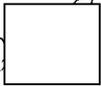


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National  
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Assessment  
Center

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# Estimated Soviet Defense Spending: Trends and Prospects

An Intelligence Assessment

~~Secret~~

SR 78-1013A  
August 1978

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## Estimated Soviet Defense Spending: Trends and Prospects

Central Intelligence Agency  
National Foreign Assessment Center

August 1978

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### *Key Judgments*

**Total Defense Spending.** Our estimates of the ruble cost of Soviet defense activities during the 1967-77 period indicate that:

- Soviet defense spending, defined to correspond to US budgetary accounts and measured in constant 1970 prices, grew at an average annual rate of about 4 to 5 percent—from 35-40 billion rubles in 1967 to 53-58 billion rubles in 1977.
- Defined more broadly, as Soviet practice might require, defense spending grew from 40-45 billion rubles in 1967 to 58-63 billion rubles in 1977.

**Economic Impact.** The defense effort has had a substantial impact on the Soviet economy:

- During the 1967-77 period, defense spending consumed an almost constant share of Soviet GNP—11 to 12 percent or 12 to 13 percent, depending on how defense spending is defined.
- Defense investment consumed about one-third of the final product of machinebuilding and metalworking, the branch of industry that produces investment goods as well as military hardware.
- Between 65 and 75 percent of the males reaching draft age were conscripted into the Soviet armed forces. Uniformed military servicemen and civilians working for the Ministry of Defense constituted 3 to 4 percent of the total labor force.
- Defense takes a large share of the economy's best scientific, technical, and managerial talent and large amounts of high-quality materials, components, and equipment.

The armed forces accounted directly for a small share of total Soviet energy consumption. Less than 5 percent of the refined petroleum and less than 5 percent of the heat and electricity consumed by the USSR went to the armed forces.

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**Composition and Allocation.** Ruble estimates provide insight into the resource composition of the Soviet defense effort and the trends in resource allocation among the services. Analysis based on the narrower definition of defense—for which the estimates are more precise—indicates that during the 1967-77 period over one-half of total spending went for investment, a little over one-fourth for operating expenditures, and over one-fifth for research, development, testing, and evaluation.

Examination of defense spending according to service indicates that:

- The Air Forces and the Ground Forces received the largest shares of investment and operating spending. The share going to the Air Forces increased during the period as a result of increased spending for Frontal Aviation. The Ground Forces' share was relatively constant.
- Spending for the Navy and the National Air Defense Forces grew more slowly than defense spending as a whole. As a result, the shares of investment and operating spending going to these forces were smaller in 1977 than in 1967. Most of the growth in spending for the Navy was allocated to ballistic missile submarines, while most of the growth in spending for the Air Defense Forces was allocated to interceptor aircraft.
- The Strategic Rocket Forces received the smallest share of investment and operating spending among the five services. Spending for the SRF was primarily determined by deployment cycles for ICBMs and fluctuated more than that for any other service. By the end of the 10-year period, spending for this service was only slightly higher than in 1967.

Examination of defense spending for intercontinental and regional forces indicates that:

- Spending for intercontinental attack forces subject to SALT II limitation constituted a little over 10 percent of total defense spending and grew at a slower pace than the total.
- Spending for Ground Forces and Frontal Aviation in the NATO Guidelines Area constituted less than 10 percent of total defense spending but grew at about twice the rate of the total.
- Spending for Soviet forces along the Sino-Soviet border constituted a little over 10 percent of total defense spending and grew at more than twice the rate of the total.

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**Prospects.** Soviet economic growth has been slowing in the 1960s and the 1970s, and we forecast a further slowdown in the 1980s. Nonetheless, all of the evidence available to us on Soviet defense programs under way and planned suggests that the long-term upward trend in allocation of resources to defense is likely to continue into the 1980s. There is no indication that economic problems are causing major changes in defense policy. The atmosphere in Moscow with regard to the economy, however, is one of concern, and the Soviet leaders could be contemplating modest alterations in military force goals. But even if such alterations were undertaken, the rate of growth of defense spending over the next five years or so probably would slow only marginally.

- For the next two or three years, Soviet defense spending will continue to grow. Because some current ICBM, ballistic missile submarine, and fighter aircraft programs are nearing completion, the annual rates of growth in that period probably will be slightly lower than the long-run average.
- During the early 1980s we expect the Soviets to begin testing and deploying a number of the new weapon systems under development. This probably will cause the annual rates of growth in defense spending to increase to a pace more in keeping with the long-term growth trend of 4 to 5 percent a year.
- Conclusion of a SALT II agreement along the lines currently being discussed would not, in itself, slow the growth of Soviet defense spending significantly.

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## PREFACE

This report presents estimates of Soviet spending for defense in rubles during the 1967-77 period and describes what we believe to be the prospects for the next five years.

The estimates are expressed in rubles to reflect our understanding of the costs of military equipment and activities in the USSR. Such estimates allow us to assess the impact of defense on the Soviet economy, the resource considerations confronting Soviet defense planners, and the relative priorities assigned to the forces and activities that make up the defense effort. Constant prices are used so that the estimates reflect only real changes in defense activities, not the effects of inflation. The use of 1970 prices permits comparison of estimated defense expenditures with other CIA estimates of Soviet economic performance, which also use that price base.

The estimates are based on a detailed identification and costing of the activities and components that make up the Soviet defense program for each year. A description of our methodology and our confidence in the estimates can be found in the appendix.

This report is an expanded version of an unclassified research paper of the same title. It provides additional information on trends and developments within the Soviet military forces and a more detailed description of our methodology and our confidence in the estimates. It is the basis for the testimony the Director of Central Intelligence presented to the Joint Economic Committee of the Congress in June 1978. This report complements our dollar cost comparison of Soviet and US defense activities.<sup>1</sup>

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## Estimated Soviet Defense Spending: Trends and Prospects

### Soviet Spending for Defense

#### Estimates of Total Defense Spending

We do not know precisely how the Soviets define defense spending. This report uses two definitions: one corresponds to that used in the United States; the other is broader and includes additional costs the Soviets are likely to classify as spending for defense. These additional costs include expenditures for internal security troops, certain civil defense activities, military stockpiling, foreign military assistance, and space programs that are operated by the military in the USSR but by the National Aeronautics and Space Administration in the United States.

Defined to correspond to US accounts, estimated Soviet spending for defense increased from 35-40 billion rubles in 1967 to 53-58 billion rubles in 1977, measured in 1970 prices. According to the broader definition, estimated spending grew from 40-45 billion rubles in 1967 to 58-63 billion rubles in 1977. Under the narrower definition, for which the estimates are more detailed and precise, estimated Soviet defense spending increased at an average annual rate of about 4 to 5 percent for the period as a whole. Growth rates varied from year to year, however, reflecting primarily fluctuations in procurement spending for aircraft and strategic missiles.

#### Economic Considerations

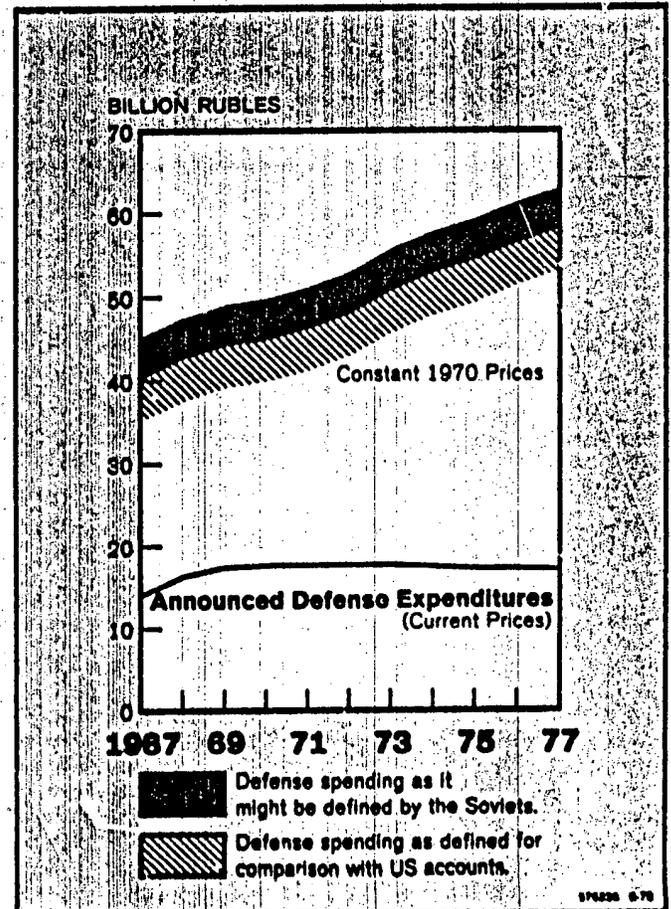
Although no single measure adequately describes the economic impact of the Soviet defense effort, defense spending's share of GNP is often used for this purpose. During the 1967-77 period, defense spending according to the narrow definition accounted for 11 to 12 percent of Soviet GNP, and, according to the broader definition, for 12 to 13 percent.<sup>2</sup> In comparison, Soviet spending for investment in the economy during

<sup>2</sup> Because defense spending grew at approximately the same rate as the economy as a whole, there was little change in the share of GNP going to defense.

this period accounted for approximately 26 percent of GNP, and spending for health and education accounted for 6 to 7 percent.

Another perspective is provided by comparing our estimate of Soviet defense spending with the size of the total Soviet state budget. In 1970, the year in which our defense spending estimate (stated in constant 1970 rubles) is directly comparable to Soviet state budget data (published in current rubles), spending for defense under the narrow definition was over one-quarter the size of total budget expenditures. According to the broader definition, it was nearly one-third.

### Estimated Soviet Expenditures for Defense, 1967-77



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Another indication of the economic impact of defense is provided by examining defense's share of crucial industrial output and economic resources. During the 1967-77 period, defense consumed approximately one-third of the final product of machinebuilding and metalworking, the branch of Soviet industry that produces civilian investment goods as well as military hardware. In ruble cost terms, about two-thirds of the aircraft and over two-thirds of the ships and boats produced in the Soviet Union went to the defense sector.

During the period, 65 to 75 percent of the males reaching draft age were conscripted into the Soviet armed forces. Uniformed military servicemen and civilians working for the Ministry of Defense constituted between 3 and 4 percent of the total Soviet labor force. The Soviet armed forces accounted directly for a relatively small share of total Soviet energy consumption—less than 5 percent of the refined petroleum and less than 5 percent of the heat and electricity consumed by the Soviet economy.

To the extent that these measures fail to take qualitative considerations into account, they tend to understate the impact of defense programs on the Soviet economy. Defense takes a large share of the economy's best scientific, technical, and managerial talent and draws heavily on the output of science and high-quality materials, components, and equipment.

### Spending by Resource Category

A useful way of analyzing Soviet defense spending is to break it down into three principal resource categories—investment, operating, and RDT&E (research, development, testing, and evaluation).<sup>9</sup> Investment, which includes spending for the procurement of new equipment and major spare parts

<sup>9</sup> The analysis presented here is based on the narrow definition of defense, corresponding to that used in the United States. However, in breaking down Soviet defense spending into resource categories, we use a wider definition of investment, and a narrower definition of operating, than employed in US defense accounts. These different definitions, which are consistent with our understanding of Soviet accounting procedures, assign a greater share of spending for spare parts and repair to investment, and a lesser share to operating, than the US definitions.

as well as for the construction of facilities, reflects the flow of new equipment and facilities into the military forces. Operating expenditures are those associated with the day-to-day functioning of the military. RDT&E expenditures, associated with exploring new technologies, developing advanced weapons, and improving existing weapons, provide some indication of plans for future force modernization.

During the 1967-77 period, Soviet expenditures for investment averaged a little over one-half of defense spending, while expenditures for operating averaged over one-quarter. The share of defense expenditures going to RDT&E—the fastest growing category—increased from less than one-fifth in 1967 to nearly one-fourth in 1977.

### Investment

Between 1967 and 1977, more than 90 percent of Soviet investment spending was for procurement, and most procurement spending was for acquisition of weapons. The bulk of the weapons acquisition outlays went for aircraft, missiles, and ships. Spending for aircraft and missiles grew most rapidly. Spending for land armaments grew at a somewhat slower pace, while spending for naval ships grew little during the period.

Expenditures for the investment category as a whole grew at an average rate of about 4 percent per year during the period, although growth rates varied from year to year. The growth pattern for investment was determined, for the most part, by procurement cycles for aircraft and missiles.

### Operating

Operating expenditures, which are associated with maintaining current forces, can be divided into personnel costs and operation and maintenance costs. Between 1967 and 1977, personnel spending—military pay and allowances, food, personal equipment, medical care, travel, and military retirement—averaged about 60 percent of operating expenditures and approximately one-sixth of total spending for defense. An approximately 20-percent increase in the total number of Soviet uniformed military personnel, along

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with increased food rations and higher spending for military retirement pay, caused these expenditures to grow during the period at a rate of 2 to 3 percent per year. The growth in personnel spending was most rapid between 1967 and 1972—during the height of the Soviet buildup along the Chinese border.

Operation and maintenance expenditures—for the maintenance of equipment and facilities, the purchase of petroleum, lubricants, and utilities, the hiring of civilian personnel, and the leasing of communications—were consistently lower than personnel expenditures but grew at approximately twice the rate.

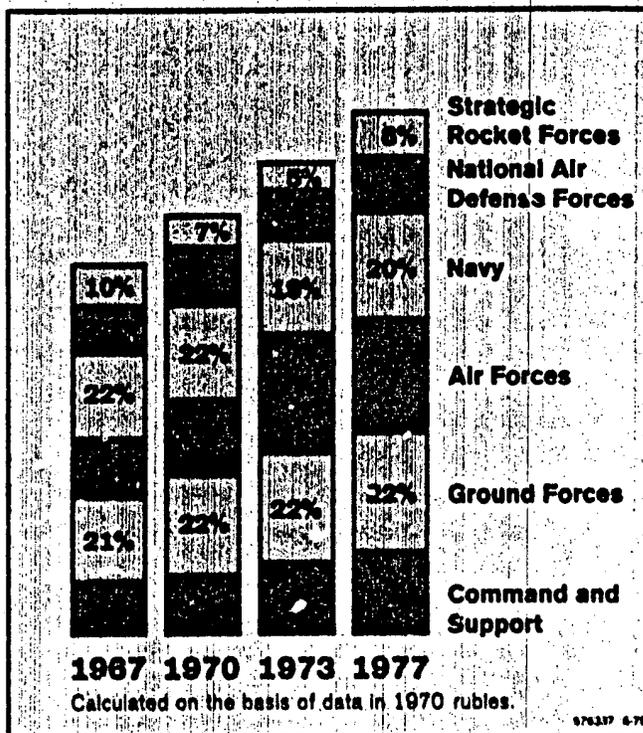
### RDT&E

The estimate for Soviet RDT&E outlays is the least reliable of our estimates. Because the estimate is based on highly aggregated and uncertain data, we cannot speak with confidence, nor in detail, about the allocation of this category of defense spending among the services or among missions. Nevertheless, the information on which the estimate is based—published Soviet statistics on science, statements by Soviet authorities on the financing of research, and evidence on particular RDT&E projects—suggests that military RDT&E expenditures are large and growing. We estimate that outlays for RDT&E currently account for almost one-quarter of total Soviet defense spending. As with the investment category, we believe that the growth in Soviet RDT&E spending varied from year to year.

### Spending by Service

The Soviet armed forces are organized into five services—Ground Forces, Air Forces, Navy, National Air Defense Forces, and Strategic Rocket Forces (SRF). Our direct-costing approach enables us to estimate the allocation of much of defense spending among these services. We cannot, however, estimate how the costs of RDT&E or of certain command, rear service, and other support functions are allocated. The analysis that follows excludes RDT&E and assigns the command and support\* functions to a separate cate-

### Percentage Shares of Estimated Soviet Investment and Operating Expenditures for Military Services



gory. Again, the analysis is based on the narrower and more detailed definition of spending for defense.

### Overview

During the 1967-77 period, the Ground Forces and the Air Forces each claimed a little over one-fifth of total investment and operating expenditures. While the Ground Forces' share remained relatively constant throughout the period, the share allocated to the Air Forces grew from one-sixth in 1967 to about one-quarter in the early 1970s before declining slightly near the end of the period. The Navy's share averaged one-fifth and declined slightly during the period. The share going to the National Air Defense Forces, which averaged one-eighth during the period, fluctuated and was smaller in 1977 than in 1967. Outlays for the SRF, which averaged well under

\* This category should not be confused with command, control, and communications, the costs of which are distributed among the services in this analysis.

one-tenth of total spending for investment and operating between 1967 and 1977, constituted the smallest and most widely fluctuating share. The portion assigned to the command and support category averaged one-sixth during the period. <sup>6</sup>

#### Ground Forces

Total investment and operating spending for the Ground Forces grew throughout the period at approximately the same rate as total defense spending. With the exception of 1968—the year the Soviets invaded Czechoslovakia—spending for the Ground Forces did not change abruptly from year to year. A major factor in the growth was an increase in manpower from over 1.2 million uniformed personnel in 1967 to over 1.7 million in 1977. Another was the long and steady procurement programs for the principal Ground Forces weapons and equipment.

Investment consistently took a little over 50 percent of spending for the Ground Forces—the smallest share for any military service. Procurement spending, which accounted for 90 percent of Ground Forces investment, was driven, in large part, by the purchase of tanks and mobile tactical surface-to-air missiles and to a lesser extent by the purchase of armored personnel carriers and artillery. Operating expenditures took over 40 percent of spending for the Ground Forces, and the share for personnel, which averaged 30 percent, was higher than that for any other service.

Ground Forces expenditures between 1967 and 1977 were spurred by the addition of divisions along the Sino-Soviet border and by the modernization of units in the western Soviet Union and Eastern Europe. Expansion of ground forces opposite China proceeded at a vigorous pace between 1967 and 1972, when the Soviets increased the number of divisions along the border from 19 to 40. Throughout the 1967-77 period the Soviets modernized Ground Forces units by introducing

<sup>6</sup> This estimate assigns the command and support category a smaller share of defense spending than our previous estimate because it allocates to the individual services costs for a number of functions which were previously allocated to the command and support category.

a number of new, more expensive weapon systems, by increasing the number of tanks, armored personnel carriers, and artillery pieces in maneuver units, by providing more helicopter support, and by increasing the number of men assigned to tank and motorized rifle divisions. These changes gave the Soviets more balanced and operationally flexible ground forces with improved capabilities for conventional as well as theater nuclear war.

#### Air Forces

Between 1967 and 1977, spending for the Air Forces increased more rapidly than spending for any other military service. From 1969 to 1973 it grew at over three times the rate for defense spending as a whole. After 1973 it declined slightly but remained at a high level.

Investment expenditures for the Air Forces averaged about 80 percent of total spending for the service, and more than 90 percent of investment spending was for procurement. Expenditures for operation and maintenance and for personnel each averaged about 10 percent of the total. Air Forces manpower increased slowly throughout the period and totaled over 500,000 in 1977.

Spending for both Long Range Aviation and Military Transport Aviation grew somewhat in absolute terms, but by far the largest increase in Air Forces spending between 1967 and 1977 was for Frontal Aviation. This reflected quantitative and qualitative improvements in equipment and an increased role for Frontal Aviation in battlefield support and theater strike. Major investment expenditures caused that component's share of Air Forces spending to rise from less than 60 percent in 1967 to over 70 percent in 1977. <sup>6</sup>

The number of tactical aircraft in the Frontal Aviation inventory increased by about 50 percent over the period. The increase was most evident along the Chinese border, where the number of

<sup>6</sup> The share of outlays for Frontal Aviation is greater than, and the share for Military Transport Aviation less than, the shares stated in our previous estimate. This is because we assigned most of the Soviet helicopter force to Frontal Aviation this year—rather than to Military Transport Aviation, as we did in our previous estimate.

tactical aircraft grew more than fivefold. Most of the additions were old-model aircraft removed from storage or transferred from operational units stationed in other areas of the Soviet Union.

The Soviets also improved the quality of the force. By 1977 over 60 percent of the fighters in Frontal Aviation were third-generation models—aircraft with improved range and payload characteristics which entered production after 1969. Between 1967 and 1977, Frontal Aviation procured approximately 1,700 MIG-23 and MIG-27 Floggers, 1,400 SU-17 Fitters, and almost 300 SU-19 Fencers. These new aircraft were initially introduced in large numbers into units in the European USSR and Eastern Europe. New model Fitters and Floggers began to appear in large numbers along the Sino-Soviet border after 1975.

Between 1967 and 1977 the Soviets also enhanced Frontal Aviation's survivability and dispersal capabilities by building new airfields and improving existing ones. Outlays for airfield construction reached high levels between 1968 and 1972.

The expansion and modernization of Frontal Aviation made this force more capable of delivering strikes in the immediate battlefield area and throughout the theater. The improvements, which paralleled the modernization within the Ground Forces, provided the Soviet theater forces with a better capability to wage both conventional and theater nuclear war at high levels of intensity.

#### Navy

Between 1967 and 1977 the Navy ranked third in total investment and operating spending, behind the Ground Forces and the Air Forces. During the period, spending for the Navy grew at a rate slightly slower than that for defense as a whole. Spending for ballistic missile submarines grew at a rapid pace between 1967 and 1974, at the same time spending for general purpose naval forces declined. These trends were reversed after 1974.

During the 1967-77 period, investment spending constituted over 80 percent of total spending

for the Navy. Procurement expenditures comprised over 90 percent of investment and over three-quarters of total spending for the Navy. Operating expenditures absorbed about 20 percent and were about evenly divided between operation and maintenance and personnel. In 1977, uniformed Navy manpower totaled about 400,000—over 10 percent higher than in 1967.

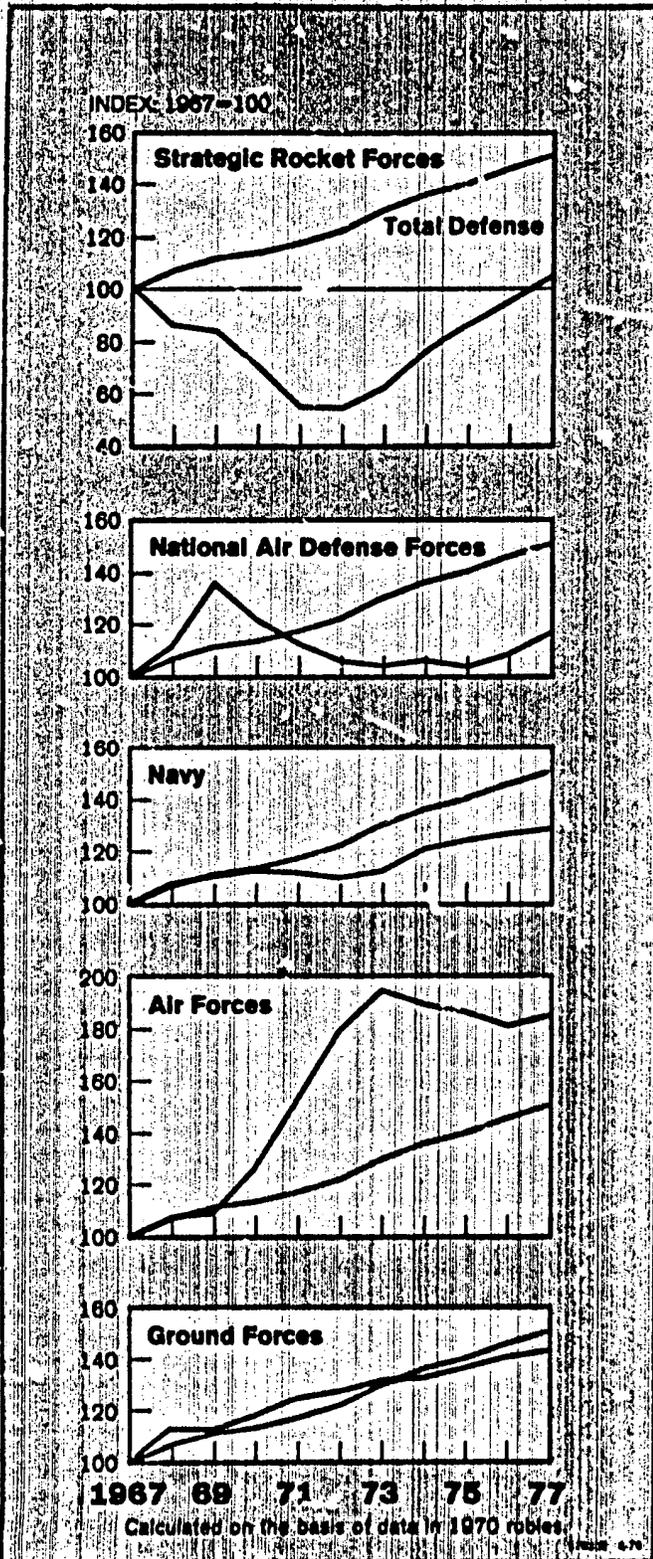
Trends in naval procurement spending during the period indicate a Soviet emphasis on forces associated with strategic attack, open-ocean anti-submarine warfare (ASW), and open-ocean anti-ship missions. The bulk of expenditures for combat ships and naval aircraft went for weapon systems associated with these missions. Expenditures for procurement of systems associated with the ASW mission showed a marked increase in 1967 that was maintained throughout the period. Less emphasis was placed on forces for coastal defense, amphibious warfare, mine warfare, and interdiction of sea lines of communication. Also evident was a preference for submarines. Between 1967 and 1977, approximately two-thirds of naval ship procurement spending was for ballistic missile and attack submarines.

Major procurement programs during the period included Y- and D-class ballistic missile submarines, which have a strategic attack mission; the C-I and C-II nuclear attack submarines, associated primarily with the open-ocean antiship mission; and V-I and V-II nuclear attack submarines, whose primary mission is open-ocean ASW. Major surface ship procurement programs included Kresta I, Kresta II, and Kara guided-missile cruisers and the Kiev-class ASW carrier—all having either open-ocean ASW or open-ocean antiship missions. Soviet Naval Aviation's antiship capabilities were enhanced by the procurement of Backfire bombers.

#### National Air Defense Forces

Between 1967 and 1977 the Soviet National Air Defense Forces ranked fourth among the services in terms of spending for operating and investment, with an average share of about one-eighth. During this period, spending for these forces grew at a slower pace than defense spending as a

**Trends In Estimated Soviet Investment and Operating Expenditures by Branch of Service, 1967-77**



whole. Overall spending for the service peaked in 1969, when expenditures for air defense interceptor aircraft and the Moscow antiballistic missile (ABM) system reached their highest levels. With a reduction in spending for the ABM system, surface-to-air missiles, and interceptor aircraft, outlays declined through 1973. The increase in spending for the National Air Defense Forces after 1975 is primarily the result of procurement of a large number of Flogger interceptors.

Investment spending consistently absorbed over two-thirds of overall spending for these forces, and over 90 percent of investment expenditures went for procurement. Expenditures for operation and maintenance of the National Air Defense Forces averaged 10 percent of the total, while spending for personnel accounted for about 20 percent. Uniformed manpower increased by about 10 percent during the period, to a total of almost 600,000 in 1977—ranking the service second, behind the Ground Forces, in number of men.

Outlays for the National Air Defense Forces exhibited a shift toward interceptor aircraft, and away from SAMs and ABMs, over the period. Spending for interceptor aircraft increased by one-third, while spending for SAMs and ABMs decreased by over one-quarter.

**Strategic Rocket Forces**

During the period, spending for the SRF grew at a slower pace than total defense spending. Of the five Soviet services, the SRF received the smallest and most widely fluctuating share of investment and operating spending. Primarily responsible for the fluctuations were deployment cycles for ICBMs. In 1967, at the height of deployment for third-generation ICBMs, the SRF accounted for about 10 percent of total investment and operating expenditures. By 1972 the share had fallen to about 5 percent. Outlays have grown steadily since then with the acquisition of fourth-generation ICBMs and the SS-20 intermediate-range ballistic missile, and in 1977 spending for the SRF rose above its 1967 level for the first

time in this period. As a result, the SRF's share of total investment and operating spending increased to about 8 percent.

Investment outlays declined through the early 1970s with the completion of deployment of third-generation ICBMs and rose sharply during the mid-1970s with deployment of fourth-generation ICBMs. Operating costs remained relatively stable, however, as the SRF shifted to systems that were more complex but had lower manpower requirements. In 1977, uniformed military personnel assigned to the service numbered over 300,000, a figure slightly lower than the total in 1967.

Most of the spending for the SRF was allocated to ICBM forces. These forces consistently accounted for over three-quarters of the spending for the service. Spending for medium- and intermediate-range ballistic missile forces associated with the peripheral attack mission accounted for less than one-quarter of the spending for the SRF.

#### Command and Support

Some costs are not allocated to a specific combat branch because they relate to general support provided by the Ministry of Defense apparatus. Other costs cannot be allocated to the combat branches because we lack the information. We assign both types of expenditures to a category called command and support. This category includes rear services, salaries of Ministry of Defense employees, space programs that in the United States would be managed by the Department of Defense, border guards, material for nuclear weapons, and military retirement pay. During the 1967-77 period, spending for command and support grew at about the same rate as total defense spending and claimed approximately one-sixth of total operating and investment expenditures.

#### Spending for Intercontinental and Regional Forces

The direct-costing methodology also permits us to assess Soviet spending for forces assigned to specific missions and provides a basis for estimat-

ing spending for forces assigned to various geographic regions. This section discusses spending for three sets of forces of particular concern to US policymakers—intercontinental attack forces subject to strategic arms limitation, the tactical air and ground forces stationed in the NATO Guidelines Area of Eastern Europe, and the theater forces opposite China. This analysis is intended to provide insights into the priorities the Soviets assigned to these forces during the past decade. While we are not certain that Soviet policymakers are supplied with budgetary data on these particular forces, it is reasonable to assume that they have a general understanding of the levels and trends of resources assigned to each.

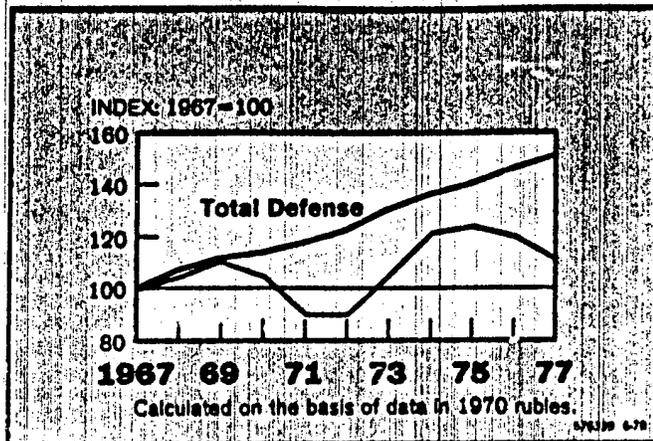
The spending estimates presented here include costs of investment for and operation of these forces, as well as a proportional share of command and support costs. RDT&E costs are not included; if they were, the totals would, of course, be higher than shown.

#### Intercontinental Attack Forces Subject to SALT II Limitations

During the 1967-77 period as a whole, the Soviets allocated a little over 10 percent of total defense spending to intercontinental attack forces subject to SALT II limitations.<sup>7</sup> Spending for these forces fluctuated from year to year according to investment cycles for ICBMs and ballistic missile submarines, reaching peaks in the late 1960s and the mid-1970s. Spending was lowest in the early 1970s, during the transition from third-generation to fourth-generation ICBMs and the changeover from production of Y-class to D-class ballistic missile submarines. Between 1967 and 1977, spending for intercontinental attack forces grew at a slower pace than defense spending as a whole, and, as a result, claimed a smaller share of defense spending in 1977 than in 1967.

<sup>7</sup> Spending for intercontinental attack, as defined here, includes expenditures for ICBMs, heavy bombers, and those ballistic missile submarines assigned intercontinental attack missions. It does not include spending for the Backfire bomber, which the Soviets contend is not subject to the SALT II limit on the aggregate number of strategic nuclear delivery vehicles.

### Trends in Estimated Soviet Spending for Intercontinental Attack Forces Subject to Strategic Arms Limitation, 1967-77



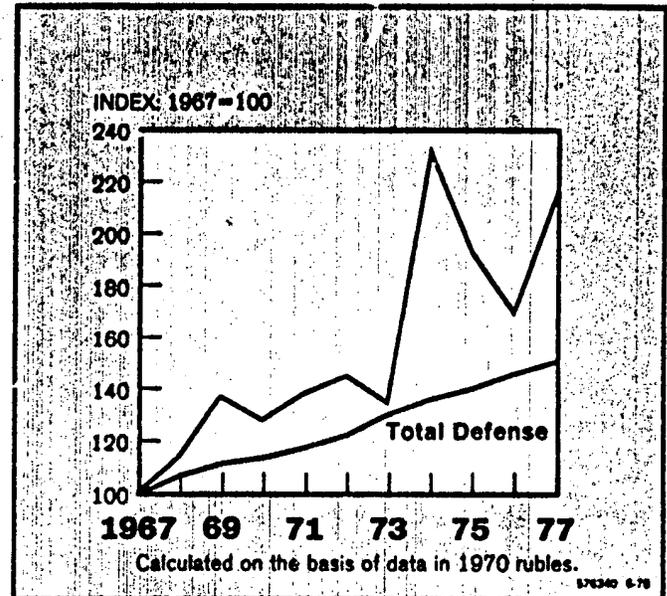
### Soviet Forces in NATO Guidelines Area

The NATO Guidelines Area (NGA) includes East Germany, Poland, and Czechoslovakia. The spending figures discussed here cover spending for Soviet Frontal Aviation and Ground Forces units stationed within these East European countries. These data reflect Soviet efforts to improve forces positioned in Eastern Europe, but do not reflect improvements to other Soviet forces which have been assigned missions against NATO.

During the period, spending for Soviet forces within the NGA constituted less than 10 percent of Soviet defense spending but grew at approximately twice the rate of total defense spending. Growth was particularly high after 1973, when the Soviets introduced large numbers of new tactical aircraft into Frontal Aviation units within the NGA. Between 1967 and 1977 the Soviets increased the number of tactical aircraft within the NGA by 20 percent. In 1977 over 80 percent of the Soviet tactical aircraft inventory in the NGA consisted of modern aircraft produced since 1969.

These improvements to Frontal Aviation in the NGA enhanced the Soviets' capabilities to wage conventional and theater nuclear war in Central Europe. By increasing the number and quality of tactical nuclear delivery aircraft, the Soviets increased the flexibility with which they can em-

### Trends in Estimated Spending for Soviet Forces in NATO Guidelines Area, 1967-77



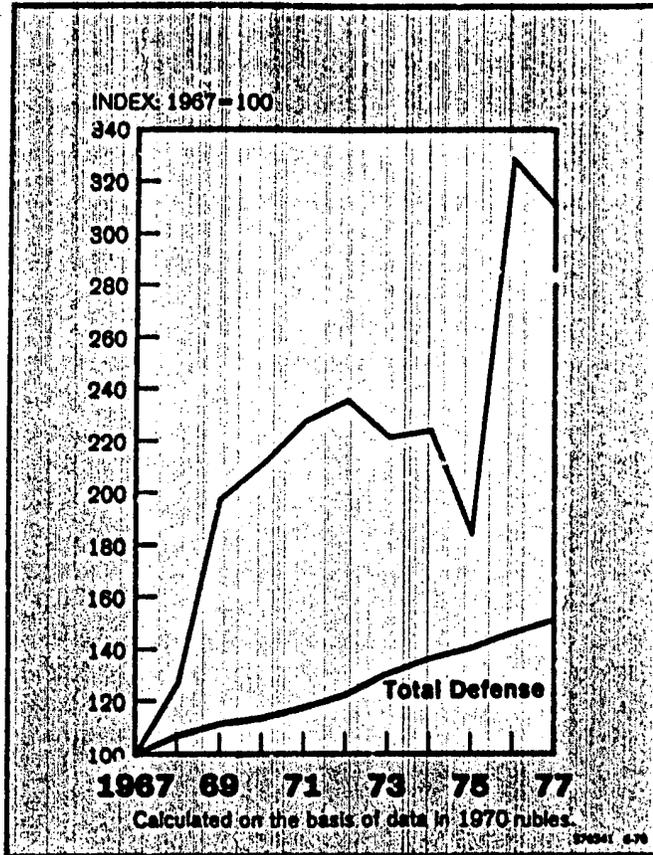
ploy tactical nuclear forces. They also provided the theater forces with a capability for conducting theater nuclear war at higher levels of intensity before having to resort to peripheral strike forces—bombers and medium- and intermediate-range missiles—based on Soviet territory.

Spending for Ground Forces units in the NGA grew at a slower pace than spending for Frontal Aviation but reflected Soviet efforts to increase the size and combat ability of these forces. The deployment of five Soviet divisions to Czechoslovakia in 1968 and 1969, and increases in the number of men assigned to divisions, increased the total of Ground Forces personnel in the NGA by about one-third between 1967 and 1977. At the same time, Ground Forces units in the NGA were modernized with additional artillery pieces, rocket launchers, tanks, and mobile air defense weapons.

### Forces Along the Sino-Soviet Border

The bulk of the Soviet buildup along the Sino-Soviet border, which began in 1964, occurred between 1967 and 1977. During this period, Soviet forces along the Sino-Soviet border ac-

### Trends in Estimated Spending for Soviet Forces Along the Sino-Soviet Border, 1967-77



counted for a little over 10 percent of total defense spending and their cost grew at a rate more than twice that of defense as a whole.\* Growth was rapid between 1967 and 1972—when the Soviets doubled the number of Ground Forces divisions along the Sino-Soviet border and increased the tactical aircraft inventory fivefold. (Most of these aircraft were older models.) The buildup of forces opposite China proceeded at a slower pace after 1972. High levels of spending in 1976 and 1977 reflected the introduction of new-generation aircraft such as the SU-17 Fitter, the MIG-23 Flogger, and the MIG-25 Foxbat.

\* Soviet spending for forces along the Chinese border, as defined here, includes spending for Frontal Aviation, Ground Forces, Military Transport Aviation, and Border Guards units in the four eastern military districts; National Air Defense units along the border; Soviet military forces stationed in Mongolia; and the medium bombers located at Belaya.

### Prospects

#### Factors Affecting Future Defense Programs

Soviet leaders must weigh a number of factors in formulating future defense programs. These surely include the leaders' perceptions of foreign military threats, their assessment of the utility of military power in advancing Soviet foreign policy goals, and internal political factors—including the influence of institutions and personalities supporting individual defense programs—as well as economic considerations.

The present Soviet leaders appear to share a broad consensus on defense policy. Over the past decade, defense spending has risen each year. Defense activities have been well funded, even during periodic economic setbacks, and follow-through on key programs has been strong. However, there are forces at work, both at home and abroad, that could make it more difficult to maintain this consensus. These factors—which include gloomy economic prospects, an unsettled strategic environment, and a coming political succession—will assume particular importance over the next year or so, as Soviet plans for defense programs in the first half of the 1980s are formulated.

**Economic Outlook.** Soviet economic growth has been slowing during the 1960s and the 1970s, and we forecast a further reduction in the 1980s. Recent announcements on plan fulfillment by the Central Statistical Administration confirm that Soviet economic growth in the 1976-77 period was lower than in any other period since World War II, and the situation is likely to worsen. The Soviet economy probably will grow at about 4 percent a year through 1980, but average growth from 1981 through 1985 probably will fall to between 3 and 3.5 percent. These projections reflect the likely impact of the declining growth rate in the Soviet labor force and continuing Soviet inability to achieve offsetting growth in productivity.

While the Soviet leaders are clearly concerned about present and impending economic problems, there is no indication that they are contemplating major changes in defense policy. They

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will assess future Soviet defense programs, however, against the backdrop of an increasingly troubled economy, and rivalry among major claimants for resources—both civilian and military—almost certainly will intensify.

While there may be pressure to constrain defense spending to promote economic growth, even sizable changes in defense resource allocation policy would not in themselves solve the USSR's economic ills. In part, this is due to the fact that defense is a relatively small and highly specialized sector of the economy. In addition, Soviet economic problems are such that even sizable transfers of resources would have little impact on overall economic growth unless accompanied by major improvements in productivity. The fundamental reforms in the Soviet system that would be required to effect such improvements are unlikely over the next few years, though modest alterations in the system of economic incentives and bolder action in critical areas such as energy use and production are probable. We do not believe that shifts in incentives and priorities are likely to oust defense from its privileged position in the Soviet economy.

**The International Environment.** Despite the considerable increase of their military power, the Soviets remain concerned about the dynamism of Western military programs and the potential threat from China. The uncertainty with which they view the future strategic environment argues for Soviet prudence in planning military forces and discourages measures to reverse the upward trend in defense spending.

**The Political Succession.** Over the next five years, several of the top Soviet political leaders will almost certainly pass from the scene. No heir apparent to Brezhnev has been identified. While we cannot discount the possibility that a strong single leader—or group of leaders—will come to power and implement major policy changes, such an eventuality seems less likely in the period through the early 1980s than a continuation of current policies under a caretaker regime.

Under these conditions, we believe that abrupt changes in defense spending trends are unlikely.

The political influence of institutions and leaders who support defense programs—the uniformed military, managers and overseers of defense and related industries, and party and government leaders whose constituents depend heavily on defense production—would be likely to remain substantial.

#### Problems in Projecting Defense Spending

In part because of these economic, strategic, and political uncertainties, our projections of Soviet spending for defense are less certain than our estimates of spending in past years. In addition, our ability to forecast Soviet defense spending is hampered by uncertainties concerning the size of future forces, the numbers and types of new weapons to be deployed, and their physical and technical characteristics. Even greater uncertainties surround estimates of the costs of future weapon systems, which are closely related to technical characteristics. The Soviets go to great lengths to deny us these technical data. The difficulties inherent in forecasting the future Soviet RDT&E effort compound the uncertainty in our estimates.

Despite these difficulties, the trends revealed by our estimates of past Soviet defense spending, the evidence gathered in preparing them, and our understanding of the factors the Soviet leaders consider in making their decisions on resource allocation provide a reasonable basis for an assessment of the future. We believe that we can forecast trends in defense spending for the next year or two with high confidence, and for up to five years with moderate confidence. Beyond that, we have low confidence in such projections because of the difficulties inherent in projecting both individual defense programs and the complex political and economic situations which the Soviets will face in the 1980s. The discussion that follows, therefore, focuses on the period from now through the next five years.

#### Defense Spending Through the Early 1980s

All of the evidence available to us on Soviet defense programs under way and planned suggests that the long-term upward trend in alloca-

tion of resources to defense is likely to continue into the 1980s. There is no indication that economic problems are causing major changes in defense policy. The atmosphere in Moscow with regard to the economy, however, is one of concern, and the Soviet leaders could be considering modest alterations in military force goals. But even if such alterations were undertaken, the overall rate of growth of defense spending over the next five years or so probably would slow only marginally.

This view is based on several trends in Soviet defense programs—the large number of weapons development and deployment activities under way, the continuing capital construction in the defense industries, and the increasing costs of new military hardware.

Given the broad scope of the new weapons development and deployment programs, outlays for new military hardware are likely to become a more important determinant of Soviet defense spending in the 1980s. Military RDT&E programs include potentially costly systems for all of the Soviet armed services. In the strategic forces, new solid- and liquid-propellant ICBMs, including a large follow-on to the SS-18, are being developed, as are new strategic naval missiles. Air defense programs for improving surveillance and control and for new fighters and low-altitude surface-to-air missiles are being pursued. ABM research and development is also continuing. Still other systems are being developed for the air, ground, and naval forces. Not all of the systems under development will be deployed, but many will enter production by the early 1980s, continuing to shift the weapons acquisition mix toward more expensive systems. Even if procured at a slower pace than their predecessors, these systems will increase the costs of weapons acquisition and maintenance.

We also see continued capital construction at defense industrial facilities which indicates that the Soviets have committed capital resources for development and production of new weapons in the 1980s. An analysis of expansion at key weapons production plants suggests that the Soviet

defense industries are currently maintaining the same general growth they have demonstrated for the last 15 years or so. Some of this investment is related to weapons development programs and some apparently is designed to enhance production capacity. Much of the construction we have observed is at facilities associated with the production of strategic missiles, naval ships, and aircraft—those costly systems that have been driving procurement and maintenance costs upward.

Finally, in the Soviet Union, as in the United States, the increasing complexity of new weapons has resulted in escalating development, production, and maintenance costs. Such cost escalation is evident in most of the new systems entering the forces in the 1970s—particularly in aircraft, ballistic missiles, and naval ships.

Economic difficulties notwithstanding, we believe that Soviet defense spending will continue to grow over the next five years. For the next two or three years, growth in defense spending probably will be slightly lower than the long-run average, as the fourth-generation ICBM and current fighter aircraft and D-class ballistic missile submarine programs wind down. This marginal reduction in the growth of defense spending is not related directly to economic difficulties. Such cycles have occurred several times in the past—for example, in the early 1970s when deployment of third-generation ICBMs tapered off before that of the fourth-generation systems reached high levels. They do not signal changes in resource allocation policy.

During the early 1980s we expect the Soviets to begin testing and deploying a number of the new weapon systems under development—including the next generation of strategic missiles, new aircraft, and new ballistic missile and attack submarines. This probably will cause the annual rates of growth in defense spending to increase to a pace more in keeping with the long-term growth trend of 4 to 5 percent a year.

This projection of defense spending is based on the assumptions that a SALT II agreement will not be reached and that the current state of

relations between the United States and the Soviet Union will continue. However, a SALT II agreement along the lines currently being discussed would not, in itself, significantly alter this projection. Such an agreement would probably reduce the rate of growth of total Soviet defense spending by only about 0.2 of a percentage point per year. The resulting savings would amount to less than 1.5 percent of total defense spending projected through the early 1980s in the absence of an agreement.

#### **Impact on the Services**

Each of the Soviet services will gain from a continuation of the upward trend in defense spending over the next five years. We expect the shares of investment and operating spending allocated to each service to be roughly the same as in the 1967-77 period, although some shifts in emphasis are likely.

Modernization is likely to continue within the Ground Forces, as the Soviets increase the firepower, mobility, and air defense capabilities of these forces with new equipment and weapons. New weapons currently being procured include the T-72 tank, two self-propelled artillery guns, the SS-21 tactical missile, and the SA-8 surface-to-air missile system. A variety of Ground Forces weapons are under development, including several mobile tactical SAM systems, new tactical missiles such as the SS-X-22, a new tank, a self-propelled antiaircraft artillery gun, and new anti-tank guided missiles. Many of these will enter production by the early 1980s. Expansion currently under way at one of the major Soviet tank plants could presage a large new production program.

Within the Air Forces, spending for Frontal Aviation will probably decline, and expenditures for Long Range Aviation and Military Transport Aviation are likely to rise and consume an increasing share of Air Forces spending into the 1980s. Much of the capital construction currently under way at Soviet airframe plants appears to be associated with production of transport aircraft, although some may be for increased production of bombers. During the next five years we expect

the Soviets to introduce into the Air Forces several systems currently under development, including the AN-72 jet short-takeoff-and-landing transport and a new helicopter. They may also deploy a tanker version of the IL-76 transport.

The Soviets are developing a new tactical fighter-bomber aircraft, which may be deployed with Frontal Aviation, and they will undoubtedly make incremental improvements to one or more of the new tactical aircraft currently in production. These could include improved target acquisition and weapons delivery systems, navigation and bombing radars, and tactical air-to-surface missiles.

The Soviets may also be developing a new long-range bomber. If so, one could be introduced into Long Range Aviation units by the early 1980s.

The Navy's share of Soviet defense investment probably will increase slightly. A new class of large ballistic missile submarines is under construction and should reach operational status during the early 1980s. Capital construction at shipyards associated with submarine programs, as well as information on new submarines in production, indicates that the Soviets will give a greater priority to the open-ocean ASW mission and to increasing production of nuclear-powered attack submarines. Continued production is likely for a variety of surface combatants, including frigates, guided-missile destroyers, guided-missile cruisers, and at least one guided-missile ASW aircraft carrier. Continued procurement of the Backfire bomber is also likely, and introduction of a new long-range ASW aircraft is possible.

Continuing concern with low-altitude air defense, and with defense against cruise missiles in particular, probably will prompt the Soviets to increase investment in the National Air Defense Forces. By the early 1980s we expect deployment of the SA-X-10 low-altitude SAM and one or more modified interceptors designed to engage low-flying targets. In addition, the Soviets will probably deploy new ground-based air surveillance radars and airborne warning and control aircraft.

At least five new or modified ICBM systems are currently under development for the SRF. Some of these systems will be flight-tested and deployed by the early 1980s.

Forecasting future RDT&E activities is more difficult than forecasting future operating and investment activities. Nevertheless, a number of factors lead us to conclude that the resources

allocated to the Soviet military RDT&E effort will continue to grow into the 1980s. The rising trend in Soviet expenditures for science as a whole, the high level of activity at Soviet design bureaus and test facilities, the large number of strategic and tactical weapon systems currently under development, and our estimate of Soviet force requirements and objectives all indicate increased funding for military RDT&E.

The author of this paper is [redacted]  
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## APPENDIX

### METHODOLOGY AND CONFIDENCE IN THE ESTIMATES

#### Methodology

In the USSR, information on defense spending is a closely guarded state secret. Only one statistic—a single-line entry for “defense” in the published state budget—is reported each year. This figure is uninformative because its scope is not defined and its size appears to be manipulated to suit Soviet political purposes. (Changes in the announced defense figure do not reflect the changes we have observed in the level of military activities.)

To provide information which the official “defense” entry does not, CIA periodically estimates the cost of Soviet defense activities. Our estimates begin with a detailed identification and listing of the activities and physical components which make up the Soviet defense program for a given year. These include data on order of battle, manpower, production of equipment, construction of facilities, and operating rates for the Soviet military forces. These data are based on all-source intelligence and on intelligence community judgments presented in National Intelligence Estimates and other publications.

By a variety of methods this data base is converted into value estimates. For many components, such as military personnel, RDT&E, construction, procurement of naval surface ships, and some operation and maintenance expenditures, the data are costed directly in rubles. In the estimate presented in this report, about half of Soviet defense spending for 1977 was estimated directly in rubles. For the remaining components, we first estimate the dollar costs of the Soviet activities—what it would cost to carry them out in the United States—and then convert these costs to ruble terms. The conversion factors are based on growing samples of prices of Soviet military equipment and activities, obtained from human and technical intelligence sources. Where possible, the ruble estimates derived from this direct-costing technique are checked for reasonableness against other intelligence information or Soviet statistics.

For two of the main components of defense spending—investment and operating expenditures—prices and quantities are estimated separately for each major element. We cannot, at present, apply this approach to the remaining component—RDT&E. The cost of military RDT&E is estimated by another method—analysis of Soviet information on expenditures for science.

#### Confidence in the Estimates

The estimates presented in this paper reflect a continuing effort to acquire more and better data and to improve our methods. During the past year we have acquired additional ruble prices for military equipment and

improved our understanding of Soviet pricing policy and inflation in the Soviet economy. New information and new costing methodologies led to improvements in our estimates of the costs of Soviet military hardware, supplies, and activities—especially petroleum, oil, and lubricants, equipment maintenance, and RDT&E. This effort has increased our confidence in the estimates. Even so, they have a margin of error which could be substantial for some items.

We have higher confidence in the estimates for total defense spending than in those for any of the individual subaggregates. Two intelligence sources provide independent benchmarks on the overall level and rate of growth of Soviet defense spending in the 1969-72 period. One source [redacted]

[redacted] reported that at the Soviet Central Statistical Administration in 1970 he had seen a classified document which included a summary accounting of actual defense expenditures for 1969 and estimated figures for 1970 (based on data for the first six months of that year). He remembered total figures of 47-48 billion rubles for 1969 and 49-50 billion rubles for 1970. These totals fall within the range of our estimates for those years, under the broad definition of defense spending.

The other source is General Secretary Brezhnev, who is reported to have said in 1972, "I simply am afraid for our people to know that every third ruble in the government budget goes for defense." One-third of the total 1972 Soviet state budget was between 57 and 58 billion rubles. Taking inflation into account, this is within the range of our estimate (stated in constant 1970 prices) for total defense spending in 1972 under the broad definition.

Because the direct-costing methodology reflects the actual changes observed in Soviet defense activities over time, we are confident that the upward trend in these estimates is correct. We have greater confidence in the general trend of our estimates than in year-to-year changes; our year-to-year estimates are sensitive to judgments regarding the phasing of costs for major procurement programs. We believe that the average annual rate of growth in Soviet defense spending over the past 10 years, in constant prices, is unlikely to have been significantly higher or lower than the 4 to 5 percent implied by our estimates. The independent evidence cited above, when adjusted for inflation, also implies a 4- to 5-percent growth rate in Soviet defense spending from 1969 to 1972.

We have checked our estimates of investment spending by analyzing published Soviet statistics for the machinebuilding and metalworking sector of the economy, which produces most of the nation's defense hardware. The results of this analysis, while subject to substantial uncertainty, are generally consistent with our estimates of defense investment and with our understanding of inflation in the Soviet economy.

Our confidence in the estimates at the lower levels of aggregation varies from category to category. We have high confidence in our estimates for procurement of major naval ships. These are easily observed and are costed directly in rubles, using Soviet data which we have found to be reliable.

Reasonable confidence can be assigned to the estimates of spending for pay and allowances of uniformed military personnel and for strategic missile and aircraft systems. The pay and allowances estimates are made directly in rubles and are based on extensive information on the Soviet military pay system. The estimates for missiles and aircraft are made initially in dollars, but the factors we use to convert these estimates to ruble terms are based on fairly large and reliable samples of ruble prices. We have less confidence in our cost estimates for the operation and maintenance of weapon systems and for the procurement of smaller items, such as general purpose vehicles and some ground force weapons.

We are least confident of the estimates for Soviet military RDT&E, which are derived in the aggregate using a methodology less certain than those for either investment or operating spending. This year, however, we have made an improvement in our methodology; a new technique provides an estimate of total Soviet spending for science in which we have considerable confidence. (This estimate—which exceeds the published Soviet science figures—is consistent with figures cited privately by several senior Soviet officials and reported by intelligence sources.) Unfortunately, we have less confidence in our estimate of what portion of this total is allocated to military RDT&E. Soviet sources provide only limited and ambiguous information on that allocation. The level and trend of these estimates, however, are consistent with our judgment, made with high confidence, that the Soviet military RDT&E effort is large and growing.

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