

In the short term, the added influence of the military in all sections of government, of which the Polish military takeover presents the most radical case, will lead to more effective and decisive moves against the grossest forms of economic mismanagement and counteract negative consequences of decentralization. Ironically, therefore, what forms of obvious mismanagement exist in the East bloc economies provide under the changed political circumstances after Poland a certain significant margin of economic recovery. In the somewhat longer run, this same added military influence defines an optimal chance of more immediately bringing to bear on the Soviet economy as a whole the thinking and leadership of the scientific and military elite. This elite has a greater chance than the entrenched bureaucracies of instilling a fighting morale in the population and of mobilizing the Soviet economy from the standpoint of those areas of strength which give it potential advantages over its U.S. counterpart. Aside from general structural consideration discussed below, these areas of great potential strength in the Soviet economy are identifiable as follows:

1) a large and rapidly growing pool of scientific and engineering manpower characterized by unsurpassed excellence precisely in certain fields most intimately related to future economic and military strength. These areas include the theoretical branches of mathematics, physics, astronomy, electrochemistry, and fluid dynamics. Soviet excellence in the field of atomic particle acceleration is well-known, and Soviet efforts here point to an early development of controlled thermonuclear fusion power, as well as the development of a particle-beam weapons system. Soviet laboratories also lead in laser research, particularly the use of lasers in fusion research, and as weapons against missiles and satellites.

2) The sizeable and growing impact on the economy as a whole of the large Siberian infrastructure projects, elaborated below.

3) The build-up in the past 20 years of an impressive and growing reservoir of machine tools. In this same period, total U.S. machine tool stocks decreased by 7 percent, while the Soviet Union experienced a 250 percent increase.

The hidden strength of the Soviet economy lies primarily in the potential inherent in these three crucial areas. Greater influence of the military-scientific complex on the Soviet economy as a whole defines the imminent possibility that this potential will be unlocked. And among civilian economists, as well, there appears to be an increasing awareness of what is required.

---

\*Source: *Narodnoe khozyaistvo SSSR v. 1978q.*, supplemented by figures from the 1979 and 1980 editions and data of *Ekonomicheskaya gazeta*, no. 5, 1982.

---

## Soviet military costs:

by Steven Bardwell, Military Strategy Editor

All experts (both real and self-advertised) agree that the most problematic aspect of studying the Soviet economy is the extent and effect of the Soviets' military spending. However, a few facts are universally acknowledged:

1) Military expenditures are grossly understated in the Soviet budget as officially prepared;

2) Actual Soviet military expenditures are greater (as a percentage of total output) than those of the United States;

3) The overall quantity of Soviet arms expenditures has increased secularly over the past 30 years.

The standard estimates of the Soviet military budget are reproduced in Table 1. All of these estimates use the same methodology to arrive at a figure for the Soviet military budget: the official Soviet output figures are taken to represent a sum total of economic output, and subjective criteria are used to determine the distribution of that output between civilian and military customers. Even the careful estimates of Soviet watcher W. T. Lee use this "inventory" method; his disagreement with the estimates of the CIA and Stanford Research Institute is that, first, they mistakenly include some output from the machine-building and metalworking industries in the category of the civilian economy when Lee's contention is that it should be included in the category of the military, and secondly, that a portion of the science budget is actually military R&D. However, even Lee's figures, if correct, only show a Soviet military budget which is comparable to that of the United States, larger in percentage terms but nearly the same in procurement terms when all uncertainties of dollar-ruble conversions, differences in pay scales, and so forth are taken into account. These marginal differences between the Soviet and U.S. military budgets are then the basis for heated

### A more realistic picture

debate between policy-makers who all agree on this method of evaluation.

---

## a scientific estimate

The unique power of the LaRouche-Riemann model is its ability to get behind the superficial picture of an economy provided by output and inventory figures in order to arrive at an understanding of the causal features of an economy. Such a causal analysis of the Soviet economy, working from a data base assembled by Clifford Gaddy of *EIR*'s Stockholm bureau, shows, contrary to all other estimates, three facts about the Soviet economy:

1) The Soviet economy functions at this point in a qualitatively different mode than the U.S. economy: it has a **positive net reproductive** ratio, that is, it is growing in its ability to reproduce itself, while the U.S. economy is not.

2) There were two important, sudden shifts in the internal composition of the Soviet economy, one in 1975 and again in 1978. These shifted a **substantial and unrecorded amount of output** to the military and significantly impeded civilian production. All "inventory methods" of estimation are inherently incapable of detecting this "hidden" component of the Soviet economy. Thus, our estimate is of an **additional 38 billion rubles** per year at minimum spent on the military.

3) The Soviet economy, with its present rate of technological innovation, is **incapable of sustaining this massive diversion** of resources to military expenditures. Our projections show that a point of net disinvestment will be reached by 1985, if current trends in productivity continue. However, only **small increases in productivity would be required** to make even this large military diversion "affordable" for the Soviet Union. Such rates of productivity were realized as recently as the early 1970s, so that, should a policy stressing advanced scientific research in the U.S.S.R. be adopted, the Soviet military budget could continue to grow.

The LaRouche-Riemann model analysis of the Soviet economy begins with the examination of the recent trends in the basic categories of real, tangible output and investment. Figure 1 shows the most basic of these, the overall composition of the Soviet workforce, with

U.S. figures for comparison. The striking difference in the percentage of productive industrial operatives between the two countries expresses most succinctly the potential strengths of the Soviet economy. The overhead expenses for the Soviet economy are significantly less than those of the U.S. economy because of the higher proportion of workers involved in the production of tangible output and the much smaller service sector. To some extent this reflects the relative backwardness of the Soviet economy, the lower productivity levels, and the more labor-intensive agriculture. But this relative underdevelopment of the Soviet economy should not obscure the more important fact that the Soviet economy has not suffered the cancerous growth of a parasitic real-estate, services, "post-industrial" sector as has the United States. This accelerating deindustrialization of the United States is responsible for the remarkable drop in the proportion of the United States workforce involved in the production of tangible goods in the period between 1970 and 1980. The fact that the Soviet Union has *not* undergone this transformation toward what former National Security Adviser Zbigniew Brzezinski hailed as the "technetronic society" is its greatest relative strength today.

The depth of this advantage is illustrated in Figure 2 with a comparison of the number of scientists and engineers involved in research and development in the two countries. The drop in absolute terms of the figure for the United States in the period after the height of the Apollo program is symptomatic of the social and economic policy introduced in the late 1960s.

The consequences of these demographic facts were noted in the introduction to this report: the Soviet economy for the period between 1950 and 1975 was growing at a consistently high rate; it had all the indications of an economy in the later states of industrialization. However, in 1975 there is a sudden and qualitative change in the growth rates, investment structure, and productivity of the Soviet economy.

---

Table 1

**Other estimates of Soviet military expenditures**

	1960	1966	1970	1975	1980 <sup>1</sup>
CIA <sup>2</sup>	18	21	24	25	29
SRI <sup>3</sup>		17	23	25	29
W.T. Lee <sup>4</sup>	18	29	47	73	83

<sup>1</sup> Estimated from CIA published growth rates.

<sup>2</sup> In billions of 1970 rubles.

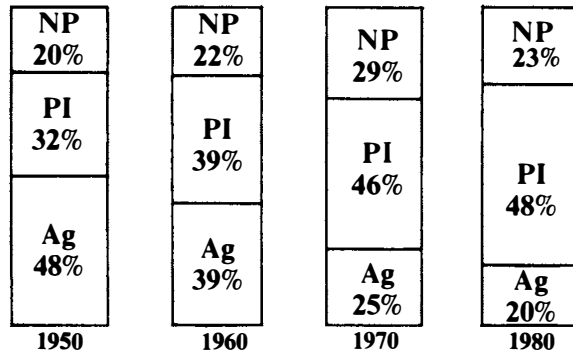
<sup>3</sup> In billions of 1970 rubles, median estimate.

<sup>4</sup> In billions of 1970 rubles, median estimates. Defense analyst W.T. Lee's findings were published in his 1977 book, *Arms, Men and Military Budgets*.

Figure 1

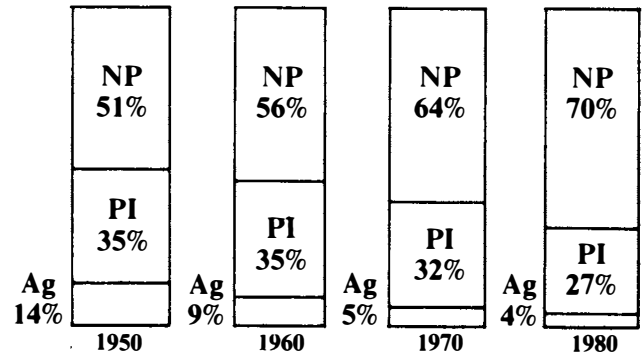
Employment by sector—U.S.S.R. and U.S.A.

U.S.S.R.



NP—Non-productive sectors  
 PI—Productive industry  
 Ag—Agriculture

U.S.A.



Source: LaRouche-Riemann model data base.  
 (totals of over 100% are due to rounding)

The cause of this drop has been fiercely debated in the West. We have rejected the explanations which would, somewhat self-consolingly, explain the Soviet economic difficulties by crop failures, pressure from declining Western economies, growing costs of maintaining the Soviet bloc countries, or accelerating inefficiencies in the Soviet economy itself. Our study shows

that something else was the primary determinant of Soviet economic behavior in the late 1970s; we believe that diversions of increasingly large amounts of tangible output were made to the Soviet military, diversions which were neither recorded as military expenditures or as output in the first place.

**What the LaRouche-Riemann model revealed**

The starting point for the LaRouche-Riemann model study is the data presented above on the real output of the Soviet economy. This data has been compiled for the Soviet economy from 1950 through 1980 and reduced, using a set of special algorithms, to the following quantities:

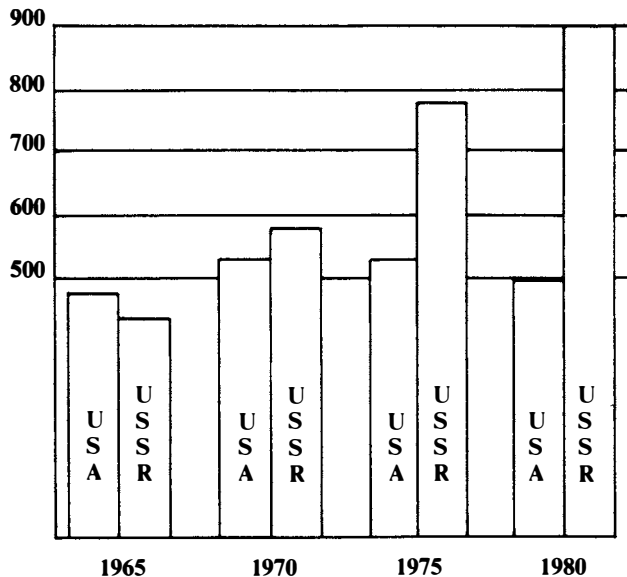
1) **Total tangible consumption by the productive work force.** The work force in demographic terms is divided into two categories, those producing tangible goods (and transportation services) and those involved in all other enterprises. The workers in the first category are analyzed in terms of their consumption, to derive an estimate of their total tangible consumption (housing, food, clothing, but not services). This figure then represents the annual investment, in currency terms, of tangible output devoted to the reproduction of the workforce. This amount will change from year to year, reflecting both changes in the living standard of the workforce and changes in the size of the workforce at constant levels of consumption.

2) **Total investment in plant, equipment, agriculture, and transportation.** This quantity is measured from official statistics and is used to calculate the changes in capital stock from year to year.

3) **Total depreciation costs.** This quantity, a part of total investment, expresses the equilibrium costs of

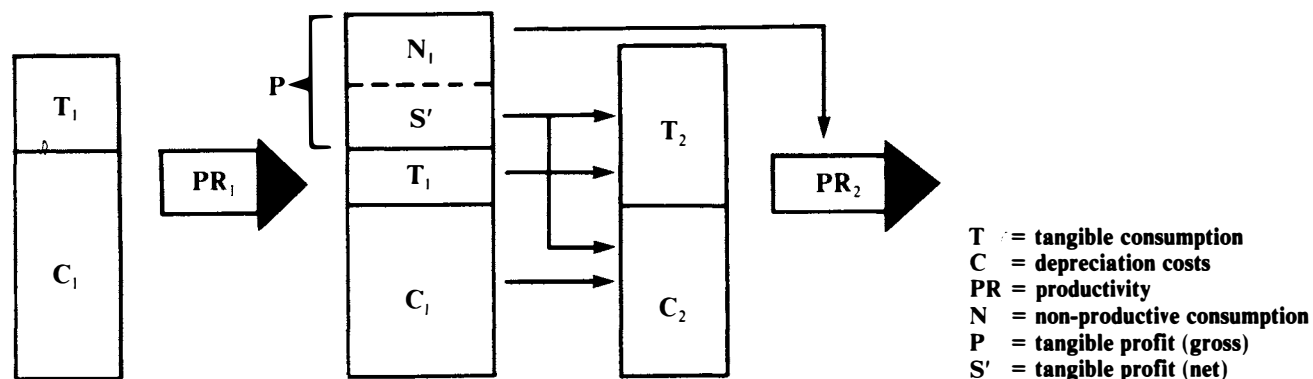
Figure 2

Scientists and engineers—U.S.S.R. and U.S.A.  
 (thousands employed in research and development)



Source: LaRouche-Riemann model data base.

Figure 3  
LaRouche-Riemann modeled reproduction of an economy



maintaining existing plant, equipment, agriculture, and transportation facilities.

4) **The difference between the sum of depreciation and total tangible consumption is calculated and called total tangible profit for an economy.** It represents the fund out of which all overhead expenses (those not directly productive of tangible goods), research costs, and new investment must be made. This fund, aggregated for the whole economy in our data base, is the margin of production above the equilibrium expenses required for maintenance of the workforce and capital stock.

Using these quantities, a number of subsidiary quantities are calculated which provide an "intrinsic" picture of the Soviet economy and the basis for projecting economic behavior.

1) **Gross reproductive capability or ratio.** This is the ratio of total tangible profit to the sum of the equilibrium costs of the economy. It is a measure of the total productivity of the tangibles-producing base of the economy. This quantity is, historically, very closely correlated with traditional measures of productivity and profitability, depending on the level of technology in an economy, on the development of infrastructure, and on the quality of the workforce.

2) **Total net reinvestment.** The yearly change in tangible consumption, added to the net new investment, gives an estimate of the portion of total tangible profit which is reinvested in the production of tangible output. This quantity, called  $S'$ , is an unnormalized measure of the growth potential of an economy. In the United States, for example,  $S'$  has been negative for the past several years as the economy has begun to decline in the production of tangible output and its reinvestment.

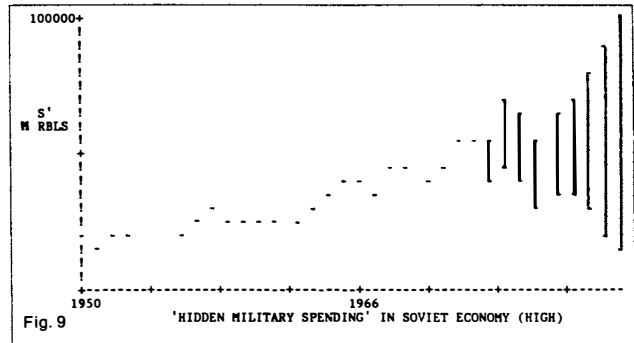
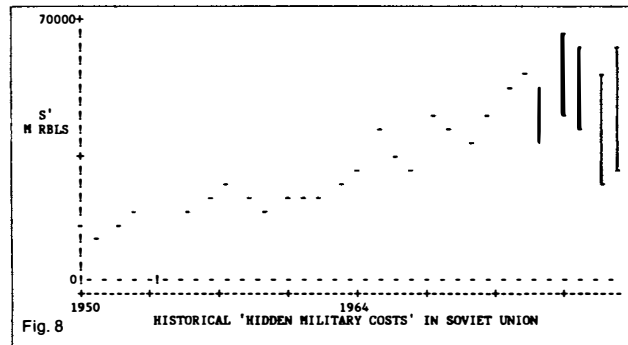
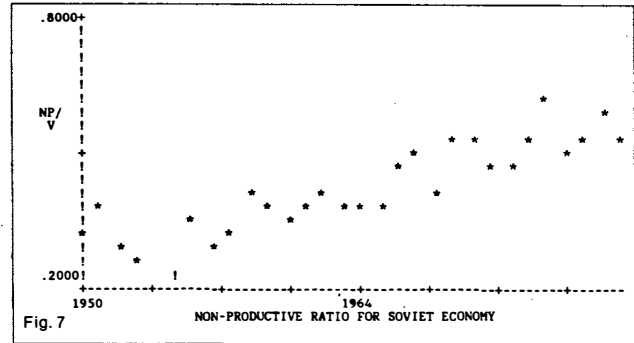
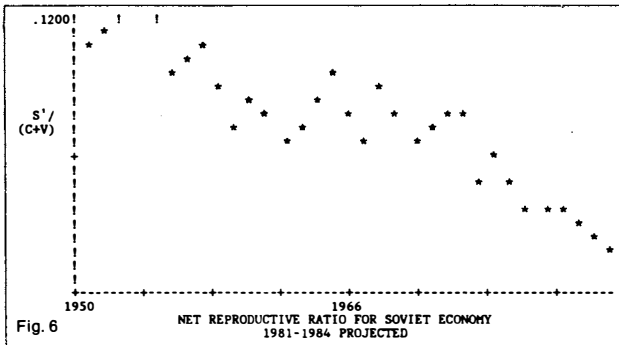
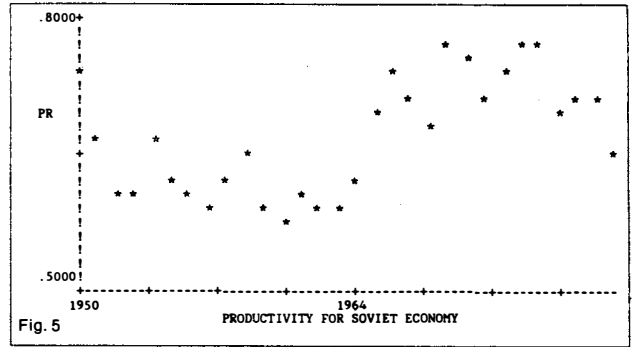
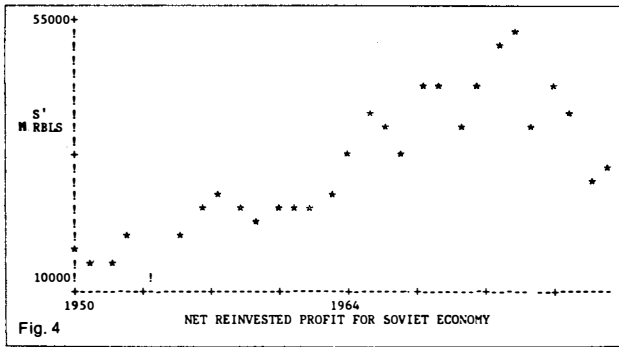
3) **Nonproductive consumption.** The difference be-

tween the gross tangible profit and net reinvestment represents a quantity of goods which are consumed without reappearing in the next cycle of production. This nonproductive consumption includes all services (both necessary and unnecessary), government bureaucracy, military expenditures, and scientific research.

In the United States, this non-productive expenditure has grown enormously over the past 20 years, as the speculative and parasitic parts of the economy have increased. However, a growing non-productive consumption can also reflect the process of industrialization, rising living, educational, and cultural standards, and increasing commitments to research and development. Non-productive consumption, while assigned a single quantitative value, is much more a figure of qualitative significance. In the case of the Soviet Union, non-productive consumption has grown steadily in per capita terms (see Figure 7), and for the period 1950-75 this slowly rising ratio was directly and tightly correlated with rising productivity. The correlation—which does not exist at all for the U.S. economy over the last 15 years—reflects the economic importance of investment in education, research, health care, and other necessary but non-productive economic activities.

That is to say, the cause of the rising productivity is investment in these areas and their realization through investment in capital embodying new technologies. Figure 3 summarizes this reproduction process.

4) After factoring out non-productive expenses, the quality of investment decision in an economy is most sensitively measured by the ratio of  $S'$  to the total equilibrium costs of the economy. This ratio, the **net reproductive ratio**, measures, the ability of an economy subject to the given investment decisions to continue to



grow. In analytic terms, this ratio is the instantaneous growth rate of total tangible production.

5) A measure of productivity unique to the model is provided by the **ratio of total tangible profit to total tangible consumption**. This ratio is a slowly changing function of the quality of manpower and the level of technology available to that workforce.

Graphs for some of these quantities are presented in Figures 4 through 7. Figure 4 shows the net reinvested profit for the Soviet economy from 1950 through 1980. This graph shows quite clearly that a qualitative change in the Soviet economy occurred after 1975. While  $S'$  had been rising steadily in the 25 years previous to 1975, there is a rapid and sustained decline in the reported investments after that point. This change is shown not only in total reinvestment but also in productivity

(Figure 5) and in the net reproductive ratio (Figure 6). Note that if this recent drop in reproductive capability is projected forward as shown in Figure 6, the Soviet economy reaches zero growth by 1985-86.

The model provides several insights into the cause of this drop. First, as shown in Figure 7, the overhead expenses per productive worker, have not increased in a different way during this period than they did during the previous 25 years. That is, the economy was not more inefficient, attempting to support a larger burden of reported military, service, or scientific endeavors than previously. What happens is that the quite close correlation between productivity and overhead expenses which obtains for the Soviet economy (but *not* for the U.S. economy in the same period) between 1950 and 1975, is suddenly broken. By official statistics and our

modifications of them, military expenditures are included in this overhead category. That is, they are expenditures which correspond to tangible output, but they are invested in nonproductive activities not productive of further tangible output.

However, this "tax" on the productive economy has not increased at a rate different between 1975 and 1980 than it had between 1950 and 1975. In fact, there is no reported statistical indication of the possible source of this difficulty. While the causes noted above of increasing obsolescence and agricultural difficulties are undoubtedly relevant, they are also of insufficient magnitude to account for the simultaneous drop in productivity and reinvestment rates, at the same time that overhead expenses as reported continue to increase.

Our contention is that there are large unreported military expenditures which must be added to the reported output of the Soviet economy. This output was produced, but was diverted to military investments during the 1975-80 period and not reported in official Soviet statistics. This amount is in addition to the most careful *inventory* estimates made of military spending. No other explanation can account for the bizarre changes in the Soviet economy.

To estimate the magnitude of this diversion, we use the most important property of the LaRouche-Riemann analysis—its ability to lay bare the investment structure of an economy, its real growth potential. The Soviet economy's growth potential, as measured by its net reproductive ratio, is easily determined in approximate terms, and it is straightforward to use the model to answer the question: how much additional reported  $S'$  would have to be added to the reported  $S'$  to restore at least constant growth potential to the Soviet economy? That is, the growth potential is most conservatively estimated to have remained constant during 1975-80 in actual terms. How much unreported  $S'$  exists that would account for the apparent drop in the reproductive ratio? Figure 8 shows our "low" estimate of the hidden military expenditures in the Soviet Union for this period. Table 3 tabulates both a low estimate, based on the assumption that the reproductive ratio would not have decreased, and a high estimate, based on the assumption that the reproductive ratio would have continued to increase at half the rate it had been increasing for the past ten years.

It is important to note that this series itself is divided into two periods. During 1975-77 the proportion of diverted  $S'$  is about 50 percent of the total reported  $S'$ . However, in 1978, this proportion jumps to almost 100 percent of the reported  $S'$ . That is, half of the reinvestment fund for the Soviet economy was diverted to military expenditures during the last three years of the decade. Both of these conclusions are important: the Soviet military budget is much larger than reported,

Table 2

**Increments of "hidden" Soviet defense spending**  
(billions rubles)

	1975	1976	1977	1978	1979	1980
Low estimate	17.6	22.4	21.6	26.2	34.1	38.3
High estimate	17.6	22.4	33.0	54.0	59.0	64.0

and the structural impact of this spending has changed during the past five years.

**Can the Soviets afford their military budget?**

Finally, we evaluated the effect of this military spending on the Soviet economy, spending which we estimate to be approximately 70 percent larger than the largest conventional estimates. To do so, we performed two projections for the Soviet economy's future. In the first, present productivity trends continue and the Soviet economy continues to devote 50 percent of its reinvestment fund to military procurement. This projection is shown in Figure 6. The Soviet economy, in this scenario, is unable to sustain these military expenditures and enters a phase of zero growth during the middle 1980s.

However, this scenario assumes that the abnormal productivity trends of the past five years continue. If we assume that the average productivity growth of approximately 3 percent per year, as seen during the past 20 years, continues for the period 1980 to 1985, the Soviet economy would grow even while sustaining an ever-larger burden of military expenditures. Figure 9 shows the military costs in this scenario, a figure which reaches approximately 110 billion rubles by 1985.

This figure is easily affordable by an economy whose productivity is increasing. That is, if the Soviet Union is able to realize its plans for Siberian development, and to translate even a small part of the advanced technological possibilities of a large military budget into productive reinvestment, its economy will grow rapidly. A large military budget based on the development of plasma technologies and directed energy-beam and space-based weapons, is precisely the sort of military which "pays its own way" because of the productivity increases it effects in the civilian economy.

This simple economic fact is proved in the converse by the current military budget in the United States. The U.S. military budget, lacking a "science driver" of advanced research and development, spending increasingly large sums on existing or obsolete technologies, and orienting more and more away from advanced technologies in its R&D funding, produces not only a decrepit military capability, but also renders itself unaffordable.