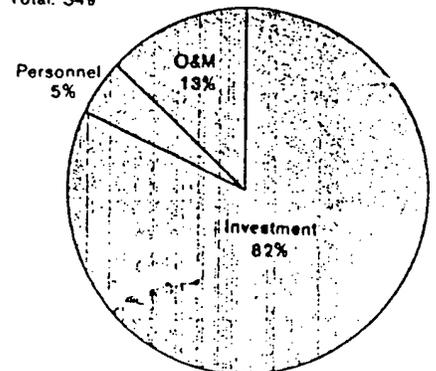


Cumulative, 1971-80

US
Total: \$29



USSR
Total: \$49



~~Secret~~

The United States did not expand its fleet of SSBNs during the 1970s. The force, however, was steadily improved:

- In the early 1970s many US ballistic missile submarines were converted to carry a new SLBM, the Poseidon C-3.
- In 1976 the US began construction of a new class of SSBN to carry the new Trident SLBM, which has a longer range and more powerful warhead. The first SSBN of that program (the Ohio) is intended for delivery by the end of 1981, and the second (the Michigan) has been launched.
- The Trident C-4 missile is being backfitted on the 12 older Benjamin Franklin-class SSBNs.

At the end of fiscal year 1980 the US had 40 SSBNs with 16 launch tubes each for a total of 640 tubes. Twenty-five of these submarines were equipped with the Poseidon C-3 SLBM or were being converted to the Trident C-4. By the end of 1980 six Benjamin Franklin-class SSBNs had completed conversion and been deployed. The remaining nine SSBNs were armed with the Polaris A-3, but these older SSBNs will be either dismantled or converted to SSNs.

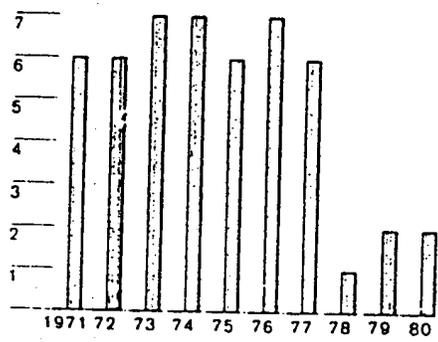
The Poseidon C-3 can carry up to 14 MIRVs in contrast to its predecessor, the Polaris A-3, which carries three MRVs. The Trident C-4 can carry the same payload as the C-3 over twice the range.

In 1980 there were 27 Y-I SSBNs remaining in the Soviet fleet. Some of the Y-Is are probably being converted to attack submarines. Each Y-I has 16 launch tubes equipped with the SS-N-6. There was also one Y-II SSBN, which carries 12 SS-N-17s. The 18 D-I SSBNs have 12 tubes carrying the SS-N-8; the four D-IIs carry 16 launchers each for the SS-N-8, and the eleven D-IIIs are each equipped with 16 SS-N-18s.

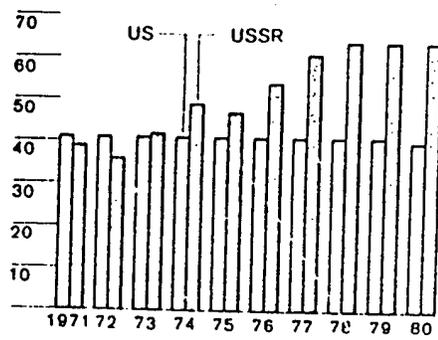
All Soviet SLBMs except the SS-N-17, which is solid fueled, are fueled with storable liquids. The SS-N-6, the first Soviet SLBM for a modern SSBN, represented a considerable improvement in range over earlier Soviet SLBMs. Its range, however, was less than that of the US Polaris A-3. One variant of the SS-N-6 carries two MRVs. The SS-N-8 has a longer range than the Polaris, Poseidon, and Trident. It is also more accurate than the SS-N-6. Of the Soviet SLBMs deployed, only the SS-N-18 is MIRVed.

Submarines for Intercontinental Attack

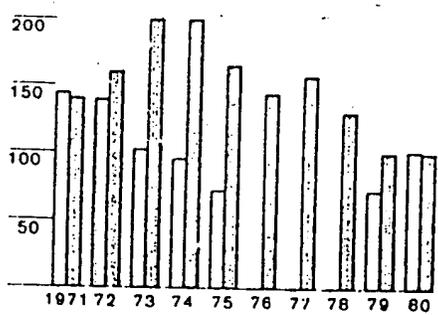
SSBN Deliveries



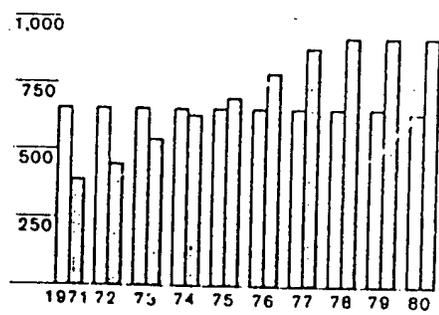
SSBN Order of Battle



SLBM Deliveries



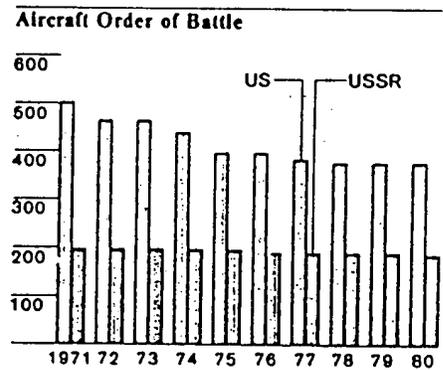
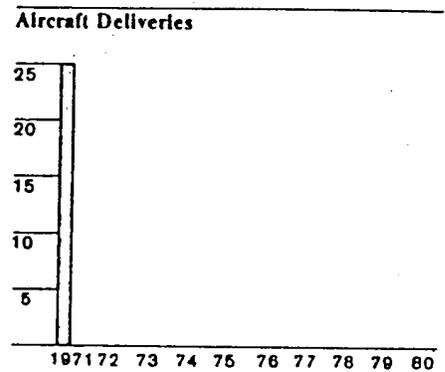
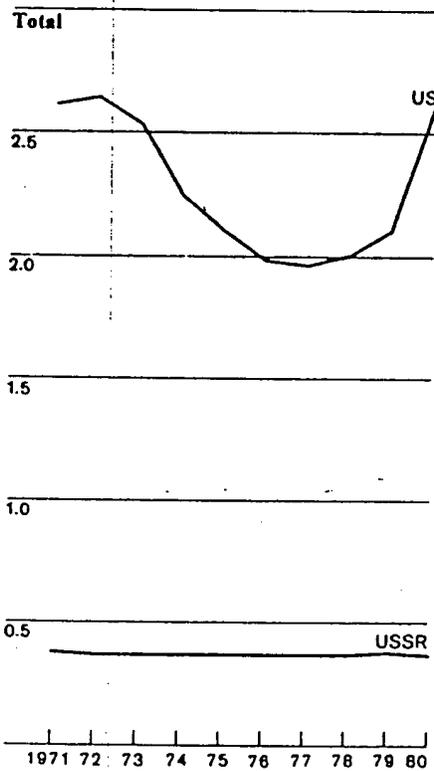
SLBM Launch Tube Order of Battle



Intercontinental Bomber Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

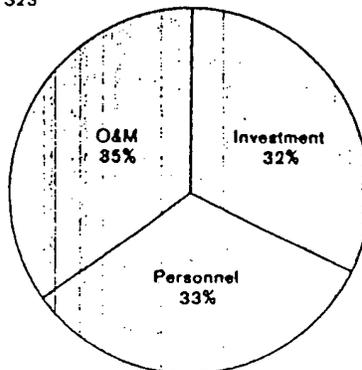
Billion 1980 dollars



Cumulative, 1971-80

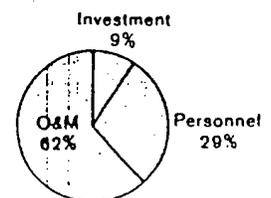
US

Total: \$23



USSR

Total: \$4



Strategic Peripheral Attack Forces

This category consists of forces assigned strategic targets along the periphery of the Soviet Union: medium- and intermediate-range ballistic missiles, medium bombers, and some older ballistic missile submarines formerly assigned intercontinental attack missions.¹² The primary targets of these forces would be in Western Europe or China.

The US has no direct counterpart to these peripheral attack forces in terms of a DPPC mission, although certain US tactical aircraft could perform similar activities.

The major aircraft assigned to the Soviet peripheral attack mission are the TU-16 Badger, the TU-22 Blinder, and the TU-22M Backfire. Land-based missiles included are the SS-4 MRBM and the SS-5 and SS-20 IRBMs. Ballistic missile submarines assigned to this mission are primarily diesel-powered types. Included are the Z-class SSB, the G-I, G-II, and G-IV SSBs, and the H-II SSBN

There were approximately two dozen of these older submarines in the peripheral attack order of battle in 1980. Approximately two-thirds of the bombers were TU-16s and TU-22s. Similarly, two-thirds of the MR/IRBMs were the older, less capable SS-4s and SS-5s.

The estimated dollar costs of the Soviet peripheral attack mission rose rapidly over the period. Although there were procurement-caused fluctuations, the growth rate was approximately 6 percent over the period. Growth was caused in part by the beginning of Backfire bomber production in the early 1970s but primarily by SS-20 IRBM production beginning in 1974

In aggregate resource terms, investment and personnel were distributed fairly evenly, but investment caused the growth of this mission over the decade

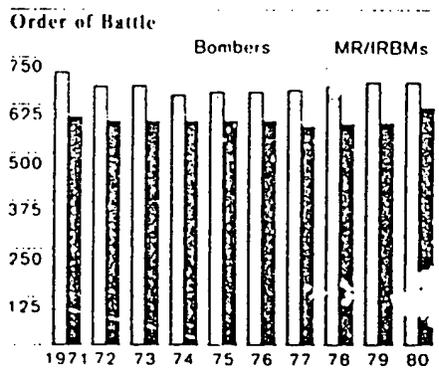
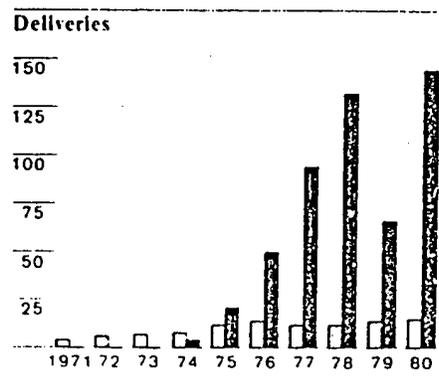
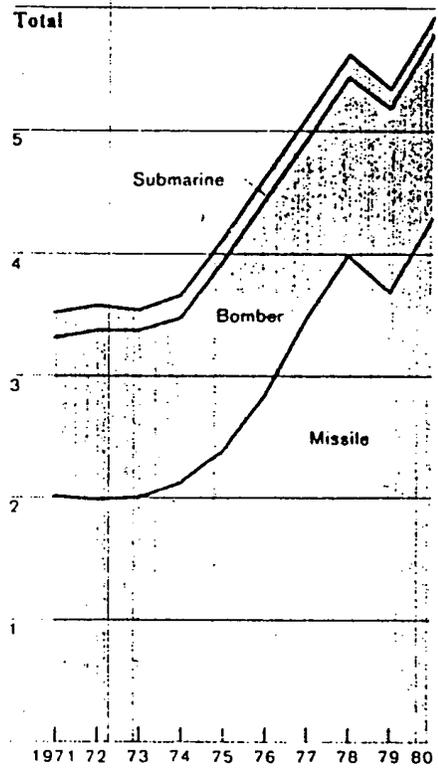
¹² Although some SS-11s may have a peripheral attack mission, we have included all of them in the intercontinental attack mission.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
Bombers	1.3	1.4	1.4	1.4	1.5	1.6	1.5	1.5	1.5	1.5	14.5
Missiles	2.0	2.0	2.0	2.1	2.4	2.8	3.5	4.0	3.7	4.3	28.7
Submarines	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	1.8
Total	3.5	3.6	3.5	3.7	4.1	4.6	5.1	5.6	5.3	5.9	45.0

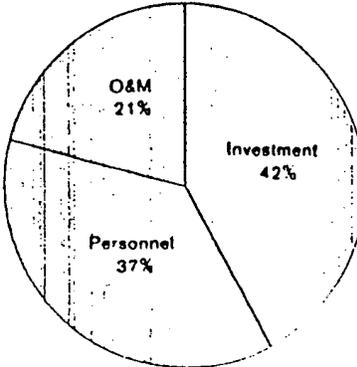
Secret

Soviet Peripheral Attack Forces

Billion 1980 dollars



Cumulative, 1971-80
Total: \$45



Strategic Defense Forces

This mission consists of strategic surface-to-air missile systems, strategic interceptor aircraft, antiballistic missile (ABM) systems, and defensive control and warning systems.

The estimated cumulative dollar costs of Soviet strategic defense during the period were about 10 times as great as total US outlays for this mission. In 1980 the Soviet dollar estimate was about 23 times as great. This disparity in strategic defense activities reflected differences in the two countries' strategic doctrines as well as differences in the bomber threats facing the USSR and the United States:

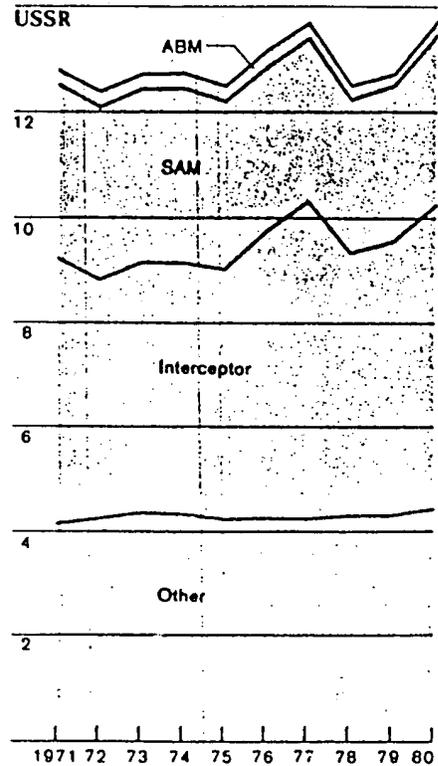
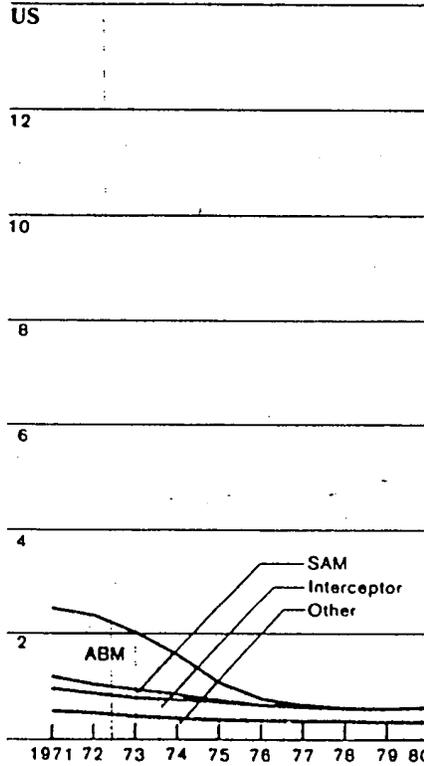
- US strategic programs favored offensive forces over defensive forces with damage-limiting missions. The US, having agreed not to deploy a nationwide ABM system for defense against the Soviet ICBM and SLBM threats, chose not to commit the levels of resources necessary to modernize its strategic air defenses against the somewhat limited Soviet bomber threat.
- Soviet strategic programs favored more balance between offensive and defensive forces. Although the Soviets also agreed not to deploy a nationwide ABM system, they continued to commit substantial resources to bomber defenses. The relatively higher emphasis which the USSR accorded bomber defenses was influenced by the threat posed by US strategic bombers—a force much larger and more capable than its Soviet counterpart. In addition, Soviet bomber defense activities were influenced by the threat from potentially hostile aircraft in the European and Pacific theaters and in China.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
Interceptor	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.3	3.2
SAM	0.2	0.2	0.2	0.1	0.0	-	-	-	-	-	0.7
ABM	1.3	1.3	1.1	0.7	0.3	0.1	0.0	-	-	-	5.0
Other	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	4.0
Total	2.5	2.3	2.0	1.6	1.1	0.8	0.7	0.6	0.6	0.6	12.7
USSR											
Interceptor	5.1	4.6	4.8	4.8	4.8	5.5	6.1	5.0	5.3	5.8	51.7
SAM	3.3	3.3	3.3	3.3	3.2	3.1	3.1	2.9	2.9	3.2	31.5
ABM	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	2.9
Other	4.2	4.3	4.4	4.4	4.3	4.3	4.3	4.3	4.3	4.5	43.1
Total	12.8	12.4	12.8	12.8	12.5	13.2	13.7	12.5	12.8	13.7	129.2

Strategic Defense Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

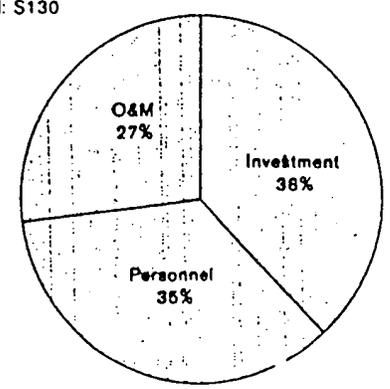
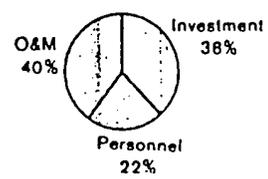
Billion 1980 dollars



Cumulative, 1971-80

US
Total: \$13

USSR
Total: \$130



During the 1971-80 period, the Soviet Union:

- Reduced the number of interceptors assigned to strategic defense from about 3,200 to 2,600 while modernizing its strategic air defenses with the production of over 1,800 SU-15 Flagon, MIG-25 Foxbat, and MIG-23 Flogger interceptors.
- Continued the deployment of SA-3 and SA-5 SAMs, resulting in a 1980 level of about 1,200 launch sites and some 9,600 SAM launchers. The SA-10 SAM was not deployed until late in 1980, but procurement costs associated with this system began in the late 1970s.
- Maintained the Moscow ABM defenses and brought two large battle management radar complexes at Moscow to operational capability.
- Completed deployment of the Hen House ballistic missile early warning system and initiated construction of a large ABM-related facility near Moscow that will probably perform battle management as well as interceptor tracking and guidance. Subsequently, in 1980, they undertook what appears to be a major upgrading and expansion of the ABM system.

In contrast, the United States:

- Reduced its strategic interceptor order of battle from approximately 490 to 270 aircraft. Most of the remaining aircraft were the older F-106s.
- In 1975 completed the deactivation of all strategic defense SAM batteries. The only strategic SAM deployed by the US Army during the period was the Nike Hercules.¹¹
- Deployed in 1975, and then deactivated in 1976, one ABM facility with 100 launchers. Costs for the program peaked in the early 1970s.

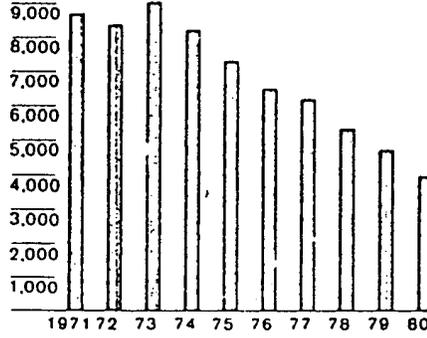
US outlays for strategic defense declined during most of the period and in 1980 were only one-fourth as large as they had been in 1971

Investment and personnel costs accounted for roughly equal shares of the estimated dollar cost of Soviet strategic defense. Fluctuations in the total resulted primarily from the procurement cycle for strategic interceptor aircraft.

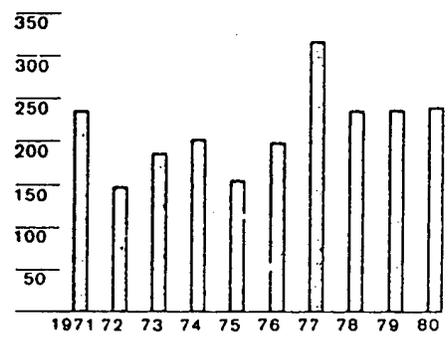
¹¹ The USAF Bomarc, eliminated in 1973, is not included in the accompanying order-of-battle data.

Strategic Defense Forces

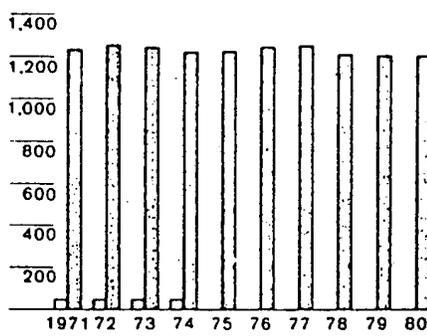
Surface-to-Air Missile Deliveries^a



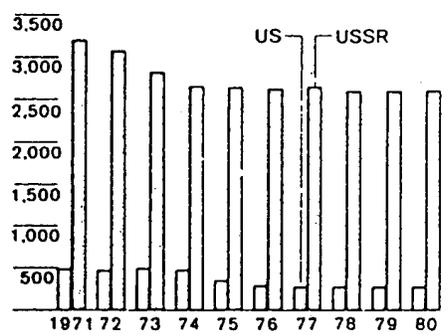
Strategic Interceptor Deliveries^a



Surface-to-Air Missile Sites/Batteries



Strategic Interceptor Order of Battle



^a Corresponding US data are not available.

Soviet Strategic Forces, 1981-85

The estimated dollar costs of Soviet strategic force activity are expected to grow, with or without SALT II limits. If the Soviets do not adhere to the provisions of the SALT II treaty, dollar costs for their strategic force activity in 1985 could be as much as 25 percent greater than they were in 1980. If they do adhere to these provisions, our dollar cost estimates would be slightly lower but still substantial.

Intercontinental Attack. Estimated Soviet dollar costs for this mission are expected to rise fairly rapidly, with or without SALT II limitations. Without SALT II limits, the growth rate for this mission could be as high as 9 percent over the period, reflecting:

- Continued deployment of improved versions of the SS-17, -18, and -19 and the introduction of follow-on systems with improved accuracy.
- Introduction of a medium-size solid-propellant ICBM with improved throw weight and accuracy and a small solid-propellant ICBM probably for deployment on mobile launchers.
- Continued production of D-III SSBNs and deployment of the Typhoon-class SSBN, each with 20 new long-range SLBMs.
- Initial procurement costs associated with a new long-range ALCM carrier and new long-range bomber that are expected to be deployed after 1985.

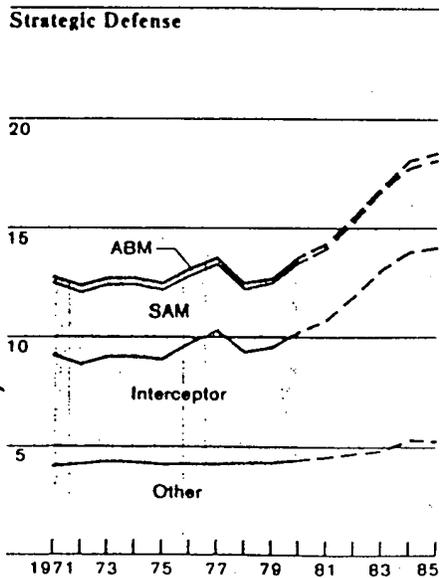
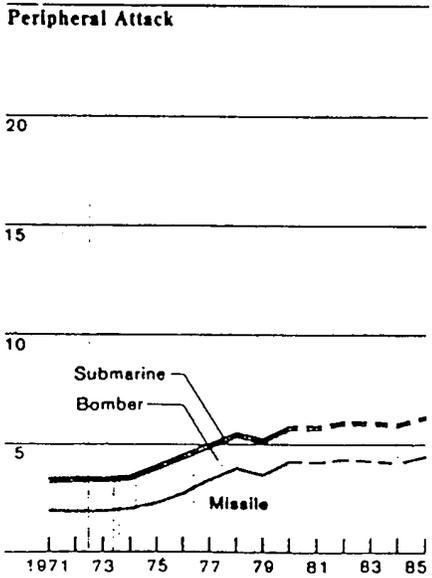
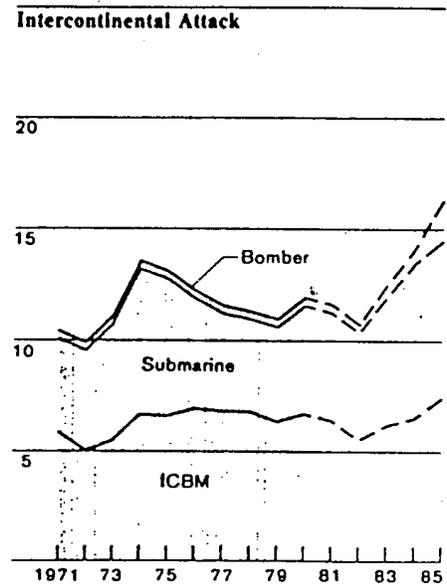
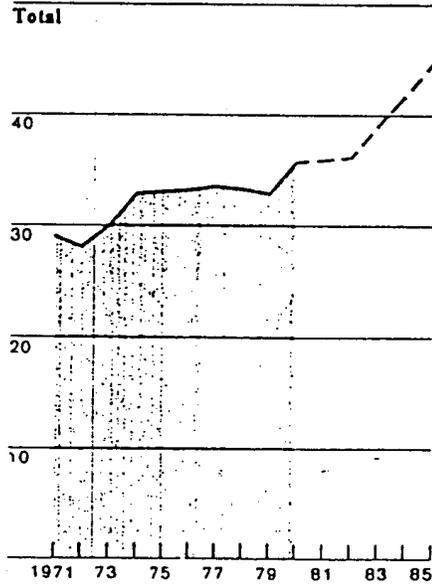
Peripheral Attack Forces. Estimated Soviet dollar costs for this mission are expected to increase by only about 2 percent a year from 1981 to 1985 compared to 6 percent during the previous 10 years. The decline in the rate of growth reflects an expected reduction in SS-20 production as the deployment program nears completion. The Soviets will probably introduce a modified version of the SS-20 with improved accuracy and could increase Backfire production. Neither program, however, is expected to have a major impact on Soviet costs before 1985.

Strategic Defense. Estimated Soviet dollar costs for this mission also are expected to rise fairly rapidly over the period. We anticipate a growth rate of about 7 percent compared to 1 percent during the previous 10 years, reflecting:

- Continued deployment of the MIG-23 Flogger, the retrofitting of existing MIG-25 Foxbats with a better radar, and the introduction of a modified Foxbat capable of detecting, tracking, and attacking targets at low altitudes.
- Introduction of two new interceptors better able to engage targets at lower altitudes than present aircraft.
- Deployment of the SA-10 SAM with its improved target-handling and low-altitude engagement capability.
- Improvements in control and warning and modernization of ABM defenses within the limits imposed by the ABM Treaty.

Soviet Strategic Forces, 1971-85

Billion 1980 dollars



Note: These cost estimates are based on the absence of SALT II limits. If the Soviets adhere to the SALT II provisions, the estimates would be slightly lower.

General Purpose Forces General purpose forces are defined to include the following DPPC categories:

- Land forces.
- Tactical air forces.
- General purpose naval forces (including ASW, amphibious, and naval support forces).
- Mobility forces (including airlift and sealift forces—see discussion on page 66).

For the 1971-80 period the estimated cumulative dollar costs of Soviet general purpose forces were 60 percent more than corresponding US outlays. Estimated Soviet costs were one-fourth more than US outlays in 1971 and over two-thirds more by 1973. They stayed at that margin until the last year of the period, when they were 55 percent more.

Estimated Soviet costs grew at an average annual rate of 3 percent over the period, while US outlays grew just under 1 percent per year.

- Soviet costs increased as a result of the modernization of land and tactical air forces; the buildup along the Sino-Soviet border and in Warsaw Pact areas, the increase in naval force levels and operations, and continued deployment of advanced tactical aircraft.
- US costs fell until the mid-1970s and then grew at an increasing rate as the United States modernized its land, naval, and tactical air forces

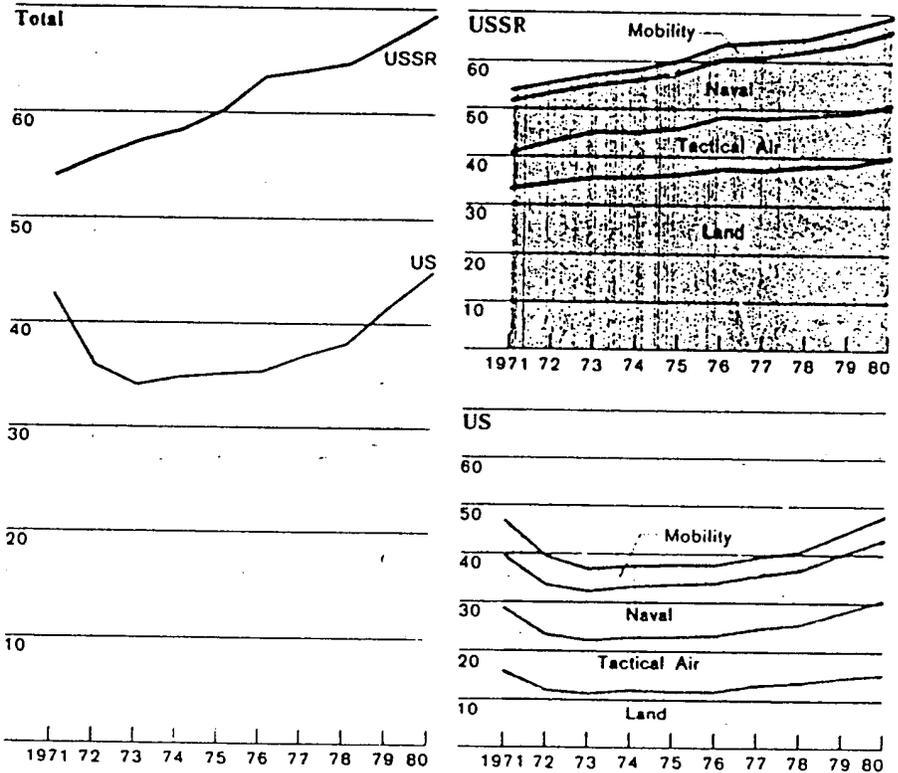
	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
Land	15.7	11.8	11.1	11.8	11.6	11.6	12.9	13.5	14.5	15.2	129.7
Tactical air	13.0	11.4	10.9	10.8	11.1	11.5	11.6	11.9	13.4	15.2	121.0
Naval	10.7	10.2	10.1	10.5	10.8	10.8	10.9	11.2	12.0	12.6	110.0
Mobility*	3.4	2.5	1.9	1.7	1.6	1.5	1.4	1.4	1.7	2.0	19.0
Total	42.7	36.0	34.1	34.8	35.1	35.4	36.9	38.1	41.6	44.9	379.7
USSR											
Land	33.2	34.5	35.6	35.7	36.2	37.4	37.2	38.1	38.3	39.9	366.0
Tactical air	7.5	8.6	9.5	9.3	9.6	10.9	10.8	10.6	10.9	11.0	98.9
Naval	10.8	10.3	9.9	11.1	11.7	12.1	12.9	13.5	14.5	15.4	122.2
Mobility	2.5	2.3	2.2	2.3	2.7	3.0	3.2	2.6	3.3	3.0	27.0
Total	53.9	55.7	57.2	58.3	60.2	63.5	64.1	64.8	67.0	69.3	614.0

* See discussion on page 66.

General Purpose Forces

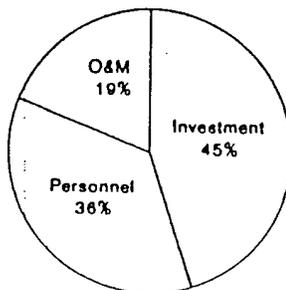
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars

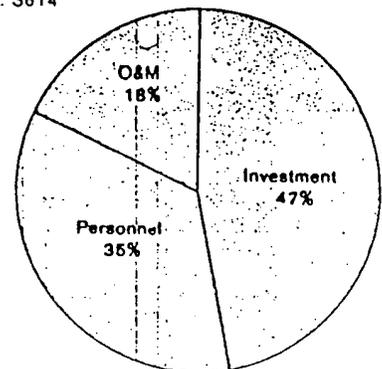


Cumulative, 1971-80

US
Total: \$380



USSR
Total: \$614



Land Forces

This mission includes those US Army and Marine elements in the DPPC categories of Land Division Forces and Land Theater Forces. On the Soviet side, it includes all of the Ground Forces and some other forces—such as ground attack helicopters and portions of the Border Guards—that have roles similar to those of the US forces in the two DPPC categories.

Over the 1971-80 period the estimated cumulative dollar costs of Soviet land forces were almost three times as large as corresponding US outlays. In 1971, the estimated dollar costs of Soviet land forces were just over twice as large as the US counterpart. This margin grew until the mid-1970s, but by 1980 it had decreased somewhat so that Soviet costs were about two and a half times as large as corresponding US outlays.

The trends in this mission in the two countries have been dissimilar. Estimated Soviet dollar costs have steadily grown. US outlays, on the other hand, fell by 25 percent between 1971 and 1975, then gradually increased over the rest of the decade.

Comparisons of the large Soviet conscript army with the US volunteer force are made in detail later in this paper, but we can note here that the USSR has made a more intense effort to develop its ground forces than has the United States. It has almost three times as many men in land forces as the United States. It also has over four times as many main battle tanks, three times as many armored personnel carriers (APCs), and four times as many artillery pieces.

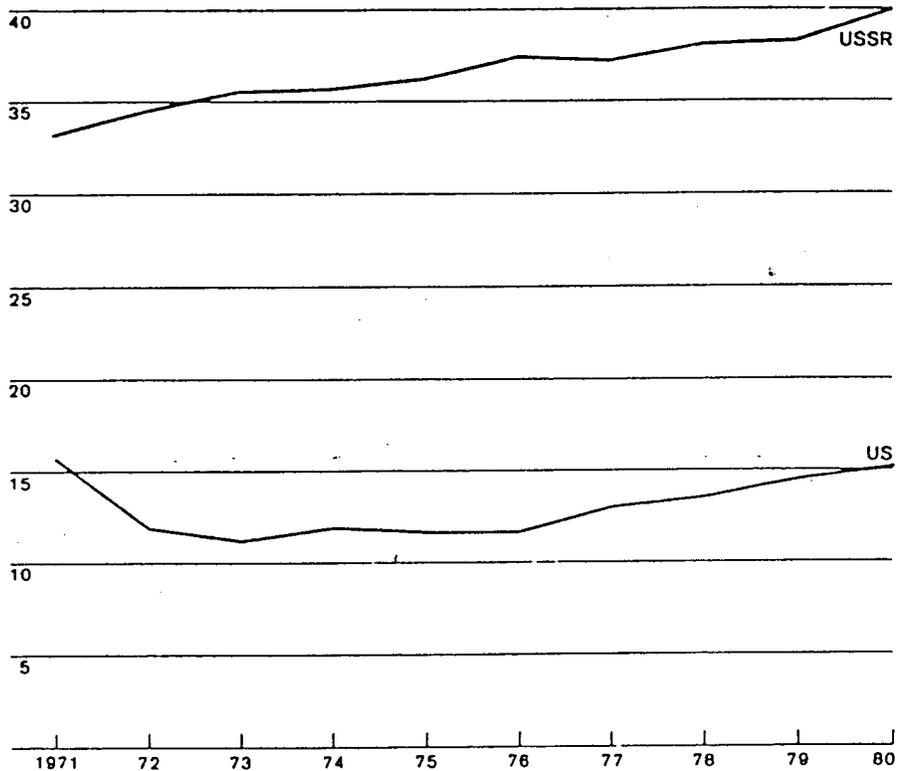
The manpower and weapons inventory of Soviet land forces expanded during the 1971-80 period as the USSR increased the size of its divisions and added 11 combat divisions, bringing the total to 174 in 1980. Accompanying this expansion was a modernization of the country's land arms inventory. Despite a decrease in outlays, the US forces were also able to modernize and expand by procuring new weapons and modernizing old ones. US land forces manpower, however, showed an overall decrease.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US	15.7	11.8	11.1	11.8	11.6	11.6	12.9	13.5	14.5	15.2	129.7
USSR	33.2	34.5	35.6	35.7	36.2	37.4	37.2	38.1	38.3	39.9	366.0

Land Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars



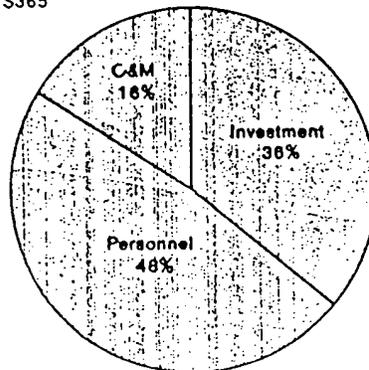
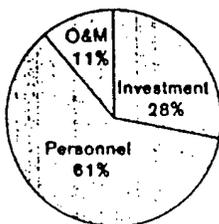
Cumulative, 1971-80

US

Total: \$130

USSR

Total: \$365



Estimated personnel costs constituted almost half of the total costs for the USSR and more than half for the United States. The Soviet costs increased steadily over the period as divisions were expanded. This expansion increased land forces manpower by almost 250,000 troops. US personnel costs fell early in the 1970s due to the reduction in Army rolls after the Vietnam war. These costs gradually rose through the end of the decade as the number of troops increased, but they stayed below their 1971 level.

Investment costs followed trends similar to those of the total missions. In both countries, tank procurement costs were a large part of the totals.

Soviet investment costs showed a general increase over the period. During the decade the USSR procured about 25,000 increasingly expensive tanks, including the T-72 and the T-64. It also procured 30,000 APCs and infantry combat vehicles and almost 10,000 BRDM reconnaissance vehicles.

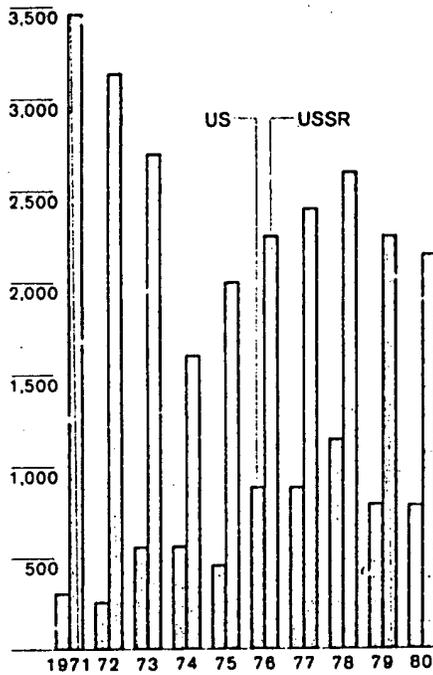
US procurement costs, like the mission as a whole, showed a general decline through the mid-1970s but by 1980 had risen higher than their 1971 level. Over the period the US, like the USSR, increased its tank and APC inventories. The Army and Marines procured over 6,000 M60 series tanks and in 1980 began production of the M1, the first new tank to be produced in the United States in 20 years. The US also converted a number of M48 tanks to modern configurations. The United States' armored vehicle inventory was also expanded with the acquisition of about 3,000 M113 APCs and M113 variants used in other roles.

The USSR has considerably more artillery than the United States. In 1980 the Soviet ground forces had over 20,000 guns and howitzers over 100 mm in size, for instance, while the US Army and Marines fielded about 6,000 comparable artillery pieces.

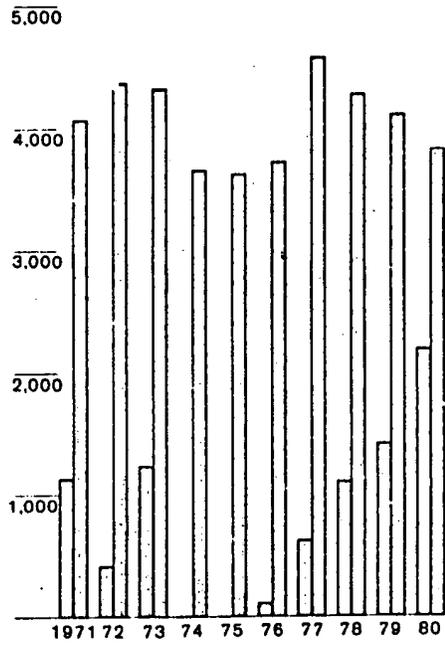
The two countries have similar numbers of attack helicopters. In late 1980 the USSR had just over 1,000 MI-24 Hinds and MI-8 Hips fielded with attack helicopter regiments. The US Army and Marine inventories included almost 1,000 AH-1 Cobras. In addition, the USSR has a number of armed transport helicopters that support ground combat operations, and the United States has armed utility helicopters that can be used in this role.

Land Forces

Tank Deliveries



Deliveries of Other Armored Combat Vehicles



Tactical Air Forces

This mission consists of all land- and sea-based fixed-wing aircraft that are used in a combat role and, on the US side, multipurpose aircraft carriers. (These carriers are included to accord with DPPC definitions.) Helicopters used for ground attack are not included, nor are those aircraft and aircraft carriers which have primarily an antisubmarine mission. Finally, no strategic defense interceptors have been included in this mission although in some scenarios they might be available for performing a tactical role

Over the 1971-80 period, US cumulative costs were 20 percent more than the cumulative dollar costs of comparable Soviet activities. The difference reflects the higher US operations level and the inclusion of the US aircraft carriers.¹⁴

US outlays dropped 15 percent between 1971 and 1974 and then grew so that they were approximately the same in 1980 as they had been in 1971.

- Air Force outlays fell until 1974 but had more than regained their 1971 level by the end of the period as A-10s, F-15s, and F-16s were added to the force.
- US Navy and Marine outlays declined until 1978 but grew over the last two years of the period. (A constant one-fourth of their costs were directly attributable to the carriers rather than the associated aircraft.)

The estimated dollar costs of the Soviet tactical air mission grew fairly steadily although there were two major procurement cycles during the period.

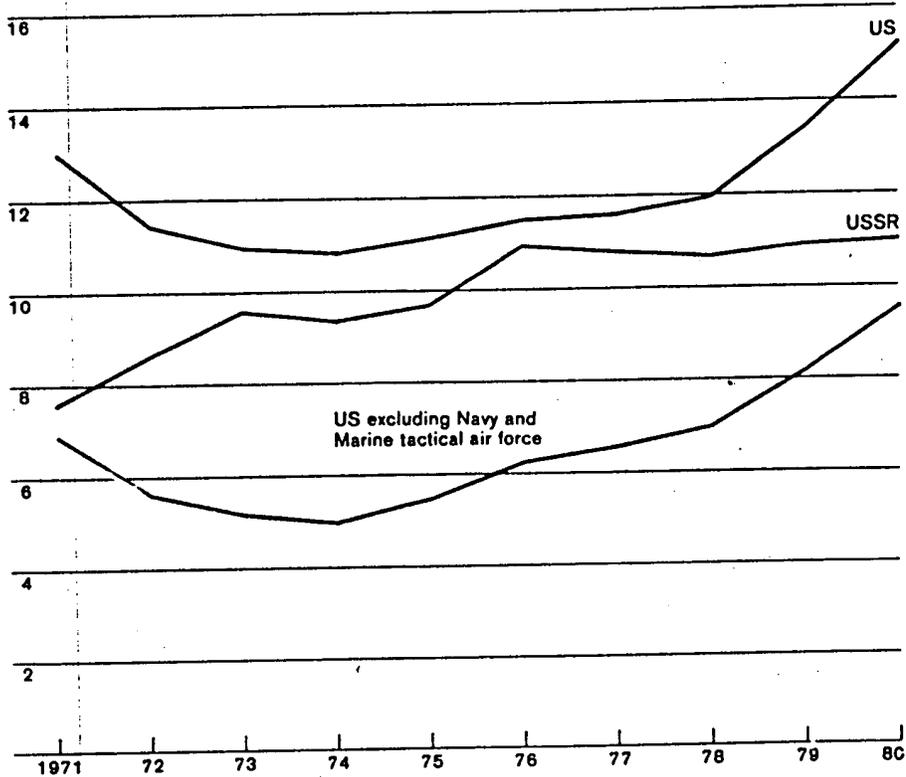
¹⁴ If US multipurpose aircraft carriers and the associated aircraft are excluded, the estimated dollar costs of Soviet tactical air forces for the 1971-80 period were 35 percent more than the corresponding US total (that is, USAF outlays for tactical air forces). In 1980, estimated Soviet costs were 15 percent more

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
Air Force	6.9	5.6	5.1	4.9	5.4	6.2	6.5	7.0	8.2	9.6	65.4
Navy and Marines	6.1	5.8	5.8	5.9	5.7	5.3	5.1	5.0	5.2	5.7	55.5
Total	13.0	11.4	10.9	10.8	11.1	11.5	11.6	11.9	13.4	15.2	121.0
USSR Total	7.5	8.6	9.5	9.3	9.6	10.9	10.8	10.6	10.9	11.0	98.9

Tactical Air Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

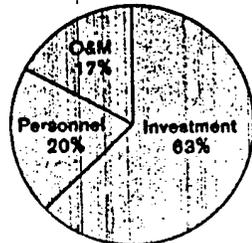
Billion 1980 dollars



Cumulative, 1971-80

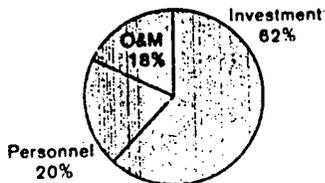
US Including Navy and Marines

Total: \$120



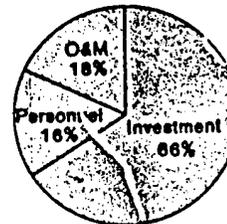
Excluding Navy and Marines

Total: \$85



USSR

Total: \$100



~~Secret~~

Over the period there was a slow increase in the Soviet order of battle and a slow decrease in the US order of battle. Both sides underwent considerable modernization.

Although the principal aircraft in the US order of battle was the F-4 Phantom both at the beginning and end of the period (over one-third of the total), approximately 850 of the new F-14s, F-15s, F-16s, and A-10s were added to this mission. The F-4 was considerably modernized over its 20-year production run. It is the only US fighter ever procured by all three of the services that operate fighter aircraft.

In 1971 MIG-15s and MIG-17s constituted about one-fourth of the Soviet force, but by 1980 these aircraft had been entirely replaced. MIG-23/27 Floggers and MIG-21 Fishbeds were the most numerous aircraft in 1980 (they each constituted about one-fourth of the total), but the MIG-21 was well on its way to being retired. We predict over 4,500 Floggers will be procured for the tactical air mission alone by the end of this aircraft's production run in the late 1980s. (Others are being procured as strategic defense interceptors.) The Flogger program (all versions) is the largest Soviet weapon procurement program, measured in dollar terms.

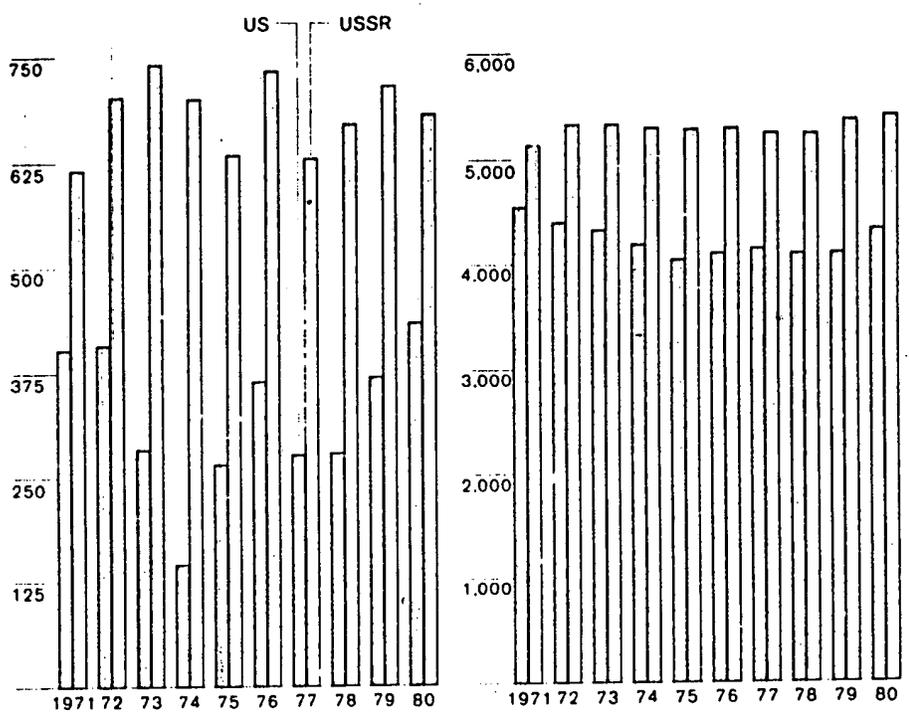
We do count some of the Soviet Navy's land-based aircraft in this mission (the most numerous are TU-16 Badgers), but the Soviets presently have no multipurpose aircraft carrier. (They do have one under development.) The 13 US multipurpose aircraft carriers and their associated aircraft, on the other hand, represent about 45 percent of total dollar outlays over the period.

The dollar costs for investment constituted about two-thirds of the total costs for each country's tactical air mission over the period. Each country's O&M costs grew at an annual average rate of 8 percent, reflecting higher maintenance costs for increasingly sophisticated aircraft.

Tactical Air Forces

Tactical Combat Aircraft Deliveries

Tactical Combat Aircraft Order of Battle



General Purpose Naval Forces

Included in the general purpose naval forces are:

- All major (over 3,000 tons) and minor surface combatants.
- Attack submarines.
- ASW aircraft and ASW carriers.
- Soviet fleet air defense (FAD) aircraft.
- Amphibious warfare ships.
- Naval forces directly supporting the fleets (auxiliaries)

Not included in this category are multipurpose aircraft carriers, which are in the tactical air forces, and strategic missile submarines and their associated tenders, which are assigned to strategic forces. The US Coast Guard is included with the support mission rather than with the general purpose naval forces

Over the entire period cumulative Soviet dollar costs for general purpose naval forces were slightly more than US outlays.¹³ In 1971 they were about equal to US outlays. Both countries' costs declined at about the same rate until 1973 and then grew until the end of the period, but Soviet costs grew at twice the US rate. As a result, in 1980 Soviet dollar costs were 20 percent more than US outlays:

For the USSR, investment accounted for about two-thirds of the estimated costs of this mission. Over the period, investment increased 40 percent, O&M costs increased 20 percent, and personnel costs increased about 10 percent. Roughly half of the US costs went for investment, although investment declined over the period. US personnel costs also declined, but O&M costs nearly doubled

The largest share, about 40 percent, of Soviet general purpose naval investment over the decade was for submarines. This reflects the USSR's effort to modernize its submarine force, by far the world's largest and the principal offensive arm of the Soviet Navy. Major surface combatants accounted for about one-fourth of naval investment, although the USSR

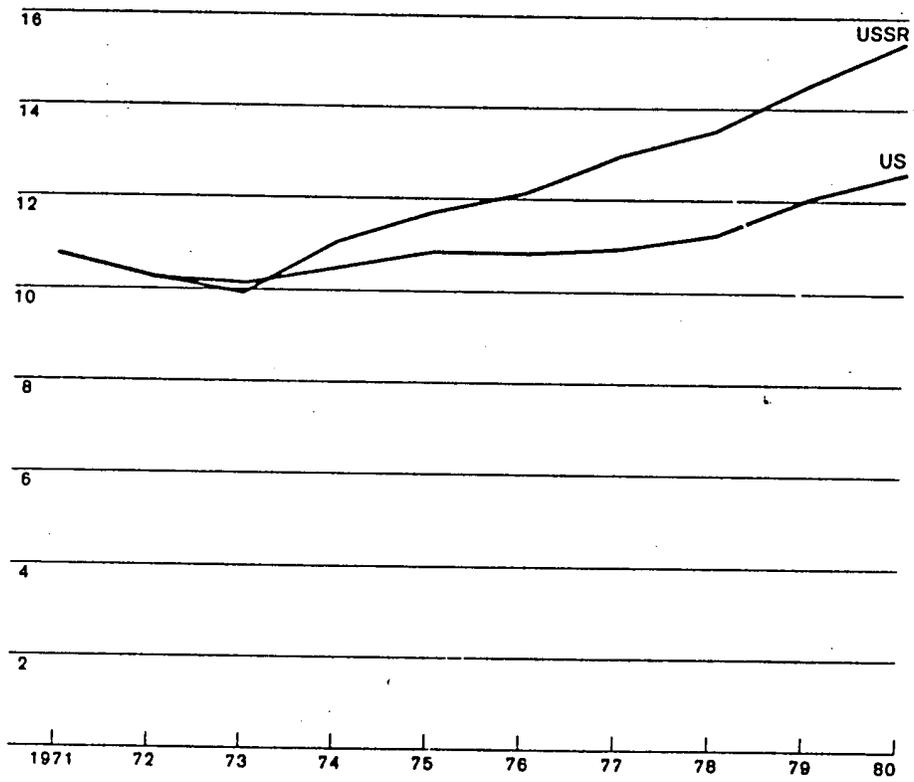
¹³ If the Navy and Marine tactical air force missions (which include carriers) and the Soviet Navy's tactical air forces are included with general purpose naval forces, US outlays were 25 percent greater over the period than estimated Soviet dollar costs. In 1980 they were only slightly more

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>million 1980 dollars</i>											
US	10.7	10.2	10.1	10.5	10.8	10.8	10.9	11.2	12.0	12.6	110.0
USSR	10.8	10.3	9.9	11.1	11.7	12.1	12.9	13.5	14.5	15.4	122.2

General Purpose Naval Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

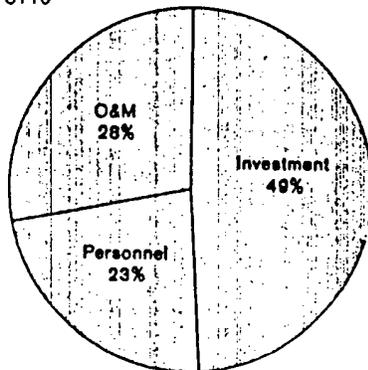
Billion 1980 dollars



Cumulative, 1971-80

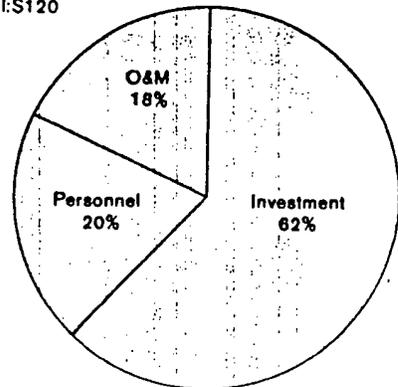
US

Total: \$110



USSR

Total: \$120



built many more minor than major combatants. Minor combatants, which accounted for about 10 percent of investment, include mine warfare ships, light frigates, patrol combatants, and small missile and torpedo attack boats. Soviet general purpose naval ASW carriers and ASW/FAD aircraft accounted for another 10 percent of naval investment.¹⁶ The USSR also built large numbers of small amphibious warfare ships and auxiliaries during the period, and these accounted for another 10 percent of naval investment

US major surface combatants accounted for about 40 percent of investment in general purpose naval forces for the period, while general purpose submarines received slightly less than 30 percent. The US built only two minor surface combatants during the period. These were an insignificant percentage of total investment. ASW aircraft absorbed nearly 20 percent of naval investment, and amphibious assault ships, 10 percent.

Over the decade Soviet general purpose naval forces underwent considerable modernization through the procurement of:

- Twenty-eight nuclear-powered torpedo attack submarines, including four of the fast, deep-diving A-class, 10 nuclear-powered cruise missile submarines, and 21 diesel-powered submarines.
- Two Kiev-class V/STOL aircraft carriers.
- Eighteen cruisers, two destroyers, and 33 large frigates, all equipped with guided missiles.
- Approximately 600 sea- and land-based fixed- and rotary-wing ASW/FAD aircraft. One-third of these were the KA-25 Hormone helicopter; the YAK-36 Forger VTOL fighter and the MI-14 Haze helicopter made up another third.

The size of the US fleet declined for most of the period as the Navy modernized by retiring many older ships and by procuring:

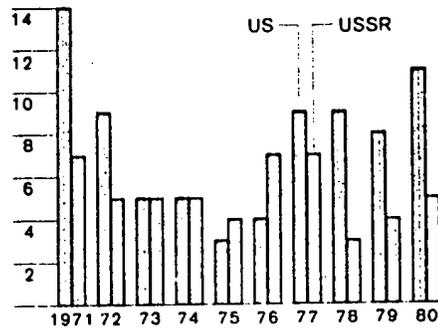
- Twenty-eight nuclear attack submarines, including 10 Los Angeles-class SSNs.
- Five nuclear-powered missile cruisers, 30 destroyers, 30 frigates, and six missile frigates. The cruisers' primary mission is anti-aircraft warfare, while the smaller destroyers and frigates have an open-ocean escort/ASW role.
- Twenty-two amphibious warfare ships, including five Tarawa-class amphibious assault ships, were added to the Navy's amphibious inventory.
- Approximately 300 fixed- and rotary-wing ASW aircraft consisting principally of the P-3C Orion (land based) and the S-3 Viking (sea based).

¹⁶ The Soviet Navy's tactical, mobility, and support aircraft are included in their respective missions

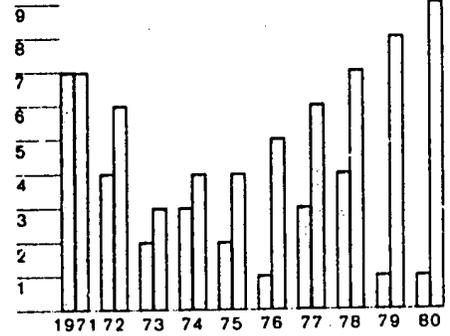
General Purpose Naval Forces

Deliveries

Major Surface Combatants

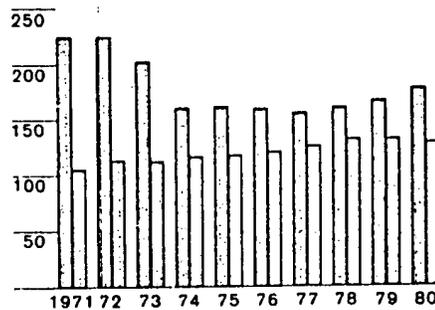


Attack Submarines

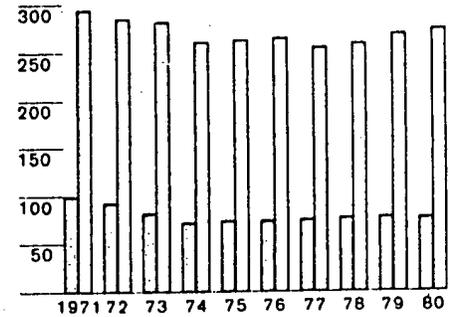


Order of Battle

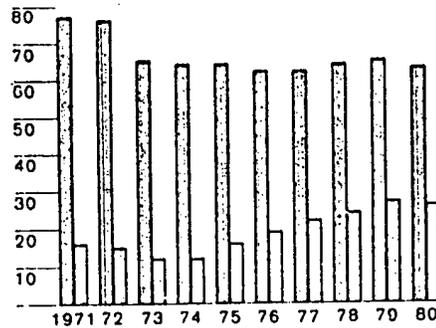
Major Surface Combatants



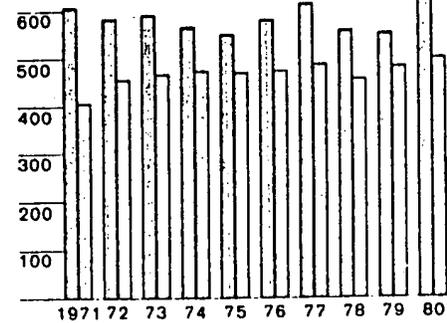
Attack Submarines



Amphibious Assault Ships*



ASW/FAD Aircraft



*Includes only those ships over 1,000 tons.

~~Secret~~

Mobility Forces

The mobility mission presents special definitional problems. According to DPPC definitions it includes airlift, sealift, and the operation of port terminals. We have not been able to identify a separate Soviet sealift mission, however, so all Soviet sealift is included in the general purpose naval forces. We believe the dollar cost of this Soviet activity is relatively small.

Another problem relates to US accounting procedures. A number of US mobility services are charged to other US defense missions, and the mobility mission, as defined by the DPPC, does not reflect these costs. When these "hidden" costs are included, US outlays for the mobility mission are substantially more. In this section, to illustrate the true scope of the US mobility mission, we have arrayed the data so as to show the real total cost of all mobility programs."

For the period, US costs of the mobility mission were 75 percent more than estimated Soviet costs. The trends in the mobility missions of the two countries have been in opposite directions: while the estimated dollar costs of Soviet mobility forces (that is, airlift) grew by 20 percent over the period, US costs fell by one-third. In 1980, US costs were 65 percent higher.

Thus, in contrast with many other comparisons in this paper, the costs of the US mobility mission generally exceeded corresponding Soviet dollar costs. This occurred because the United States, with its many overseas bases and a need to supply them by sea and by air, has a much greater requirement for a mobility mission than the USSR. We do not count any rail transport in the USSR, however, and that may cause an understatement of USSR mobility activities.

In 1980 there were about 2,000 aircraft in the Soviet airlift mission and approximately half that number on the US side. However, the Soviet figure includes many small propeller-driven aircraft. The US has 300 modern heavy airlift aircraft (C-5As and C-141s); the USSR has less than 200 (AN-22s and IL-76s)

" For this reason, the US mobility total differs from that shown on page 52.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US	7.3	5.9	4.7	4.4	4.2	3.9	3.9	3.9	4.3	4.9	47.3
USSR	2.5	2.3	2.2	2.3	2.7	3.0	3.2	2.6	3.3	3.0	27.0

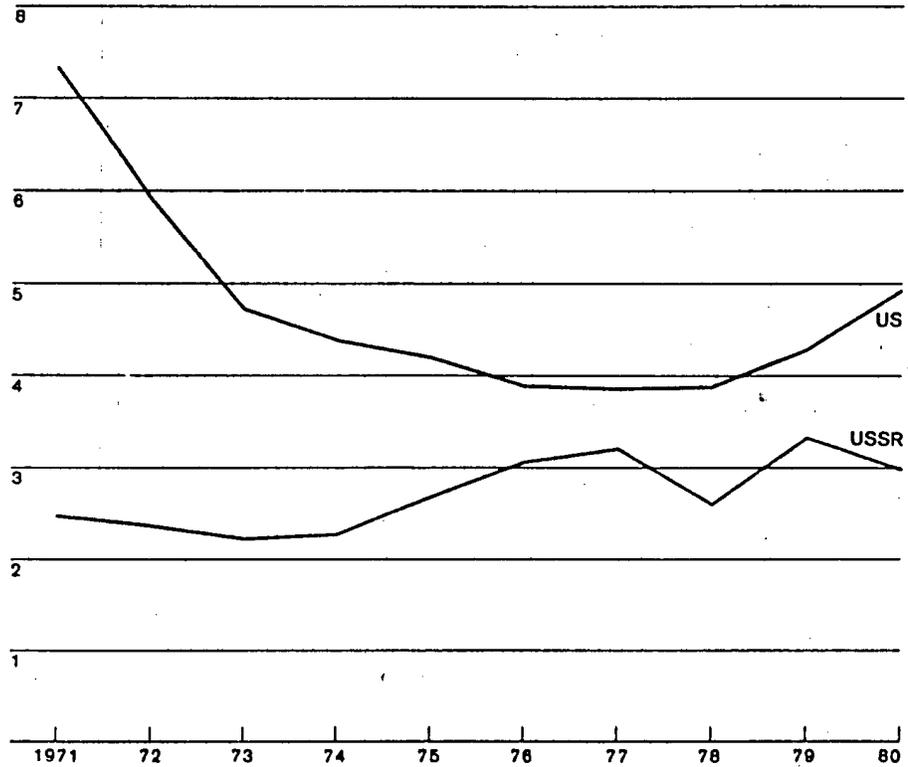
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66

Mobility Forces

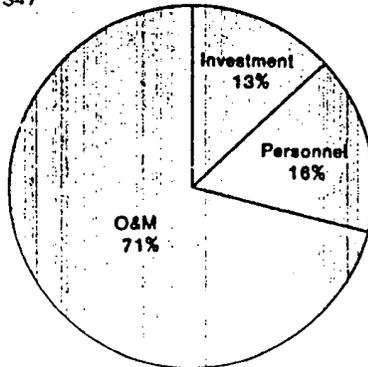
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars

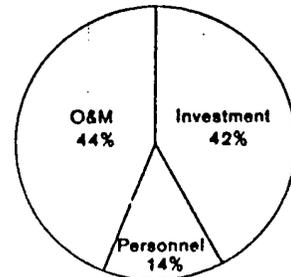


Cumulative, 1971-80

US
Total: \$47



USSR
Total: \$27



~~Secret~~

Soviet General Purpose Forces, 1981-85

We project that the estimated dollar costs of Soviet general purpose forces will continue to grow at an average annual rate of slightly less than 3 percent until 1985. The growth will be led by investment and O&M costs.

Land Forces. In the next five years we expect the dollar costs of the Soviet land forces mission to continue to rise gradually, increasing at an annual rate of 1.5 percent. We expect to see a continued increase in the number of Soviet Ground Forces divisions. In addition, the USSR will continue current efforts to expand its tank divisions with the addition of infantry and artillery.

The Ground Forces are projected to begin procuring a new tank in 1981. Procurement of the T-72 in improved versions will continue through 1985 and beyond.

Tactical Air Forces. We believe the dollar costs of Soviet tactical air forces will grow at an average annual rate of 10 percent until the mid-1980s. This rapid growth rate reflects our prediction of a major procurement cycle for a new generation of fighter aircraft. These aircraft, including both air superiority and ground attack versions, generally incorporate more sophisticated avionics than their predecessors and thus represent higher dollar costs.

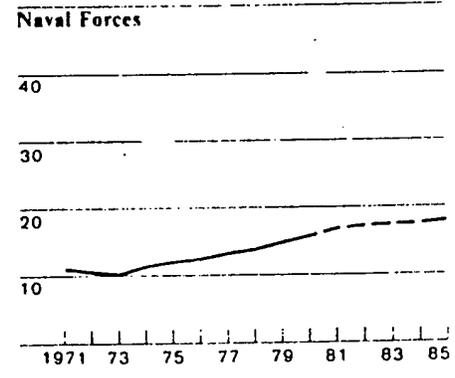
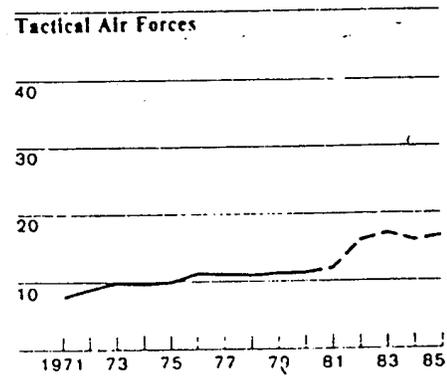
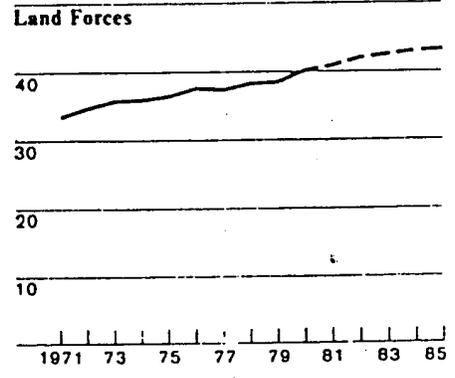
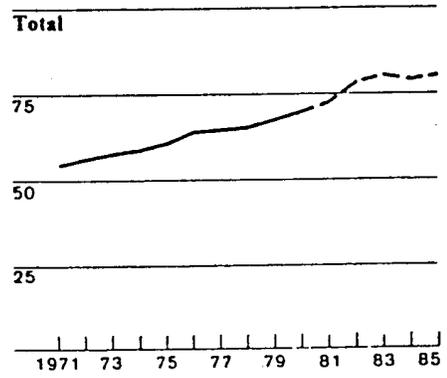
General Purpose Naval Forces. During the next five years, the annual growth rate of costs for the Soviet general purpose navy will be about 2 percent versus the 5 percent we observed over the last five years. O&M will grow fastest, followed by investment and personnel. The increase in O&M will be largely due to maintenance required on the SSNs procured in the late 1970s. Investment will continue to grow because of some very expensive follow-on SSNs scheduled for production.

Major future procurement in the Soviet general purpose navy will include 15 nuclear-powered attack submarines, two additional Kiev-class V/STOL aircraft carriers, approximately 40 other major surface combatants, and approximately 300 sea- and land-based fixed- and rotary-wing ASW/FAD aircraft.

Mobility Forces. The dollar costs of mobility forces will not increase substantially by 1985. Production of new systems—particularly a new large transport—is expected after that date.

Soviet General Purpose Forces, 1971-85

Billion 1980 dollars



Support Forces

The support mission includes those activities which are required to support the US and Soviet combat forces. The major elements of this mission are:

- The operation and maintenance of fixed military installations—for example, civil engineering activities, base transportation, furnishings, utilities, and communication systems.
- Logistic activities, including the operation of depots for weapons, ammunition, and POL and the transportation of supplies.
- Intelligence programs, satellite and other centralized (nontactical) communication systems, and centralized topographic, oceanographic, weather, and like services.
- Training conducted at other than the combat unit level, primarily recruit/conscript, officer, and general skills training. Included are the costs of operating schools and procuring and maintaining training aircraft, weapon simulators, and other training supplies.
- The administration of the US and Soviet forces, including centrally located command personnel (for example, at field army, air army, or numbered air forces headquarters), and those at the US Department of Defense and Soviet Ministry of Defense levels. The administrative costs of the United States' participation in NATO and the USSR's administration of the Warsaw Pact alliance are found here. Also included are the two countries' recruitment/conscription activities and personnel management services.

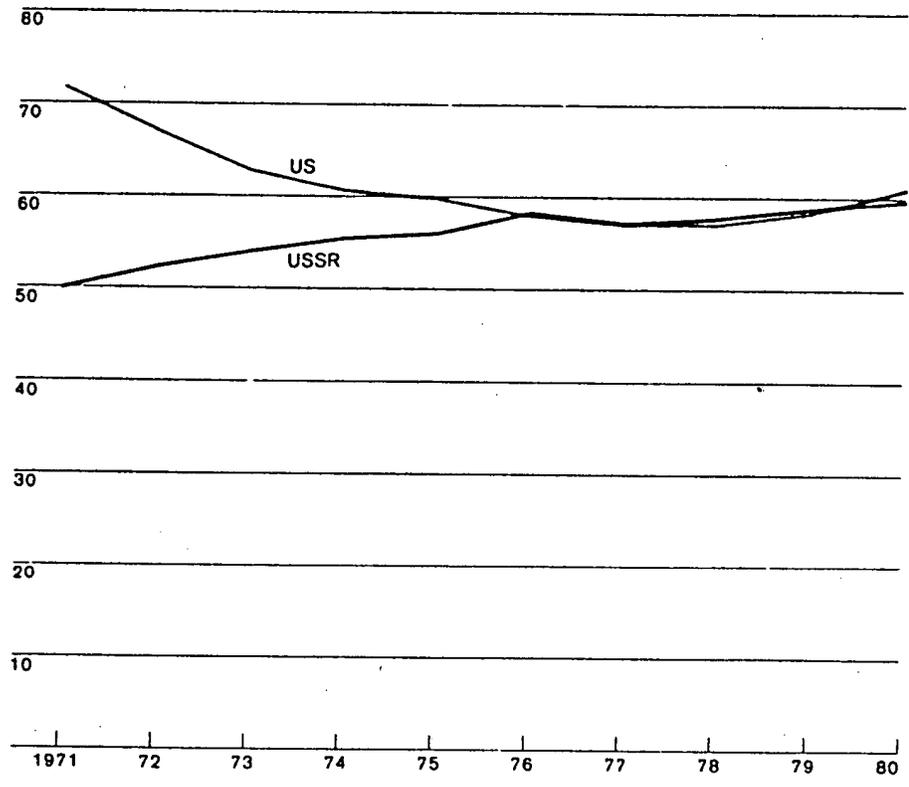
The support mission also includes the US outlays and Soviet dollar costs for a number of other services not attributable to a specific combat mission. For instance, the defense-related activities of the US Coast Guard, the administration of the Soviet KGB, US and Soviet hospitals and medical clinics, data processing (computer) support of the services, security, investigative and judicial activities, and the maintenance of emergency command posts are part of this category.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US	72.0	67.0	62.8	60.6	59.7	57.9	57.0	57.1	58.3	60.9	613.3
USSR	50.0	52.3	54.0	55.4	56.0	58.3	57.2	57.7	58.8	59.6	559.4

Support Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

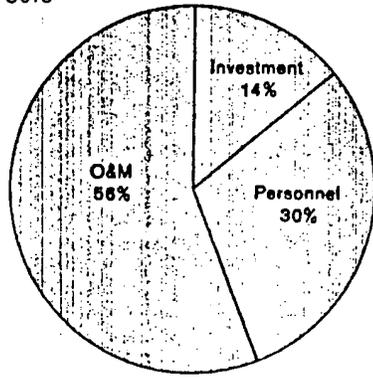
Billion 1980 dollars



Cumulative, 1971-80

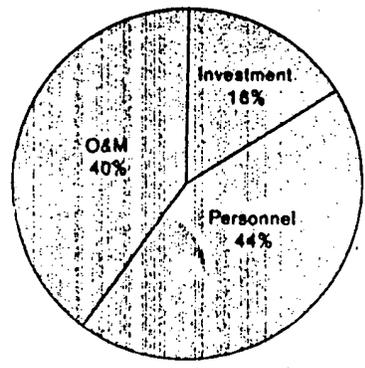
US

Total: \$815



USSR

Total: \$560



~~Secret~~

Over the 1971-80 period the cumulative US outlays for support were slightly more than the estimated dollar costs of Soviet support forces. In 1980, estimated Soviet dollar costs were almost equal to US outlays.

US support costs fell every year from 1971 to 1977, decreasing by 20 percent before they began to grow again in 1978. The decline paralleled the decreases in most of the combat forces from the beginning of the period until the mid-1970s. Personnel costs led this trend in the support forces.

The estimated dollar costs of Soviet support forces increased every year except for a brief leveling-off in 1977 and 1978. The total increase, almost 20 percent, kept pace with the growth of other missions and reflected an increase in manpower and the cost of supporting increasingly sophisticated military forces.

Over the period, O&M costs were the largest resource category for the United States in this mission. Estimated personnel costs were the largest for the USSR but O&M costs were almost as large. The proportion of investment in estimated total costs was relatively small, averaging around 15 percent each year for both countries.

A significant part of O&M costs in both countries was the pay and benefits of civilian personnel who operate bases and logistic establishments and serve in administrative capacities. These accounted for a third of the annual O&M costs for the USSR's support mission. Utilities and fuel costs were also significant, as were the operation and maintenance costs of auxiliary support activities, especially space and intelligence programs. In the USSR, preinduction military training programs, conducted at the secondary school level, accounted for about 15 percent of cumulative O&M costs. The US Department of Defense does not operate a large program of this type.

Cumulative Soviet investment costs for the support mission were approximately equal to US outlays. A large portion of the construction of airfields, naval bases, and Army and Ground Forces bases are included in the support mission, so that construction makes up a large share of the investment category relative to other missions.

Estimated Soviet procurement costs were 75 percent of corresponding US outlays, but construction costs were 40 percent more. For both countries a large portion of the procurement costs were for expensive space systems. Other large procurement outlays were for aircraft (for training, intelligence, and logistics roles), electronics and communications equipment, training equipment other than aircraft, and base furnishings and supplies. The US category includes procurement associated with the Coast Guard.

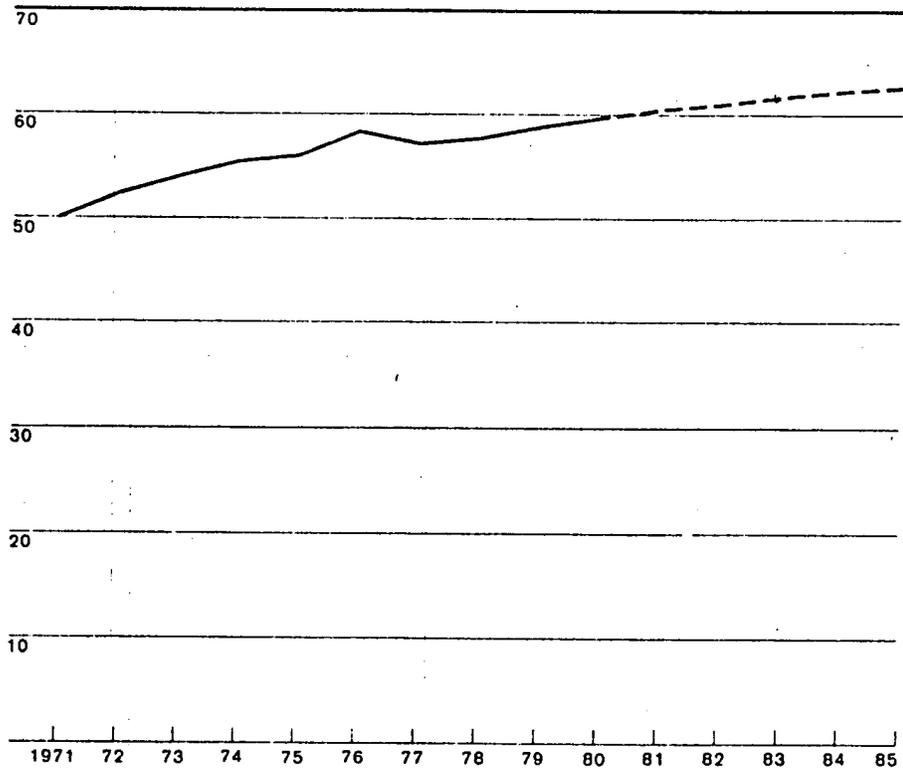
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Soviet Support Forces, 1981-85

During the next five years, the dollar costs of the Soviet support mission will follow trends similar to those of the past decade. These costs will grow slowly throughout the period. The investment and O&M categories will lead the increase, reflecting the costs of supporting increasingly sophisticated defense forces. Military personnel costs will remain fairly level.

Soviet Support Forces, 1971-85

Billion 1980 dollars



Estimated Dollar Cost by US Service

This section compares the US Army, Navy (including Marines), Air Force, and defense agencies with their hypothetical Soviet counterparts. We have aggregated all the Soviet units as if the USSR structured its military as the United States does. The purpose of this exercise is to give some idea of the comparative size in dollars of Soviet counterpart organizations.

It must be emphasized that this is not the way the Soviets structure their services. Instead of three services, the USSR has five: the Strategic Rocket Forces (SRF), the National Air Defense Forces (PVO), the Ground Forces, the Navy, and the Air Forces. The Air Forces include Long-Range Aviation (LRA), Military Transport Aviation (VTA), and Frontal (tactical) Aviation.¹⁴ In general, there is no one-to-one correspondence of activities: for example, the activities of the US Air Force are performed in the USSR by the SRF, the PVO, and the Air Forces. Yet, some of the PVO's activities are carried out by the US Army

The category "defense agencies and other" includes all activities at the Department of Defense or Ministry of Defense level, nuclear weapons procurement and maintenance (most of which is performed in the United States by the Department of Energy), and the US Coast Guard. DOSAAF (the premilitary training program in the USSR) is also included in this category. The US has no premilitary training program of similar scope

Although the methodology we use in this exercise has been improved in the past year, there are still some miscellaneous Soviet activities that we could not assign to a specific service. These are included in the "defense agencies and other" category. An example is central command—much of this is at the service level in the United States but at the Ministry of Defense level in the USSR. The net effect of these miscellaneous activities, despite our improvements, is to make the Soviet entry for "defense agencies and other" too high relative to the corresponding US category. Conversely, each of the Soviet "services" is underestimated by a smaller, but unknown, amount.

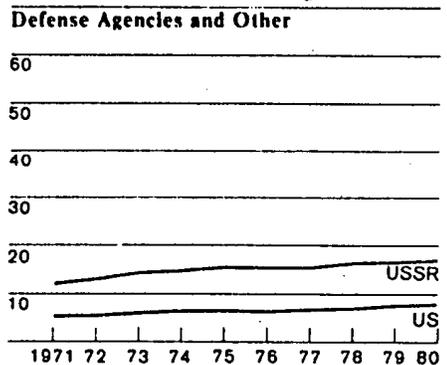
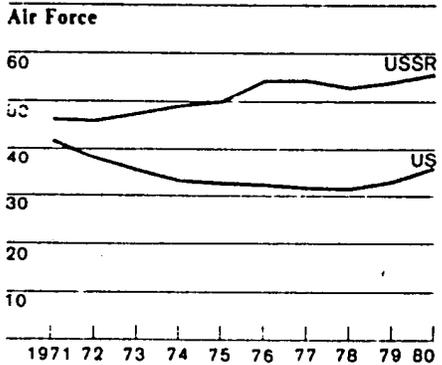
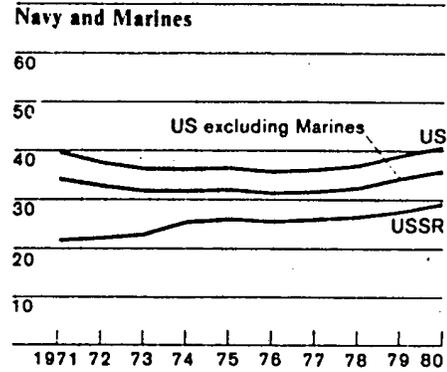
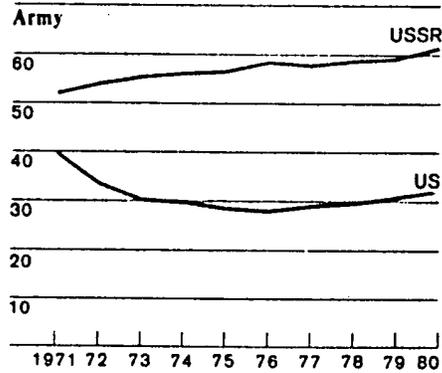
All RDT&E costs are excluded from both sides, since we are unable to allocate these estimated costs among the Soviet services. Pensions are also excluded. All Soviet military space activities are assigned to the Soviet "air force."

¹⁴ The Soviet Union has recently restructured its forces, abolishing LRA and changing the name and duties of PVO. This change was not completed until after the period this paper covers

Estimated Dollar Costs by US Service

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1980 dollars



We have not tried to duplicate the US Marines. (The Soviet Naval Infantry, which is a much smaller organization with limited functions, is included with the "navy.") We have placed all Soviet assault and attack helicopters in the "army" although these kinds of helicopters are also procured by the US Navy for the US Marines. This complicates the comparisons—especially for the "navies."

The largest difference (ignoring "defense agencies and other" for the reasons noted above) is for the "armies." Soviet "army" estimated costs were 85 percent more than US Army outlays over the 1971-80 period. The cumulative dollar costs for the Soviet "air force" were half again as much as US Air Force outlays over the period. Finally, the size and costs of the US Navy (and Marines) exceeded the hypothetical Soviet counterpart. Estimated Soviet cumulative dollar costs were only two-thirds of US Navy and Marine outlays.

The disparities are greater for investment costs than they are for operating costs. This is particularly true for the "navies." The operating costs for the US Navy (and Marines) are twice as much as their Soviet counterpart over the period; US Navy and Marine investment costs are 20 percent lower. Thus, the US Navy is characterized by higher operating costs reflecting its greater activity level. The Soviet "navy's" higher investment costs reflect the continuing buildup of the Soviet fleet.

The dollar costs grew fastest for the Soviet "navy" followed by the "air force" and the "army" (again ignoring "defense agencies and other"). Outlays for the US Army and Air Force decreased over the decade while the Navy and Marine total was approximately the same in 1980 as it had been in 1971.

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Cumulative
<i>Billion 1980 dollars</i>											
US											
Navy and Marines	39.6	37.4	36.1	36.1	36.3	35.5	35.9	36.8	38.8	40.6	373.2
Navy only	34.0	32.7	31.6	31.6	31.8	31.2	31.4	32.2	34.1	35.7	326.4
Marines only	5.5	4.8	4.5	4.5	4.5	4.3	4.4	4.6	4.7	4.9	46.8
Army	39.7	33.3	30.2	29.6	28.4	27.9	28.9	29.5	30.7	32.1	310.3
Air Force	41.7	37.9	35.2	33.1	32.6	32.3	31.6	31.4	32.9	35.8	344.4
Defense agencies	5.1	5.3	5.8	6.2	6.4	6.1	6.5	6.8	7.5	7.7	63.4
Total	126.0	113.9	107.3	105.0	103.7	101.9	102.9	104.5	109.9	116.2	1,091.2
USSR											
"Navy"	22.0	22.5	23.2	25.7	26.3	25.9	26.3	26.8	27.9	29.5	256.1
"Army"	52.3	54.3	55.8	56.5	56.9	58.8	58.2	59.1	59.6	61.8	573.2
"Air Force"	46.5	46.2	47.8	49.4	50.4	54.7	54.7	53.3	54.4	56.1	513.5
"Defense agencies"	12.4	13.3	14.6	15.1	15.8	15.7	15.7	16.7	16.9	17.3	153.5
Total	133.2	136.3	141.4	146.7	149.4	155.1	154.9	155.9	158.7	164.8	1,496.4

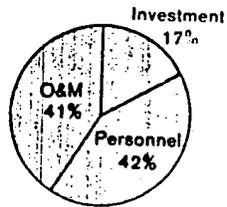
Estimated Dollar Costs by US Service

A comparison of US outlays with estimated dollar costs of Soviet activities

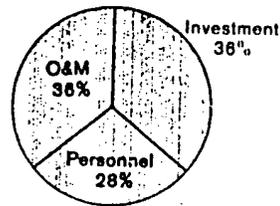
Cumulative, 1971-80

Billion 1980 dollars

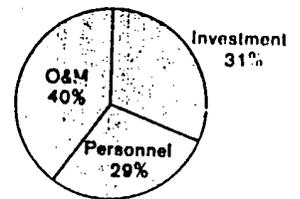
US Army
Total: \$310



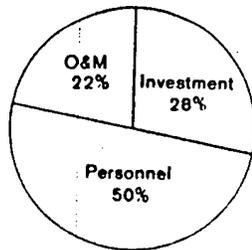
Navy and Marines
Total: \$375



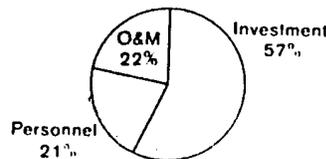
Air Force
Total: \$345



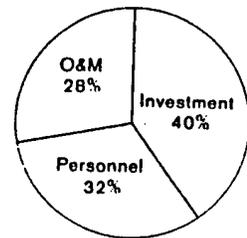
USSR "Army"
Total: \$575



"Navy"
Total: \$255



"Air Force"
Total: \$515



Military Manpower

The manpower comparisons in this section are designed to cover the same Defense Planning and Programming Categories as the preceding dollar cost comparisons:

- On the Soviet side, this comparison includes men in the Ground Forces, Air Forces, Air Defense Forces, Navy, Strategic Rocket Forces, the Border Guards of the KGB, and the national command and support structure.
- On the US side, the manpower total includes all members of the armed forces and the Coast Guard.¹⁹

We include only those Soviet personnel who fill what in the United States are considered to be national security roles. Thus, we do not include Soviet military personnel assigned to militarized security forces of the Ministry of Internal Affairs, military construction and railroad troops, or civil defense troops. (These categories total more than 900,000 men.)

Over the past nine years, trends for military manpower have paralleled those for total costs in the two defense establishments:

- Estimated Soviet military manpower grew by more than 400,000 between 1971 and 1980—a rate equal to 1.2 percent per year.
- From 1971 to 1975, US military manpower was still declining from its Vietnam-era peak. This decline amounted to 590,000 men. Since 1975, US manpower levels have been relatively stable.

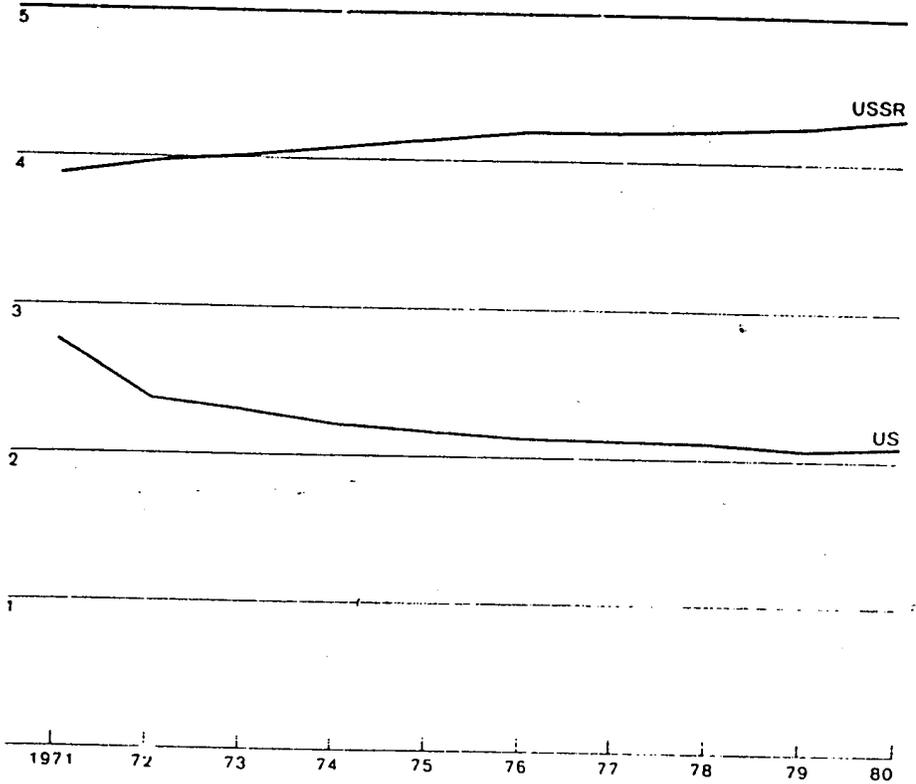
Viewed on the basis of military services as defined by the Soviets, the largest increase in Soviet manpower through the decade occurred in the Ground Forces. This increase amounted to more than 250,000 men—an annual growth rate of 2 percent.

Despite dissimilarities in the structure of the US and Soviet forces which make organizational comparisons misleading, the allocation of manpower to military missions can be roughly compared using the definitions of the US Defense Planning and Programming Categories. The table on the next page presents these comparisons.

¹⁹ This results in a slight overstatement for the United States, since only those Coast Guard personnel with a military mission should be counted

Total Military Manpower

Personnel (in millions)



**Estimates of US and Soviet
Military Manpower, 1980**

Thousands •

	US	USSR
Strategic offensive forces		
Intercontinental	70	310
Peripheral	—	160
Strategic defense forces ^b	20	360
General purpose forces	920	1,810
Land	540	1,480
Tactical aviation	170	100
Navy	180	210
Mobility	40	20
Support forces ^c	1,070	1,830
Total	2,090	4,310

^a Because of rounding, components may not add to the totals shown.

^b Includes the strategic control and surveillance mission.

^c Includes RDT&E and space missions.

The manpower table highlights several differences between US and Soviet military missions:

- The Soviets have a large peripheral strike force composed of medium- and intermediate-range ballistic missiles of the Strategic Rocket Forces, long- and medium-range bombers of the Air Forces, and the older ballistic missile submarines of the Navy. The United States has no comparable force.
- The Soviets commit a large force of men and equipment to defense against air and missile attack. The more than 360,000 men in this mission are assigned to interceptor, surface-to-air missile, antiballistic missile, and control and warning forces. The United States has only a token force dedicated to this mission.
- Soviet general purpose forces are nearly twice as large as those of the United States. The land forces, which are nearly three times as large as the US counterpart, account for this difference.

There are also similarities in the shares of manpower allocated to the missions shown in the table:

- Intercontinental attack forces require approximately 3 percent of total manpower in each country.
- Support forces take about half of US military manpower and slightly less than half of the Soviet total

Confidence in Manpower Estimates

We calculate our total manpower figure by making separate estimates for each of the individual Soviet forces. These individual manning estimates are produced by a variety of methods, including order-of-battle studies, [] and statistical sampling techniques. We believe our estimate of the overall force size is accurate within 10 percent

A recently completed study of the military service experience [] provides the first independent check on our total manpower estimates. The results of this study support our estimate within the 10 percent range of uncertainty.

Soviet Conscription Practices

Besides checking our estimates of military manpower, the [] data show how the Soviets have adjusted their conscription system to balance the military demand with the changing size of the draft pool. [] experience shows that the length of service has varied widely since 1950, when the average conscript served over six years. The average term fell below three years in the mid-1950s, rising again in the early 1960s to compensate for manpower shortages. Since then, conscripts have typically served only the term required by Soviet law—three years before 1967, two years thereafter.

In addition, the Soviets call on older members of the draft pool when they cannot otherwise meet their requirements. Ordinarily, the Soviets draft the majority of a year's conscripts from the youngest members of the draft pool. For example, in 1962, the youngest eligible age was 19, but the average age of conscripts that year was about 21, suggesting that the Soviets reached deeper into the draft pool to obtain sufficient numbers of draftees.