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10. (Confidential - JGO) Attempted to meet with Frank Cummings, Administrative Assistant to Senator Jacob K. Javits (R., N.Y.), but Mr. Cummings left the office and will be out of the city with the Senator until Monday. See Journal item of 17 September 1970.

25X1C 11. (Secret - JGO) Met with Earl Morgan, House Armed Services Committee staff, and brought him up to date on [redacted]

12. (Internal Use Only - JGO) Received a call from Mr. Roger Majak, Administrative Assistant to Representative Jonathan Bingham (D., N.Y.), who requested such information as we can make available [redacted]

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25X1C [redacted] Mr. Majak told me also that he had contacted the Library of Congress and had been advised that they had no further information on
25X1C [redacted], but that further classified information might be available from CIA.

13. (Secret - GLC) In response to her request of yesterday, I hand-carried to Dorothy Fosdick, on the staff of the Senate Subcommittee on National Security and International Operations, a book put together by OCI which contained information drawn from the NISs on the various Arab states. Miss Fosdick was most pleased to receive this material and agreed to observe the strict rules which I laid down with regard to any reference as to the source of this material.

14. (Confidential - GLC) Picked up from the Joint Economic Committee advance copies of the Committee's study on the Economic Performance and the Military Burden in the Soviet Union. I talked with the Executive Director, John Stark, later about the Committee's inclusion of the Michael Boretsky article in the study. See Memorandum for the Record.

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24 September 1970

MEMORANDUM FOR THE RECORD

SUBJECT: Conversation with Joint Economic Committee Staff re the Michael Boretsky Article

1. I picked up from the Joint Economic Committee advance copies of the Committee's study on the Economic Performance and the Military Burden in the Soviet Union. The study includes the rather controversial paper by Michael Boretsky on The Technological Base of Soviet Military Power, but statements are included in the forward of the study and in the press release indicating that the studies present different interpretations of such phenomenon as Soviet defense activities due largely to the secrecy surrounding them.

2. As suggested by Dr. Ed Allen, of OER, I offered John Stark, Committee Executive Director, a copy of OER's Memorandum for the Record on the Boretsky article. Stark thanked me for offering this material, but indicated that Chairman Proxmire had given instructions to the Committee staff not to accept any classified material. This was the result of some rather bitter experiences with the Air Force over the C5-A issue.

3. A copy of the study and press release was sent to OER.

25X1A [redacted]
Deputy Legislative Counsel

Distribution:
Orig. - Subj
1 - OER
1 - Chrono

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OLC/GLC:rw (28 Sep 70)

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16 September 1970

MEMORANDUM FOR THE RECORD

SUBJECT: "The Technological Base of Soviet Military Power," by Dr. Michael Boretsky, U.S. Department of Commerce

1. This memorandum presents the position of the Office of Economic Research with regard to the subject paper prepared by Dr. Boretsky for publication in the forthcoming JEC study, "Soviet Economic Performance, 1968-69." This paper was forwarded to CIA for review by the Honorable Maurice H. Stans, Secretary of Commerce, on 6 August 1970. A conference was held on 28 August 1970 between representatives of CIA and the Department of Commerce to discuss the differences in their estimates of military hardware production. This memorandum presents OER's objections to Dr. Boretsky's estimates under the following subject headings: the "residual" method of estimation, the credibility of the results, the validity of Soviet gross value of output as a reliable measure of growth, and the ruble-dollar ratio problem involved in converting the ruble value of military hardware expenditures into their dollar equivalent.

2. The "Residual" Method of Estimation --

Dr. Boretsky's methodology for "residualizing" Soviet production of military and space hardware is fraught with problems relating both to the global value from which he starts (see Validity of Gross Value of Output, below) and the values which he deducts for the various nonmilitary components of machine building. Given the number of uncertainties surrounding the basic Soviet data, the residual method of estimating such a critical magnitude as Soviet production of military and space hardware can not be relied upon to give sound results. Even if conceptually sound, the methodology can yield reliable results only when the initial magnitude and the items to be deducted from it are more solidly based than in the present case. Dr. Boretsky's results suffer from his necessarily heavy reliance on unverifiable data and assumptions. Unfortunately there is no way of ascertaining the degree of success in breaching the smokescreen surrounding Soviet statistics that contain classified data on military production.*

*In the 25 years that have elapsed since the end of World War II the Soviets have been completely successful in preventing Western "penetration" of their statistical accounts with respect to military expenditures, despite the publication of statistical abstracts, input-output tables, and scholarly research. It is clear that the government takes great care to prevent published statistics from fitting together into a coherent whole.

3. Even if it were conceded (which it is not) that Dr. Boretsky's starting point for the residualization process -- the Soviet gross value of output for machine building -- were an appropriate measure of economic growth for determining military expenditures, the opportunities for cumulative error in the residualization process are enormous. The result at each step of residualization is directly dependent on all the preceding steps. To illustrate the sensitivity of this methodology to variations in the basic data the following examples are offered. If the "suspect" aggregate (the gross value of output) were to increase by 9.7% per year during 1959-68 instead of by 13.3%, as officially claimed, then, given the parameters used by Dr. Boretsky, there would be no increase at all in the residual. Or again, if the Soviet I-O tables are taken to reflect with a fair amount of accuracy the increase of deliveries of machinery to final demand in constant prices as well as current prices, then the military machinery residual increased between 1959 and 1966 by only 64% as compared with some 185% estimated by Mr. Boretsky. The absolute amount and growth of the residual are also sensitive to various assumptions about whether or how much to lag investment and sales of consumer durables (neither of which Dr. Boretsky does).

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4. The residual method has been explored by this agency as well as by organizations working under contract to it. We have never felt that the results were good enough to warrant reliance on the residual technique as a means of obtaining a realistic series on production of military and space hardware.

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5. Using his residual method, Dr. Boretsky estimates a level and trend of Soviet expenditures on military - space machinery that is vastly different from CIA estimates. Whereas, according to the CIA estimate,

	Billion 1955 rubles	
	Boretsky	CIA
1958	1.9	7.7
1968	10.7	13.4

expenditures on military-space hardware increased by 74% in the ten years after 1958, Boretsky finds the increase

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to be 478%. Stressing the enormity of this percentage increase, he concludes, "The story conveyed by these /estimates/ could hardly be more dramatic."

Because of the divergence in the CIA and Boretsky estimates, the serious weaknesses in the residual approach, and the "headline" potential of Boretsky's commentary, we cannot be sanguine about the publication of his estimate.

6. Credibility of the Results -- We believe that Dr. Boretsky's calculation of the production of military and space hardware in his base year (1958) is far too low and contributes to a sizeable overstatement of growth in 1959-68. It is simply incredible that in 1958 the USSR could support its large and expanding military hardware programs as well as an extensive space program with an expenditure of 1.9 billion rubles -- less than the sums invested in the coal and petroleum industries in that year. His calculations further imply that production of civilian machinery during 1959-62 did not share in the vigorous growth of military machinery (although the latter is very dependent on some types of civilian production for parts and components). CIA's Soviet Production Index, (SPIOER), which includes in its sample a very large number of final products, shows no such lag in the civilian

(see Table 1)
machinery sector. Therefore we feel that Dr. Boretsky's series on the value of military machinery production is not consistent with other available evidence on trends in Soviet machine building during 1959-62.

7. Another of Dr. Boretsky's results that is extremely hard to accept simply on the grounds of credibility is the implied average annual increase of 32% in the production of Soviet military and space hardware in the 4-year period between 1958 and 1962. If one is to believe the figures in his Appendix Table 3, which shows the derivation of his residual Soviet ruble-value series for military and space hardware (Row II, 5) then this category increased from 12½% of the gross value of output of machine building (MB) net of intraindustry sales (Row I, F) in 1958 to 22% in 1962. Such a phenomenal increase in such a short period would certainly have caused a great dislocation in the productive resources of the machine building industry, but there is no evidence that dislocation of this magnitude took place in 1959-62. Instead, the CIA estimates of the growth of civilian machinery slump especially in 1963-68, when the average rate of increase of Boretsky's military machinery falls from 32% to 11% a year.

Table 1

Average Annual Growth Rates of Soviet Machinery Production, 1959-68

	Percent		
	1959-68 a/	1959-62 a/	1963-68 b/
Official Soviet			
Gross value of output of machine building	13.3	15.8	11.7
Boretsky			
Gross value of output of machine building net of intraindustry sales	11.8	14.5	10.1
Military machinery	19.2	32	11.3
Civilian machinery	10.3	11.1	9.7
CIA Estimates			
Total machinery	8.1	10.3	6.6
Military machinery	6.4	9.8	4.2
Civilian machinery	9.1	10.6	8.1

a. The base year for this calculation was 1958.

b. The base year for this calculation was 1962.

8. Although the Boretsky and SPIOER growth rates for 1963-68 are at some variance, the difference is nowhere as extreme as in 1959-62, and a drop in the growth rate of military machinery production is evident in both. Given the lack of understanding in the West concerning the precise manner in which Soviet GVO indexes are computed (and what factors account for growth rates that are so much higher than anything that can be calculated by conventional methods) it is fruitless to push the comparison between Dr. Boretsky's estimates and those of CIA any further. Acceptance of Dr. Boretsky's results (even if corrected for the apparent aberration in 1959-62) rests on the credibility which the West attaches to Soviet GVO indexes as meaningful measures of real growth and on the applicability of the parameters that Dr. Boretsky uses to derive his results.

9. Validity of the Soviet Index of Gross Value of Output -- Western economists who have specialized in the study of the Soviet economy (Bergson, Greenslade, Grossman, Powell, Wiles, etc.) have reached a common conclusion after independent investigation of the Soviet "gross value of output (GVO)" -- namely that it overstates real growth. It is our experience that the overstatement is nowhere greater than in the case of machine building. Soviet indexes of GVO for MBMW

tend to overstate growth relative not only to comparable indexes constructed independently in the West but even to other official Soviet production data (see Table 2). The growth in gross output of machine building as reflected in the two Soviet I-O tables for 1959 and 1966, for example, averaged 10.6% annually between those two years, whereas the comparable official GVO index indicates a growth of 13.3%, nearly 3 percentage points higher. Similarly, for individual branches of machine building, the GVO indexes have indicated growth rates significantly above those derived from officially published ruble-value production series.

10. No one in the West knows how to account precisely for the inflated growth rates registered by Soviet GVO indexes. We do, however, know some of the things wrong with the indexes: inclusion of secondary products, multiple counting of intermediate goods and components, use of artificially high "temporary" prices for new and nonstandard products. Dr. Boretsky has tried to deal with two of these problems -- inclusion of secondary products and multiple counting of intermediate goods (primarily intraindustry sales). Comparison of the 1959 and 1966 I-O tables seems to show about the same increase in intraindustry sales as Dr. Boretsky estimates. With respect to other aspects

Table 2

Comparison of Machinery Growth Rates: Official Gross Value of Output Versus Other Soviet Measures of Production, Selected Years, 1958-68

	Index Numbers	Average Annual Percentage Rate of Growth
1. Machine building and metalworking	1966 (1959 = 100)	
Official index of gross value of output a/	231	12.7
Gross output from 1959 and 1966 I-O tables b/	202	10.6
2. Machine building only		
Official index of gross value of output a/	239	13.3
Gross output from 1959 and 1966 I-O tables b/	202	10.6
3. Selected branches of machine building		
a. Instrument building (priborostroyeniye)	1968 (1959 = 100)	
Official index of gross value of output	338	16.4
Reported ruble value of production	269	13.2
b. Equipment for the food processing industry	1964 (1958 = 100)	
Official index of gross value of output	226	14.6
Reported ruble value of production	154	7.5

a. Calculated in enterprise wholesale prices of 1 July 1955. Output is computed on an establishment basis, including secondary products.

b. Calculated in current prices to the purchaser (including turnover tax where applicable, freight charges, and trade mark-up). Output is computed on a commodity basis consisting of primary products only and regardless of where produced.

of these two problems, however, it is difficult to judge the success of Dr. Boretsky's adjustments, given the self-interest of Soviet enterprises in maximizing their GVO's. Also there is little that one can do about the pricing problem. Reputable Soviet economists claim that machinery prices have actually increased since 1958 despite the publication of an official index of machine building prices that shows a decline of 11% in enterprise wholesale prices. Acceptance of the official index of GVO as a reliable constant price index is very much in question due to the numerous problems inherent in Soviet price formation and pricing practices. Soviet practice tends to allow the introduction into the reporting of GVO of artificially high "temporary" prices for new and nonstandard products as if they were bona fide constant 1955 prices.

11. Soviet sources are themselves in disagreement over the absolute value of the gross output of machine building and metalworking. This value is crucial because it is the starting point for Dr. Boretsky's entire calculation of Soviet military machinery production. Dr. Boretsky places the value of MBMW in 1959 at 27.6 billion rubles (Table A-3, Row I,B). We believe that he is in error in this regard. Certainly a strong case can be made that this figure should be 29.6 billion

rubles.* Substitution of this number alone reduces the average annual growth rate of Dr. Boretsky's military and space hardware series during 1959-62 from 32% to 23%, thus indicating how susceptible his results are to modifications in the underlying Soviet data.

12. Finally the use of GVO as a basis for disaggregating the various components of machine building is a risky business because of the lack of common knowledge as to its precise contents and how the ratios of its components change over time. In 1962 OER attempted to estimate for the purpose of deriving weights for use in SPIOER the division between the civilian and military components of MBMW. Using statements and coefficients culled from the Soviet press, it was estimated that the military component was 40% to 50% of the total in 1955. Dr. Boretsky, also relying on statements and coefficients appearing in the Soviet press, arrives at a military share of machine building (net of intraindustry sales) of only 12.6% in 1958,

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* The GVO of MBMW in 1960 was officially reported to be 34 billion rubles in enterprise wholesale prices of 1 July 1955 (SSSR v tsifrakh v 1961 godu, p. 108-9). Moved by the official index of GVO for MBMW (1959 = 87, when 1960 = 100) results in a 1959 value of 29.6 billion rubles. [redacted] of this Office has written a memorandum, Gross Value of Output of Machine Building and Metalworking, USSR, in 1965, dated 30 April 1970, in which he details the conflicting evidence concerning the correct value of MBMW. A copy of this memorandum was presented to Dr. Boretsky at the conference on 28 August.

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rising to 22% in 1962, and to 24% in 1968. Clearly the selection of data and the interpretation of Russian sources can lead to very different results. 25X1B

25X1B [redacted] Interestingly enough, this method led to a military share in 1960 that was not far from the one calculated by OER for 1955, but greatly at variance with Dr. Boretsky's 1958 relative share. Since 1960 military machinery has grown more slowly than civilian machinery in the CIA index and its share has correspondingly declined from 40% to 35%. In particular, Dr. Boretsky's method of estimating sales of intermediate products and inventories seems somewhat arbitrary.

13. The Ruble-Dollar Ratio Problem -- In addition to the question of the meaningfulness of Dr. Boretsky's ruble-value series, his paper poses a serious problem with regard to the valuation of military machinery in dollars. In converting his ruble series on Soviet military machinery production into dollars for purposes of comparison with US military machinery, he comes to the conclusion that Soviet production in 1968 exceeded US production by some 3% to 19%. (The range reflects the

use of alternative ruble/dollar ratios.). Dr. Boretsky seems to favor use of the lower ratio of .315 rubles to 1 US dollar, and for purposes of exposition we will confine our comments to this ratio and its effect on his dollar-value series.

14. First, we question the realism of the .315-to-1 ratio. It is based on a sample of investment goods, not military goods. We believe that this ratio is much too low and leads to an inflated dollar valuation of Soviet military hardware production. In our estmates of Soviet military hardware production individual categories are converted at different ruble-dollar ratios. When these categories are aggregated, a weighted average ratio is derived. This ratio tended to rise between 1958 and 1962, but levelled off thereafter. The rise reflected the introduction on the Soviet side of more exotic types of weaponry (nuclear warheads, radio-electronic equipment, etc.) that are relatively more costly for the USSR to produce vis-a-vis the US than are conventional series-produced items.

15. If our ruble-dollar ratios are substituted for Dr. Boretsky's, the level of his dollar series for Soviet military hardware production drops by one-third, and the ratio of the value of Soviet military hardware production to the value of US procurement of military-space hardware declines correspondingly:

Boretsky's Comparison

	1958	1962	1965	1967	1968
Machinery component of Soviet defense and space programs					
1955 Rubles (million)	1,864	5,642	6,337	9,318	10,733
Ruble-dollar ratio -- (Boretsky)	.315	.315	.315	.315	.315
1964 Dollars (million)	5,872	17,772	19,962	29,352	33,809
Machinery component of US defense and space programs (million 1964 dollars)	16,517	19,738	19,430	26,060	28,530
Soviet programs as a percent of US programs	36	90	103	113	119

Alternative Comparison (employing CIA ruble/dollar ratios)

	1958	1962	1965	1967	1968
Machinery component of Soviet defense and space programs					
1955 Rubles (million)	1,864	5,642	6,337	9,318	10,733
Ruble-dollar ratio (CIA)	.48	.52	.51	.51	.51
1964 Dollars (million)	3,883	10,850	12,425	18,271	21,045
Machinery component of US defense and space programs (million 1964 dollars)	16,517	19,738	19,430	26,060	28,530
Soviet programs as a percent of US programs	24	55	64	70	74

16. In the alternative series the Soviet program reaches only 74% of the US program in 1968 instead of 119%. Even if Dr. Boretsky's 1958 base-year figure were adjusted upward as we believe it should be (see above), then the Soviet programs would still equal only 33% of the US programs in 1958 but would rise to 90% in 1968. CIA estimates that the Soviet programs equalled about 97% of the US programs in 1958 and about 93% in 1968.

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McHUGH - 5171

FOR RELEASE FRIDAY A.M.
SEPTEMBER 25, 1970

CONGRESS OF THE UNITED STATES
JOINT ECONOMIC COMMITTEE

Representative Hale Boggs Announces Release of Study of Soviet Union

Representative Hale Boggs (D-La.), Chairman of the Foreign Economic Policy Subcommittee of the Joint Economic Committee announced today the publication of a new study, Economic Performance and the Military Burden in the Soviet Union.

In announcing the publication, Chairman Boggs noted that the Joint Economic Committee has had a long-standing interest in the study of the economic performance of the Soviet Union and has made available periodic studies going back to 1955.

Representative Boggs cited two important features in connection with this publication. "First, the Soviet leadership is now preparing a blueprint for their next Five Year Plan for 1971-1975 to be aired at the forthcoming Twenty-Fourth Party Congress. The new study is therefore a timely assessment of Soviet economic achievement and will provide the U.S. Congress and the American people an opportunity to place in perspective whatever plans will be announced by the Soviet leadership.

"Second, the latest publication has been oriented, more so than past publications, to the analysis of the role of the military requirements on the overall performance of the Soviet economy. This analysis is especially pertinent as the American people, the President, and the Congress reappraise and shape their priorities for the years ahead."

"The Subcommittee's study," Chairman Boggs noted, "presents a telling case of the relatively poor Soviet economic performance in the last several years, with not only agricultural but industrial production lagged -- agricultural performance was particularly low in 1969 due principally to bad weather. However, there were also pressing bottlenecks in fuel, labor and construction. In the short run, these problems directly impinge on defense production. For the longer term, it is evident that unless there is

further substantial economic reform, Soviet efforts to raise living standards, which are roughly about one-third that of the United States, will depend on the priorities given to military production and services.

"It is stressed throughout the study" Representative Boggs asserted "that the defense effort share (which accounts for over one-tenth of Soviet output), might be maintained indefinitely or even increased if present world tensions continue. Such an eventuality would unfortunately mean that the military would continue to have the strong voice it now has in determining priorities. On the other hand, a diminution of world tensions would afford the Soviet leaders an opportunity to meet many pressing civilian demands which are much more acute than in this country."

Other major findings of the study are summarized in the attached release.

The Chairman indicated that some of these studies present different interpretations of such phenomenon as Soviet defense activities. For the most part, this is due to the high degree of secrecy surrounding such activities in the Soviet Union. The Chairman expressed hope that the publication of these data will permit fuller exploration of the subject matter by the experts with a view of minimizing discrepancies and arriving at close approximations of the truth. This subcommittee plans to examine the more prominent areas of controversy through public hearings to aid in this process of achieving a fuller understanding of events.

Copies of this study are available on request from the Joint Economic Committee, Room G-133, NSOB, Ext. 5321.

# # # #

Members of the Subcommittee on Foreign Economic Policy are:

HOUSE OF REPRESENTATIVES

Hale Boggs (D-La.), Chairman
Henry S. Reuss (D-Wis.)
William S. Moorhead (D-Pa.)
William B. Widnall (R-N.J.)
W. E. Brock III (R-Tenn.)
Barber B. Conable, Jr. (R-N.Y.)

SENATE

John Sparkman (D-Ala.)
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Herman E. Talmadge (D-Ga.)
Stuart Symington (D-Mo.)
Abraham Ribicoff (D-Conn.)
Jacob K. Javits (R-N.Y.)
Jack Miller (R-Iowa)

Representative Hale Boggs (D-La.), Chairman of the Foreign Economic Policy Subcommittee of the Joint Economic Committee of the U.S. Congress, announced the publication of another in their series of assessments of Soviet economic performance. This publication entitled "Economic Performance and the Military Burden in the USSR" represents not only an updating of the periodic annual indicators (Soviet Economic Performance 1966-67 published in 1968 being the most recent) but an initial survey of the role of military claims on resources in the performance of the Soviet economy.

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[redacted] provided a general assessment of Soviet performance in the following:

"For the Soviet Union, 1969 was a year of slower growth and generally unsatisfactory economic performance. Nevertheless, the USSR easily maintained its second place position among the world's economic powers, producing only half as much as the United States but almost 2½ times as much as third ranking Japan or fourth ranking West Germany. Measured on a per capita basis, however, Soviet gross national product (GNP) is only about 40 percent of the American or ½ of the northwest European and is comparable to the Italian or Japanese.

"During 1969, Soviet GNP increased only 2.3 percent, that is, at less than half the rate maintained during the preceding several years and the lowest rate posted since the disastrous agricultural year of 1963. Over the years, the rapid growth of factor (i.e., capital and labor) inputs has been largely responsible for the rapid growth of Soviet output. Employment increased more rapidly in the Soviet Union during the 1960's than in any other major industrial nation, largely because of demographic circumstances. The Soviet capital stock also grew rapidly, thanks to rapid growth of investment and a low rate of retirement of fixed assets. Another source of output growth has been rising joint factor productivity, that is, improvement in the efficiency with which measured inputs are used. From 1961 through 1967, joint factor productivity in Soviet industry increased slowly, however, and during 1968-69 it apparently registered a slight decrease. Year-to-year variations in weather conditions have been sufficient to cause sizable swings in the rate of change of joint factor productivity in agriculture.

"Dissatisfaction of the Soviet leaders with the performance of the economy is evident in their speeches and in a flood of press articles that urge better and more intensive work and announce new measures to alleviate specific difficulties. Basically, concern seems to be centered on the declining rate of growth of nonagricultural production, but chronic difficulties in agriculture draw attention as well. Measures aimed at increasing the output obtained from given inputs have been widely publicized. Much attention has been given to measures for improving the distribution of labor and the organization of producing units or work tasks as well as to measures intended to speed the development and introduction of new equipment. Enterprises and organizations of all sorts are being pressured to release unneeded workers for employment elsewhere. Nevertheless, large scale transfers of labor from agriculture, which absorbs an anachronistically large portion of the labor force, are not being advocated publicly. To date, no satisfactory cure for decelerating output growth has been hit upon."

Agriculture, the pendulum factor in Soviet economic performance, was assessed by [redacted] 25X1A

"In the period 1968-69 agricultural production was marked by fluctuation, increasing 5½ percent in 1968 and falling 4½ percent the following year. As a result, after reaching a record high level of output in 1968, farm output in 1969 dropped to nearly the level of output in 1967, and on a per capita basis, it registered an absolute decline (see Table 1).

"Crop production in 1968-69 increased 7½ percent then fell 9 percent. The increase in total crop production in 1968 was due mainly to a bumper grain harvest of 135 million metric tons, ranking second only to the crop of 140 million tons harvested in 1966 (see Table 3). The overall decrease in crop production in 1969 included smaller harvests of grain, potatoes, sugar beets, cotton, and fruits and vegetables. As usual, weather was the most important factor affecting crop production in both years; relatively favorable weather in 1968 was followed by generally unfavorable weather in 1969.

"Unfavorable weather conditions in 1969 resulted in above-normal damage to winter grain and other fall-sown crops, prevented timely spring planting, and seriously compressed the time available for fall harvesting. On the other hand, a noticeable upward trend in yields per acre for most crops were promoted by improvements in tillage practices, the wider use of better plant varieties, and a somewhat larger supply of soil additives (fertilizer and lime). The 1969 grain crop of 128 million tons was below both the 1968 level and the average level achieved in 1966-68 (132 million tons), yet it was one-third above the near-disastrous grain harvests of 1963 and 1965. Grain supplies will be further enhanced as the result of the recent purchase of 2 million tons of wheat from Canada for delivery in 1970. This amount of grain should permit the U.S.S.R. to meet current domestic needs for bread supplies in 1970; to fulfill current export commitments, and to maintain sizable grain stocks."

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25X1A Other economic trouble spots, reviewed by [redacted] are Soviet fuel industries:

"The U.S.S.R. leads the world in the production of coal and ranks second to the United States in output of crude oil and natural gas. The rate of growth in production of fuels in the U.S.S.R., however, has been declining for several years and without substantial increases in investment is unlikely to improve in the near future. During 1966-69 average annual growth in output of major fuels was about 5.5 percent, compared with about 7.3 percent annually during 1961-65. The unfavorable performance of the fuels industries in recent years results from the failure to solve several chronic problems related to the allocation of investment and the management of investment programs. Growing demand for fuel coupled with depletion of resources in older producing regions is forcing exploitation of reserves at greater depths or in new areas, many of them remote from centers of consumption and affected by severe extremes of climate. Some of the exploration and production technology and equipment now employed are not suited to the changing geologic and climatic conditions. As a result, substantial capital investment for modernization and reequipment will be required. In the recent past, however, increases in production per unit of additional investment have been growing smaller, at least in part because more output has come from remote, high-cost areas."

In the far flung republics of the USSR freight transportation continues to be a bottle neck as reviewed by [redacted] 25X1A

"The Soviet transportation system continued to grow in 1968-69, although showing signs of strain at times. Total freight traffic in 1968 increased 7 percent compared with the 1967 level, and grew 4 percent more in 1969 to 3,574 billion ton-kilometers, according to official preliminary data.

"Two-thirds of this traffic was handled by the railroads.

The relative standing of the various modes differs greatly when measured by tons carried rather than ton-kilometers because of differences in the average length of haul, which is particularly short for motor transport.

"Railroads still lead in ton-kilometers but in recent years other modes of transportation--especially pipeline and maritime--have been growing more rapidly. Because of differences in the nature of the traffic, the average revenue per ton-kilometer of freight varies considerably among different modes of transportation. In the period since 1960, however, a value-weighted index of growth showed about the same rate as an index based on ton-kilometers."

25X1A [redacted] evaluates the core of Soviet economic plans--their capital investment program:

"Between 1950 and 1969 Soviet gross fixed investment grew nearly twice as fast as total GNP. The significant increase in the allocation of resources to investment during this period reflected the determined pursuit of economic growth on the part of the Soviet leadership. This investment policy achieved its primary objective of creating a vast industrial complex in the Soviet Union, but at a high cost.[1]

"The functional structure of Soviet investment continues to be heavily weighted in favor of construction activity (at present about 60 percent of total investment), although the share of the equipment component has been rising gradually since 1959. Soviet construction requirements appear to be almost limitless given the vast undeveloped areas east of the Urals, the many conservation and reclamation projects in some of the more densely populated regions, and the inadequacy of the present housing stock. Furthermore, the requirements for new technologies in many types of industrial production call for construction of new plant from the ground up rather than simply the redesigning of existing plant. As a result there has been no significant change in the functional structure of Soviet investment over the last 5 years!"

25X1A [redacted] evaluated the industrial record in the recent past as follows:

"The rate of growth of civilian industrial production in the Soviet Union fell below 6 percent in 1968–69, the lowest rate of growth for consecutive years since World War II.[1] In every sector of industry the rate of growth in 1968–69 was lower than in 1951–60 or in 1961–67. Sharp reductions in the rate of growth of industrial materials and nondurable consumer goods accounted for most of the downturn. The rate of growth of industrial materials fell from 6.8 percent in 1966–67 to 4.6 percent in 1968–69, and the rate of growth of nondurable consumer goods declined from 6.0 to 4.4 percent. The decline in the rate of growth of civilian machinery was not as steep—from 9.5 percent in 1966–67 to 9.1 percent in 1968–69.[2]

"The performance in 1969 was especially poor. Ten of the 11 branches represented in the sample of industrial production showed lower rates of growth than in 1968 as the average annual increase in the overall index of civilian industrial production slipped from 6.1 percent in 1968 to 5.2 percent in 1969 (see table 2). The direct and indirect effects of an extremely severe winter together with a slump in agricultural output contributed to the 1969 decline in industrial growth. Only the coal branch managed to increase output at a faster rate in 1969 than in 1968."

A new source on labor and wages assists Murray Feshbach and Stephen Rapawy in appraising recent developments:

"In the summer of 1968, after a hiatus of more than 30 years, the Soviet Central Statistical Administration released a statistical handbook on labor, *Trud v SSSR*.[1] This handbook contains much information which was not previously available, and its publication raised the possibility of establishing numerous time series of statistics on labor. However, the latest statistical yearbook,[2] which was released in mid-October 1969, contains revised data for certain earlier years and in effect dashes many of these hopes concerning time series. For example, the employment series given in the labor handbook has now been changed for the years 1960 and 1966–67, due to the reclassification of industrial and other economic activities adopted in August 1967. The figures for the industry, construction, and agriculture branches of the national economy, as well as those for most of the branches of industry, have been altered for these years. In addition, the wage series for the branches of the national economy has been changed because the scope of wages reported on has been expanded to include more than just the direct payments from the wage fund which were published in *Trud v SSSR* and the previous statistical yearbooks on the national economy."

[1] U.S.S.R. Tsentral'noe statisticheskoe upravlenie (TsSU), *Trud v SSSR, statisticheskii sbornik*, Statistika, Moscow, 1968, 343 pp.

[2] TsSU, *Narodnoe khozialstvo SSSR v 1968 g., statisticheskii ezhegodnik*, Moscow, Statistika, 1969, 832 pp. (This volume and others in this series are cited hereafter as *Nar. khoz. v 19—.*)

The related population developments assessed by Murray Feshbach prior to the availability of the 1970 census highlight a falling birth rate especially among the Slavic ethnic population.

Preliminary results from the January 15, 1970, census reflect these regional fertility differentials. According to these figures, the population in each of the four Central Asian republics increased by 40 percent or more between 1959 and 1970. On the other hand, the population of the R.S.F.S.R. increased by only 11 percent, that of the Ukrainian S.S.R. by 13 percent, and that of the Byelorussian S.S.R. by 12 percent.[4]

The differentials in fertility, plus the effect of internal migration, have resulted in a decline in the proportion of the total population that resides in the R.S.F.S.R.—from 56.3 percent in 1959 to 53.8 percent in 1970.[5] If these trends continue, in the not too distant

[4] *Nar. khoz. v 1968*, p. 9, and *Izvestiia*, Apr. 19, 1970, p. 1.

future the R.S.F.S.R. will no longer contain a majority of the population. It is not unreasonable to label this the "50-percent problem." Soviet writers of late have been discussing questions of differential fertility, which suggests concern over the possibility that the Great Russians may well become a minority nationality in the country.

Education, as described by [redacted] still represents a key Soviet vehicle for change:

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"Enrollment in Soviet schools (excluding factory training programs) was 60 million in the 1968-69 school year, an increase of 44 percent over the 42 million students enrolled in 1960-61. This rise in enrollment, which occurred largely in grades 5-10, is evidence of the continuing effort being made in the Soviet Union to improve educational opportunity and attainment.

"Engineers, who comprise the largest single group of specialists with a higher education, have shown tremendous numerical growth since 1950. The number of engineers in the national economy more than doubled between 1950 and 1960, increasing from 400,000 to 1 million. In 1969 there were more than 2 million, and the number is projected to increase to about 2.9 million by 1975. This would represent an average annual growth rate of 8.3 percent for the years 1950–75.

"Technicians employed in the national economy similarly comprise the largest group of specialists with a specialized secondary education, nearly 43 percent at the beginning of 1969. There were 507,000 technicians employed in 1950, and 1.7 million in 1960. This groups has been projected to reach 6.1 million in 1975. Should this number be attained, the size of this group would have grown by 10.5 percent per year during the period 1950–75."

The post-Stalin upgrading of consumer welfare, assessed by [redacted] continues although,

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" The forward momentum achieved in the mid-1960's in improving consumer welfare slowed in 1968 and 1969. According to Soviet data, real income per capita (which includes wages, farm income-in-kind, and transfer payments) rose slightly more than 6 percent in 1968, and 5 percent in 1969, in contrast to 6½ percent annually during 1966–67. The slowdown in the growth of consumption per capita in 1968–69 was even more marked—4½ percent and 3½ percent, respectively, compared to an average rate of 6 percent during 1966–67. Some letdown in 1968 in the rate of growth of consumption was anticipated after the all-out effort by the regime in 1967, occasioned by the 50th anniversary jubilee year celebration, to give the consumer a better shake. However, the continued decline in 1969 was not expected and was in part explained by a poor agricultural year. As a result, the upward trend in improving the quality of the Soviet diet was reversed; per capita consumption of some quality foods such as meat was lower in 1969 than in 1968."

I. S. Koropeckyj surveyed industrial location policy in the USSR:

"Inasmuch as the internal and external conditions, which either endanger the power of the ruling group or impede the expansion of its influences, are constantly changing, the policies of leadership have to change accordingly. This obviously applies also to industrial location policy. A quick glance over the history of the U.S.S.R. illustrates this point. The policy during the 1930's was dominated by the anticipation of war with Germany and Japan. It found its expression in an intensive industrialization of the Eastern Urals and Western Siberia, regions more removed from the former country but closer to the latter than traditional centers in Western U.S.S.R. During World War II it was obviously necessary to locate industry in the hinterland of the country, but not too far from the battlefront; therefore, the growth of the Volga and Ural regions. After the war, until the second half of the 1950's, the objective of the leadership was to overcome the effects of hostilities in the shortest possible time, to create an industrial basis for competition with capitalist countries, and to improve the standard of living of the population. As a result, there was emphasis on the growth of the western regions of the country where the achievement of these objectives was most feasible. Then again, the looming danger from China led to a renewed interest in the eastern regions, but this time in those adjacent to China, such as East Siberia, the Far East, and Kazakhstan. At the same time, the status of a major world power requires the U.S.S.R. to assure the continuous and rapid advance of technology and, based on it, the growth of output of sophisticated machinery, instruments, etc. This could clearly take place only or mainly in well-developed and urbanized parts of the U.S.S.R. Hence the growth of metropolitan centers and their neighboring regions in European Russia, the Ukraine, and the Baltic republics.

"However, Soviet location policy at any point of time is not represented by a single dominant trend, notwithstanding how important it might be. There are many other tendencies simultaneously at work, mainly those which were dominant in the past and which continue, although to a decreasing rate, to influence current investment distribution. Furthermore, along with central planning, including often objectives other than economic, there is always felt in the economic life the influence of purely economic considerations not specified by the planners but reflected in decisions of managers and administrators on lower levels. These latter considerations are frequently in conflict with the noneconomic considerations. Finally the influence of branch and local interests cannot be ignored either. It follows that the Soviet location policy during any period of time is a mixture of all these various factors. Yet, in view of the totalitarian framework, one objective, that which reflects the current concern of the ruling group and is being constantly articulated by the entire state apparatus, regardless of the euphemism stands out among all others."

25X1A [redacted] assessed recent trends in Soviet foreign trade:

"Soviet foreign trade almost doubled in the period 1960-69—from $11.2 billion to an estimated $21.6 billion. The average annual rate of 7.6 percent during the period was comparable to that of world trade. Performance, however, has been uneven over the period with a sharp decline in the growth rate in 1956-66 and a growth in 1967-69 in excess of the longer term average. Trade in 1968 was up $1.9 billion or 10.2 percent over the 1967 level, the largest percentage increase since 1962. Growth in 1969 was almost as large as in 1968 in absolute terms—$1.6 billion—but was only 8 percent above the previous year's level.

"Among the principal causes of the fluctuations in the growth rate of Soviet foreign trade in the 1960's were the changes in intra-CEMA foreign trade prices in 1965-66 which reduced the value of Soviet traded goods. Soviet trade with Eastern Europe hardly increased as a result of the price changes; in 1967-69, however, this trade grew substantially. Another significant factor has been Sino-Soviet relations. Trade with China declined drastically in the 1960's, plunging from more than $2 billion and almost 20 percent of Soviet trade in 1959 to about $60 million in 1969, or three-tenths of a percent of total Soviet trade."

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[redacted] appraised Soviet economic assistance to the less developed countries:

"Since 1954 the U.S.S.R. has extended about $6.8 billion of economic assistance to 38 non-Communist less developed countries.[1] In spite

[1] Soviet extensions of military assistance to the less developed countries bring this figure up to somewhat more than $11 billion. Less military aid was extended in 1969 than in 1965-68, as an annual average. The decline in 1966 reflects smaller aid pledges to Arab countries, which had largely restored their inventories to pre-war levels following the June 1967 war with Israel.

of the increase in annual aid undertakings since the end of 1964—from an average of almost $370 million between 1954–64 to about $560 million during 1965–69—annual disbursements have not increased. This leveling-off in deliveries, together with a lack of vigorous new Soviet aid initiatives, and the generally harder terms associated with many recent Soviet credits, suggest that the present leadership has adopted a more conservative approach to foreign aid. During the first decade of the aid offensive, Moscow was willing to extend assistance to almost any less developed country that requested it. Large lines of credit ("umbrella credits" not committed to specific uses) were extended for economic development which, because of the accompanying propaganda, the timing, and the kinds of projects undertaken, often produced a political impact that was out of proportion to the amount of aid or its ultimate economic benefits. Moreover early Soviet aid agreements often were formalized without prior study of the proposed investments, either as they related to the recipients' absorptive capacity or the feasibility of specific program assistance. As a consequence much of the aid remained unutilized; in some cases completed projects operated far below optimum capacities.

"During the past few years, however, the U.S.S.R. has modified its foreign aid program so as to make it more effective, both politically and economically. Assistance is being concentrated in fewer countries, as discussed in the next three paragraphs. Recent Soviet aid commitments also have shown a diversity in terms and content which suggests that Soviet aid officials are paying greater attention to local conditions and individual requirements than in the past. The U.S.S.R. undertakes extensive feasibility surveys before aid is extended to specific projects, and repayment terms vary with the type of aid extended.

"From the beginning, Soviet aid was highly concentrated in a few countries, especially in the Near East and South Asia. To some extent this early concentration was a reflection of the greater willingness of certain less developed countries to accept assistance from the Soviet Union rather than any Soviet strategy for penetrating particular areas. By the mid-1960's, as more developing nations discarded their former inhibitions against accepting Soviet assistance, the U.S.S.R. was able to use aid more directly to promote its foreign policy objectives. Although the U.S.S.R. continues to extend at least token assistance to all Free World areas, its aid program has become more highly targeted as Khrushchev's successors apply location criteria to their aid determinations more systematically than before. These criteria identify Soviet interests in the Arab World and Moscow's desire to reinforce its foothold in the Near East including, in particular: Turkey, Iran, Pakistan, India, and Afghanistan; they also reflect the U.S.S.R.'s growing concern with China, and the desire to strengthen Soviet relationships with nations along its own and Communist China's southern borders. Thus in most recent years, a larger part of new commitments has been earmarked for Near Eastern and South Asian countries. Out of total Soviet assistance extended to developing nations between 1965 and 1969, some 82 percent was allocated to the Near East and South Asia, compared with 62 percent during 1960–64. Meanwhile Africa's share of the total fell from 28 to 11 percent."

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[redacted] identified the Soviet defense-industrial complex:

"Available information permits the identification of eight ministries that are currently responsible for producing most of the military equipment, including space-related equipment, in the U.S.S.R. These ministries are:

(a) Ministry of Defense Industry (Ministerstvo Oboronnoi Promyshlennosti—MOP);

(b) Ministry of Aviation Industry (Ministerstvo Aviastionnoi Promyshlennosti—MAP);

(c) Ministry of Shipbuilding Industry (Ministerstvo Sudostroitel'noi Promyshlennosti—MSP);

(d) Ministry of Electronics Industry (Ministerstvo Elektronnoi

Promyshlennosti—MEP);
(e) Ministry of Radio Industry (Ministerstvo Radiopromyshlennosti—MR);
(f) Ministry of General Machine Building (Ministerstvo Obshchego Mashinostroeniia—MOM);
(g) Ministry of Medium Machine Building (Ministerstvo Srednego Mashinostroeniia—MSM);
(h) Ministry of Machine Building (Ministerstvo Mashinostroeniia—MM).

"Not all military production takes place in these ministries, nor do the plants under the jurisdiction of these ministries produce only military goods. For example, some military transportation equipment is produced in plants under the jurisdiction of the Ministry of Automobile Industry, and some plants of the Ministry of Radio Industry produce radios for civilian use. Moreover, ministries other than those listed above undoubtedly manufacture products for the military establishment.

"Control of the defense-industrial ministries is highly centralized. The top overseer is Dmitrii Fedorovich Ustinov, a secretary of the Central Committee of the Communist Party and a candidate member of the Politburo. Ustinov has spent his entire career in the military production area, first as an armament and rocket specialist, later as the chief government executive in the defense industry field. Although he no doubt deals directly with individual ministries and the Ministry of Defense, an intermediary group may actually control defense-industrial affairs. Such a group might be composed of representatives of the defense-industrial ministries, the Ministry of Defense, and any other organizations concerned with military research, development, testing and production.

"Military production is closely monitored, in terms of both physical security of production facilities and quality of product. Production facilities are located in secure or semi-secure areas. A plant producing military goods usually is assigned a small team of military engineers, technicians, and office personnel who represent the Ministry of Defense. Sometimes the commander of the military team is a field grade officer equal in experience and status to the plant manager. The major function of the team is to maintain quality control at each step in the production process and to insure that the product meets prescribed specifications. The plant officials retain control over production methods, rate of output, and other related functions.

25X1A [redacted] identified the Soviet defense-industrial complex (continued):

"The Ministry of Machine Building (MM), established in February 1968, is the newest member of the defense-industrial complex. The title of the ministry is vague and no information has been released concerning its responsibilities or subordination. Speculations about its specific functions have rested either on the backgrounds of the men identified with the ministry or on the need for such functions in the U.S.S.R. One possibility is that the responsibility for missiles and space has been divided leaving MOM with ballistic missiles and giving MM the space program. Another is that MM has assumed some of the functions previously assigned to the Ministry of Defense Industry.

"The ministry's chief Viacheslav Vasil'evich Bakhirev, is a little-publicized executive whose entire career appears to have been spent in the defense-industrial complex—with an emphasis on armaments. He was publicly associated with high level defense production in 1965 when he was made Deputy Minister of the Ministry of Defense Industry.

25X1A [redacted] identifies the defense associated activities outside the Ministry of Defense:

"Whereas the preceding section deals with the industrial ministries within the Ministry of Defense, headed by Dmitrii F. Ustinov and charged with the procurement of goods for the regular military complex, this section is concerned with elements that provide military augmentation or other services to the Soviet Ministry of Defense forces. This paper represents a summarized treatment of selected aspects of the organization, function, capabilities, and characteristics of a number of additional state-operated activities within the governmental structure of the Soviet Union that impact on Soviet military capabilities. All these enterprises basically provide services rather than the manufacture or production of goods. It is only through an understanding of these varied but related service activities that one can be fully aware of the complexity of the Soviet military and the full impact of military requirements and control upon the economy.

"The economic significance of these defense-associated activities may be viewed in the broad context of the regime's choice between control and economic incentives and the intrusion of military as well as party control into areas normally civilian in nature. The KGB border troops and the MVD troop units, at least in part, represent the first choices; that is, the use of internal security measures to control the Soviet society. The various transport facilities and public health represent examples of the quasi-military character of functions in most countries primarily civilian in character. These activities require substantial skilled labor forces. Were the Soviet society less controlled or militarized a part of this labor force could be released to relieve labor force deficiencies elsewhere in the economy. Moreover, as these paramilitary activities are subject to preemption by military during times of crises, that is, Czechoslovakia. These activities may indicate both strength and weaknesses of the Soviet military, strength in that normally civilian activities may be militarized, weakness in that it may be necessary to rely on these quasi-military organizations rather than integral military service support."

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[redacted] evaluates the economic burden of Soviet defense outlays historically and identifies the competition in future plans as being between civilian investment, as it relates to economic growth through factor productivity, and military outlays:

"Even more intensively than in the United States there has been strenuous resource contention between defense and civilian uses, particularly investment, in the Soviet Union. This competition has been intimated in official declarations and can be verified by analysis of Soviet product and income flows.

"Soviet defense expenditure trends have been decidedly irregular with a sharp increase during the Korean War, a plateau for the remainder of the decade, rapid increases during the early sixties, some levelling out in the mid-sixties, and renewed rapid growth since 1965. The composition of military outlays has shifted from a position of over half of all spending on personnel expenditures in the early fifties, to a decline in such outlays for the past fifteen years, with considerably greater offsets in the burgeoning of research and development and procurement expenditures for complex aerospace and nuclear weaponry.

"The Korean War defense surge led to a sharp decline in the rate of increase in investment, especially of equipment; while the expenditure plateau from 1952 to 1960 permitted rapid rises in investment. The 1960-63 defense upsurge again depressed investment growth, particularly in construction of housing and consumer goods plants. Defense trends since 1963 have had less discernible displacement effects, but they have set an apparent ceiling on the proportion of national product used for growth purposes.

"A noteworthy exception to these displacement patterns has been that of machinery industry investment. Since this branch of industry includes military production, its parallel movement with defense trends is to be expected. Trends in defense spending have also affected the quality of investment in terms of the capital-output ratio. Again machinery is the glaring exception to the tendency for surges in defense spending to increase capital-output ratios. There is no correlation between trends in defense expenditures and trends in consumption. Given the relatively low income of the Soviet citizen, his market basket is largely oriented toward items of agricultural origin with consequent dependence on production trends in that sector.

"On the basis of demonstrable technological analogy with the United States, the principal material inputs into complex weapons find their alternative uses in capital investment, further verifying the drain on both the volume and quality of investment imposed by burgeoning defense outlays. Similarly a rising share of engineering graduates has been absorbed into research and development and are composed of those engineering specialities most appropriate to rapid development of aerospace and nuclear technology. Finally, the defense sectors have been favored organizationally by both planners and political leaders in the effective competition for scarce type of human and material resources.

"It is through restraint on increases in the productivity of manpower and capital that defense outlays impose their principal burden on the Soviet economy. The defense programs sequester resources that would otherwise contribute to the improvement of civilian-oriented technology and be used in civilian production. Some illustrative calculations indicate that a change in defense expenditures would have only a minor impact on growth through the transfer of resources to investment but a substantially larger effect through repercussions on the productivity of both the labor force and fixed capital.

"Given the uncertainty in the defense series and the influence of other factors, one cannot construct a quantitative relation between the rate of growth of defense and of productivity of the civilian economy. However, the evidence suggests that the release of highly skilled manpower and the rechanneling of other resources might well have a significant impact on productivity and therefore on GNP growth over the long run. It is interesting to note that the qualitative effects through productivity are potentially larger than the direct effect through the volume of investment. It might be noted, however, that since the defense sector has been the recipient of the highest quality scientific, engineering and managerial resources and has enjoyed superior institutional advantages, the impact of a shift of these resources out of defense on productivity might be greater than would a further shift of priorities toward defense. Conversely a slowdown or decline of total defense spending could occur without affecting defense R. &. D or the institutional advantages.

"Furthermore, to achieve the full benefit from a reduction in the rate of growth of defense expenditures, the resources, both human and material, which would have gone into defense cannot be transferred into other uses without adequate prior planning. Such a reallocation would require a number of priority steps, such as training engineers in specialities relevant to production of civilian goods. The benefits would be less if high grade human and material resources were shifted suddenly out of defense and into civilian-oriented production, as their capabilities would be too specialized to be as productive in new tasks. Given time for retraining and adaptation, full productivity may be restored, but in the near term, reduced returns would have be to expected."

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[redacted] through budgetary analysis finds less evidence of defense priority:

"Defense is a single number in the Budget with no further breakdown. Moreover, a number of defense and defense-related activities are known to be included under other budget categories.

"The State Budget of the U.S.S.R. for 1970 is highlighted by a smaller planned rate of increase of budget expenditures for Defense as compared to rates of growth in earlier years of the post-Khrushchev regime. The appropriation for Defense in 1970 is set at 17.9 billion rubles, an increase of less than 1 percent over the 1969 figure. This increase is the smallest since 1965, and contrasts to an average annual increase of nearly 10 percent during 1967-69. The Defense share of total planned budget expenditures in 1970—12.3 percent—is the lowest in many years.

"Part of the decline in the growth of budget expenditures for Defense in 1970 can probably be attributed to the effect of price revisions. Just as upward price revisions were partly responsible for a large increase in appropriations in 1968, price reductions on individual products in the electrotechnical, instrument building, machine tool building, radio, and other industries introduced on January 1, 1970, could be expected to affect the prices of some military end items, thus understating the real changes in defense programs."

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[redacted] is more skeptical than [redacted] on the growth stimulating effect of defense reductions and the onerous character of the military burden:

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"It sometimes is emphasized that reducing the priority of defense objectives would stimulate GNP growth not only because it would facilitate an increase in investment but also because it would foster technological progress and increases in joint factor productivity. Factor productivity would benefit from the shift of a portion of the research and development effort—now predominantly directed toward defense objectives—and a portion of the most innovative people—now generally occupied in defense related work—to non-defense sectors. This argument is buttressed by allusion to the existence of an inverse correlation between growth of defense expenditures and growth of joint factor productivity during the late 1950's and the early 1960's.

"Perhaps the most noteworthy indication that the defense burden may not be becoming more onerous is the fact that defense objectives now claim a smaller portion of GNP than they did in the recent past and a much smaller portion than they claimed in the early 1950's. Moreover, per capita GNP is much greater now than it was during the early 1950's, so the sacrifice of a given portion of GNP to defense needs should be less painful now.

"The positive effect that a reduction of defense expenditures would have on joint factor productivity might be less than first supposed. The inverse relationship between growth of defense expenditures and growth of joint factor productivity during the late 1950's and early 1960's may well have been unique to that time period. At least it is not observable in some other periods. Moreover, restriction of defense expenditure might not involve much, if any, reorientation of research and development activities from defense to non-defense objectives, especially if defense expenditures were held down because of an international agreement to limit the manufacture and deployment of certain types of weapons. In such a situation, large amounts of defense oriented research and development still would be needed to keep the Soviet Union at the frontier of military technology, and this work would be complicated by the reduction of opportunities for testing and gaining field experience. Finally, it must be noted that the continuing decline in investment yields probably would be aggravated by a further shift of resources into [illegible]

"Compounding this unattractive prospect are rising consumer inflationary pressures. Between 1960 and 1967 consumer disposable incomes rose by 69 percent, but personal savings rose by 148 percent, or at more than twice the rate. Whereas the Soviet consumer was saving 17 percent of his additional incomes in 1960, by 1967 he was saving 49 percent.[3] Such a high rate of savings is unprecedented in any economy, let alone one with the low per capita income of the U.S.S.R. Obviously, there is a situation of rising unsatisfied consumer demands. Persistence of such a trend will imperil the work incentives of a labor force with rapidly rising skills.

Michael Boretsky, on the other hand, finds not only a rapid improvement of the technological base of Soviet military hardware output--in sharp contrast with the civilian sectors of the engineering industries--but also finds a rapid relative increase in comparative Soviet-US military and space outlays.