Gorbachev's Modernization Program: A Status Report

19 March 1987

A paper presented by the Central Intelligence Agency
and the Defense Intelligence Agency for Submission to
the Subcommittee on National Security Economics
of the Joint Economic Committee,
Congress of the United States

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Introduction

Since coming to power in March 1985, Mikhail Gorbachev has put forward the most ambitious program for economic, political, and social change since Nikita Khrushchev, often linking the USSR's ability to maintain its status as a military "superpower" to the success of his efforts. This joint CIA-DIA report provides an initial evaluation of Gorbachev's program. It begins by describing Gorbachev's policies and assessing their impact on the economy's performance in 1986. The paper then analyzes the future direction of his economic modernization program in light of the 1987 Plan and the demands for continued military force development. Finally, the paper addresses Soviet economic prospects over the longer term, highlighting problems the USSR will face if Gorbachev's program fails to bring about the intended acceleration in economic growth.

Gorbachev's Challenge: Accelerate Growth, Upgrade Technology

At the time Gorbachev took over, the Soviet economy was in the midst of a decade long slump, averaging just over two percent GNP growth per year in 1976-85. Of the other major industrialized countries, only the United Kingdom had a lower average growth rate during this ten-year period. Although Soviet economic growth after 1980 was as good or better than that of most other major industrialized nations except for the United States and Japan, this was more a reflection of a slide in economic growth in Western nations than a recovery of the Soviet economy (see table 1). Indeed, it was clear at the time Gorbachev became General Secretary that overall GNP growth during the 1981-85 Five-Year Plan (FYP) was going to be the smallest percentage increase of any FYP period. In fact, GNP had increased by less than 1.5 percent in 1984, and during the first quarter of 1985--just before Gorbachev took over--production was essentially flat.

Table 1

Average Annual Growth Rates of Real GNP
(percent)

	1961-65	1966-70	1971-75	1976-80	1981-85
USSR	5.0	5.3	3.4	2.3	1.9
US	4.7	3.0	2.5	3.4	2.4
Japan	10.0	11.0	4.3	4.0	3.9
France	5.8	5.4	4.0	3.3	1.2[1]
West Germany	4.8	4.2	2.1	3.3	1.2
Italy	5.2	6.2	2.4	3.8	0.8[1]
UK	3.2	2.5	2.1	1.6	1.7[1]

[1]Data are for gross domestic product (GDP). The difference between GNP and GDP, net factor income from abroad, is small.

Note: Growth rates are measured in national currencies.

Sources: USSR: CIA estimates
Western countries: 1961-80, OECD, National Accounts
1981-85, IMF, International Financial Statistics

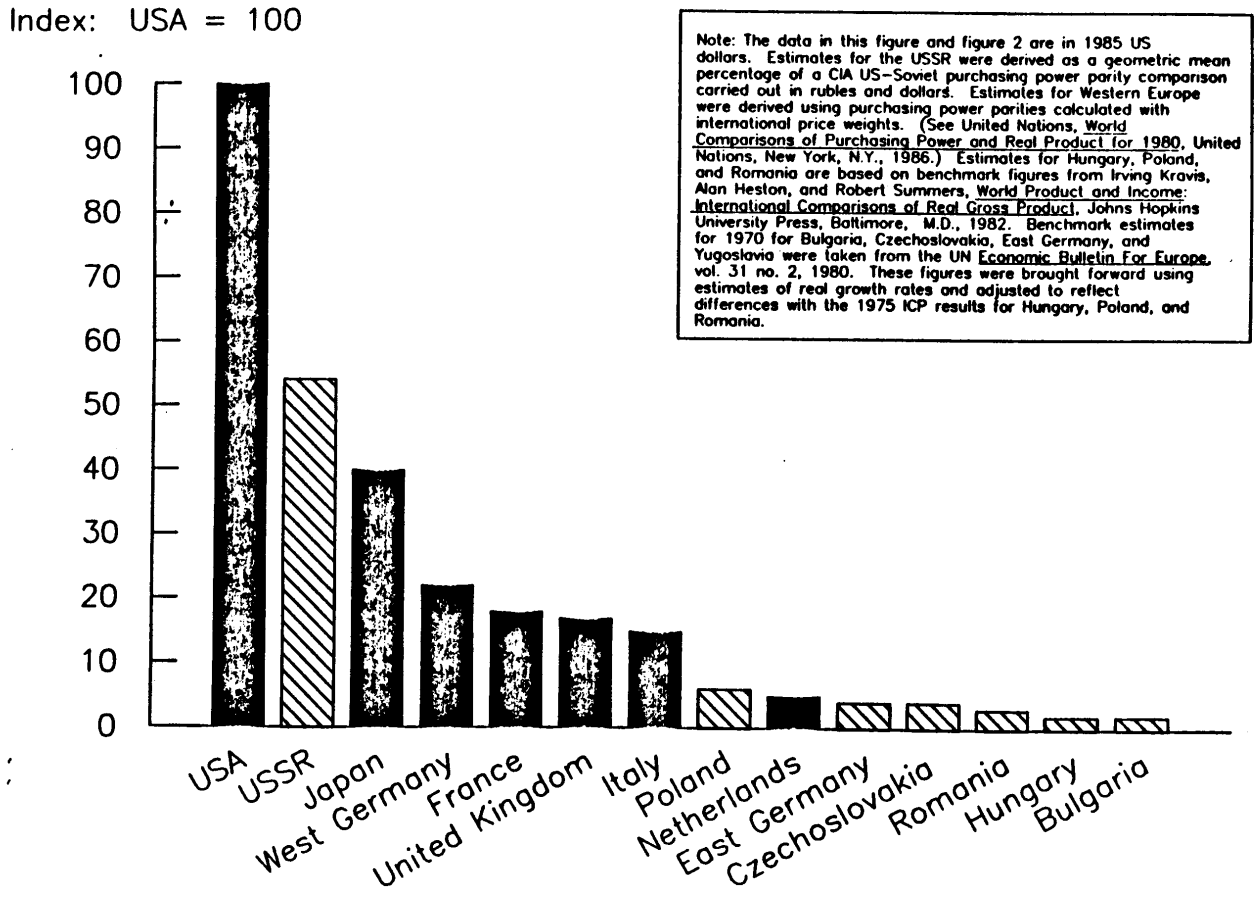
Growth rates by themselves do not reflect the scope of the USSR's problem. Low growth in the Soviet Union was occurring in an economy that did not compare favorably in size or technological level with that of the United States. Soviet GNP in 1960 was roughly half that of the United States. After narrowing the gap during the 1960s and 1970s and peaking in the early 1980s, Soviet GNP as a percent of US GNP fell to about 55 percent in 1985 (see figure 1). Even more striking, both the USSR and its East European allies continued to lag far behind major Western countries in terms of per capita GNP (see figure 2).

One reason for the economy's comparatively poor showing is the USSR's relatively antiquated industrial base. According to one estimate, for example, the average length of service of Soviet industrial equipment is about 20 years, compared with average use times of 10 years in France, West Germany, and Italy, and 12 years in the United States. In contrast to the West, where the rapid introduction of advanced manufacturing technologies has sustained productivity growth, the combined productivity of labor and fixed capital in the USSR has declined in absolute terms over the past decade.

We believe Soviet leaders worried about the implications of these trends for the USSR's future military strength. By dint of two decades of a sustained, costly military buildup, the USSR has secured its position as a military superpower whose global interests were increasingly recognized. In the past ten years alone (1977-86), more than 22,000 tanks, 21,000 infantry fighting vehicles, and 27,000 armored personnel carriers and like vehicles have been delivered to the Soviet ground forces. Soviet strategic forces received over 3,200 strategic missiles and about 20 new and converted ballistic missile submarines, and Soviet air power was augmented with over 7,100 new fighter aircraft and almost 4,600 helicopters.

Figure 1

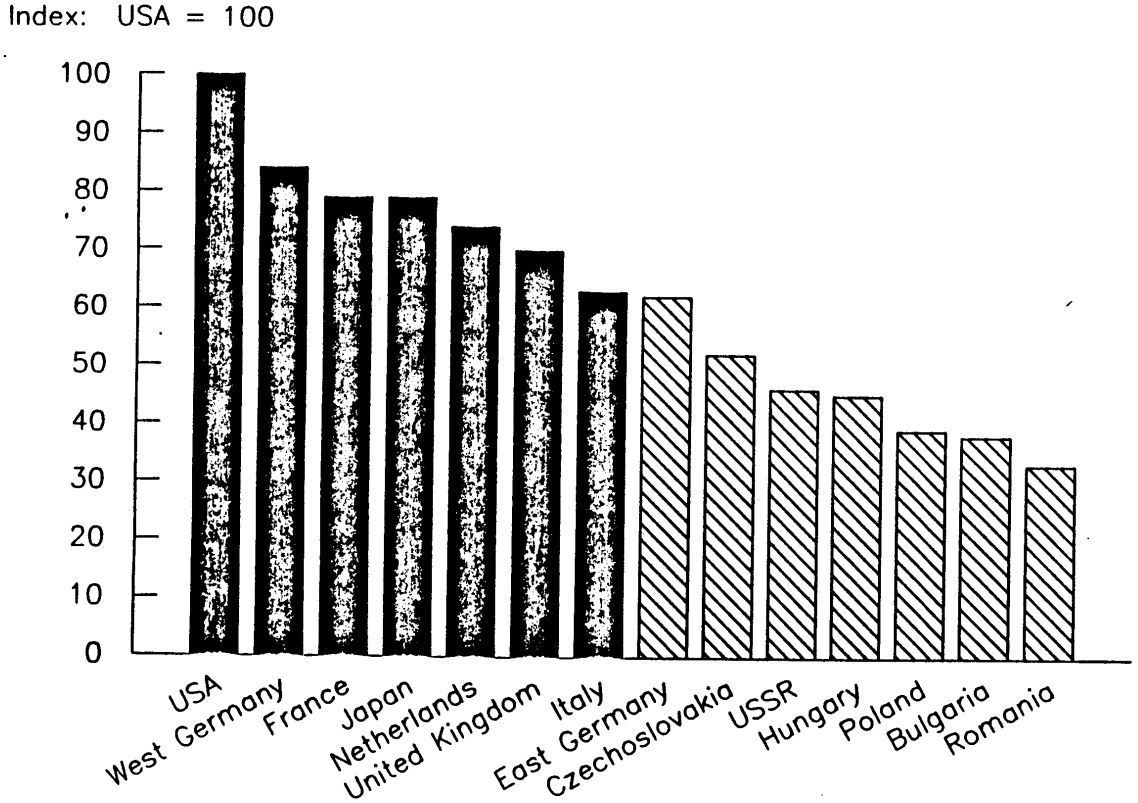
Gross National Product, 1985



Note: The data in this figure and figure 2 are in 1985 US dollars. Estimates for the USSR were derived as a geometric mean percentage of a CIA US-Soviet purchasing power parity comparison carried out in rubles and dollars. Estimates for Western Europe were derived using purchasing power parities calculated with international price weights. (See United Nations, World Comparisons of Purchasing Power and Real Product for 1980, United Nations, New York, N.Y., 1986.) Estimates for Hungary, Poland, and Romania are based on benchmark figures from Irving Kravis, Alan Heston, and Robert Summers, World Product and Income: International Comparisons of Real Gross Product, Johns Hopkins University Press, Baltimore, M.D., 1982. Benchmark estimates for 1970 for Bulgaria, Czechoslovakia, East Germany, and Yugoslavia were taken from the UN Economic Bulletin For Europe, vol. 31 no. 2, 1980. These figures were brought forward using estimates of real growth rates and adjusted to reflect differences with the 1975 ICP results for Hungary, Poland, and Romania.

Figure 2

Per Capita GNP, 1985[a]



[a] See footnote on Figure 1.

Even before the US Strategic Defense Initiative (SDI) became an issue, however, Soviet military authorities had expressed concern that the level of technology embedded in such US programs as the D-5 sea-launched ballistic missile, the Stealth bomber, "smart" conventional weapons, and cruise missiles would offset the numerical superiority that the USSR had achieved in most classes of weapons and thus threaten some of their hard-fought military gains. The USSR has made significant advances in many weapon systems technologies, cutting into the US technology lead in deployed systems in some areas. But the leadership recognized that in most advanced manufacturing technologies the USSR remains years behind the United States (see figure 3). Moreover, SDI, by concentrating competition in those high tech areas where Moscow is weakest, has clearly been viewed by the Soviets as a new and even greater threat.

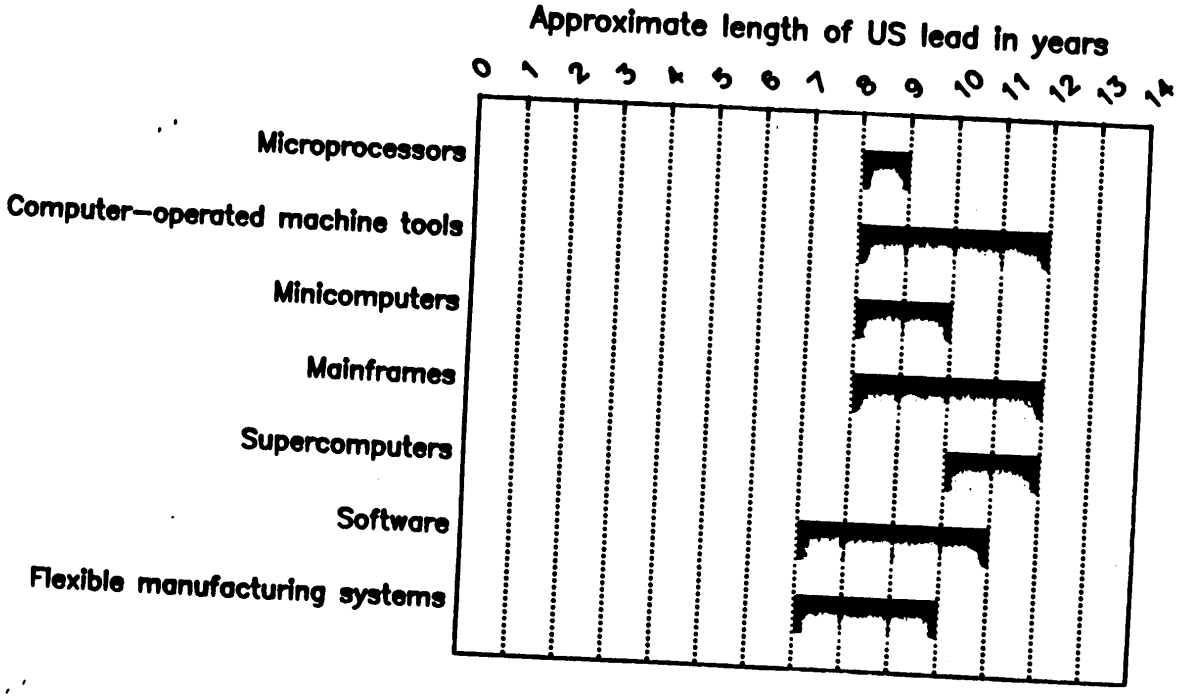
Gorbachev's Economic Agenda

Gorbachev's commitment to revitalizing the country's economic base--and hence to underwriting future military modernization--has been evident since before he became General Secretary. Even when he assumed power, however, Gorbachev may not have fully grasped the scope of the country's economic problems and the magnitude of the effort needed to attack them. In fact, despite his frenetic efforts over the past two years, we still do not see a viable, integrated plan for modernization; rather, we see many individual programs being put forth, each dealing with one facet of the economy.

Essentially, Gorbachev has set out a two-step approach. Initially, he is relying on a combination of measures to strengthen party control, improve worker attitudes, and weed out incompetents --what he refers to as "human factor" gains. The most visible part of these efforts has been his campaigns

Figure 3

Selected Advanced Manufacturing Technologies: The United States Versus the USSR



US lead is based on projections of length of time required for Soviets to achieve series production of levels of each technology similar to those in US series production today.

for discipline and against corruption and alcoholism. These measures--which do not call for structural change--have had a positive impact for the most part.

Over the longer term, Gorbachev is counting on achieving major productivity gains as a result of organizational changes, reform initiatives, and, most importantly, an ambitious modernization program to upgrade the country's stock of plant and equipment (see box insert). To this end, the current five-year plan (1986-90) calls for doubling retirement rates for fixed capital, replacing up to one third of the country's plant and equipment by 1990, and increasing the level of investment in the civilian machine-building and metalworking ministries (MBMW) by 80 percent during 1986-90 over the level achieved during 1981-85. Gorbachev has also instituted an ambitious new program to improve quality control in industry. Known as State Acceptance (Gospriyemka), the program establishes permanent quality control by state employees at the plant level, a program not unlike that used by the military to ensure the quality of defense goods. At present, it encompasses 1500 enterprises which produce an estimated 15 percent of all industrial products and nearly one-third of the output of the critical machine-building sector.

Through these actions, Gorbachev has indicated that he wants to upgrade the country's technological base so as to put the country on a higher, self-sustaining growth plane. Soviet plan targets imply an average annual GNP growth rate of about 4 percent during 1986-90, which is to accelerate to a 5-percent average annual rate during the 1991-2000 period.

Although many of the specific policies Gorbachev has adopted are not new, the intensity Gorbachev has brought to his efforts and his apparent commitment

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Defining Modernization

The phrase "modernization program" often has been used by Western observers as an umbrella term to describe any policy instituted by Gorbachev for dealing with the country's economic problems. As Gorbachev has used it, however, the term has a more limited meaning and refers to his efforts to upgrade the country's stock of plant and equipment. Basically, it involves substantially increasing the productive capacity of the machine building sector, the primary source of manufacturing technology and equipment. As part of the efforts to modernize the USSR's industrial base, Gorbachev's plan calls for:

-- Improving the quality of machinery that embodies existing levels of technology by manufacturing it under a stricter system of quality control.

-- Replacing existing machinery with machinery embodying a higher level of technology, what Soviet planners sometimes refer to as "world standards."

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to finding long-term solutions are attributes that his immediate predecessors lacked. Nonetheless, Gorbachev's program appears too ambitious on a number of counts:

-- Meeting output targets for many key commodities would require unrealistic gains in productivity, given planned investment targets.

-- Even if output targets can be achieved, high growth rates and improved quality are not readily compatible objectives. The industrial output targets for 1986-90, for example, appear too high to allow for a slowdown in production to install new, more technologically advanced equipment.

-- Finally, despite considerable rhetoric, none of the proposals so far would greatly change the system of economic incentives that has discouraged management innovation and technological change.

1986 Economic Performance

1986 marked the initial year of the 1986-90 FYP and the first full year of Gorbachev's stewardship. Partly as the result of his leadership, partly as a result of some changes instituted by his predecessors, and partly as a result of some good luck, 1986 turned out to be a very good year for the economy (see table 2). On the strength of record farm output and reduced loss of work time, Soviet GNP grew by more than 4 percent, the highest rate in a decade. Industry, the focus of Gorbachev's modernization efforts, also did well, recording its best growth in a decade. Nonetheless, a number of problems surfaced during the year that could spell trouble for Gorbachev's economic program over the longer term. For example, the first significant resistance to specific policies, although not overall goals, surfaced in both the massive goverment and party bureaucracy, particularly among many enterprise managers who complained that they were being asked to carry out conflicting goals--such as to raise quality standards and output targets sim

Table 2

USSR: GNP by Sector of Origin[1]

Annual Percentage Growth

	1981-85	1981	1982	1983	1984	1985	1986[2]
GNP	1.9	1.4	2.6	3.2	1.4	1.1	4.2
Agriculture[3]	1.9	-0.7	7.2	6.0	-0.7	-1.7	7.3
Other Sectors	2.1	2.2	1.2	2.6	2.3	2.3	3.2
of which:							
Industry	2.0	1.3	0.7	2.7	2.6	2.7	3.6

[1]CIA estimate calculated in 1982 rubles at factor cost.
[2]Preliminary.
[3]This measure for agricultural output excludes intra-agricultural use of farm products but does not make an adjustment for purchases by agriculture from other sectors. Value added in agriculture grew by 8.6 percent in 1986 and at an annual average rate of 1 percent in 1981-85 as a whole.

Growth Good, but Some Problems

Record farm output led the surge in GNP. Production of potatoes and vegetables increased substantially over depressed 1985 levels, and new highs were established for production of all major livestock products. Meanwhile, a 210-million-ton grain harvest----the highest since 1978--helped Moscow reduce grain imports and contributed to a 5-percent increase in net livestock production. Overall, net farm output increased by 7.3 percent. (see Appendix A for a more detailed description of Soviet economic performance in 1986.)

While not growing as rapidly as agriculture, industry also turned in a respectable showing. Production targets for the majority of the most important items produced in the machinery sector--including metal-cutting machine tools and computer equipment--were exceeded. The energy branches, despite problems caused by the Chernobyl' nuclear power accident, exhibited healthy growth, with the output goals for coal and natural gas being exceeded. Similarly, those branches producing industrial materials, shortages of which have caused bottlenecks in the past, did well. Several ambitious plan targets for the year were met or exceeded.

Underlying industry's improved performance was an improvement in productivity. After decades of steady decline, overall factor productivity in industry nearly stabilized in 1986. Faster growth in labor productivity substantially offset a continuing though slowing decline in capital productivity. Much of the improvement in labor productivity appears to have come from reduced loss of worktime through increased discipline, less drunkenness on the job, and more effective management. The room for such reduction is substantial. According to a Soviet economist, on an average

* Factor productivity measures the difference between the growth of gross national product and the growth of weighted sum of inputs of land, labor, and capital.

workday 18 percent of the work force does not show up because they are on vacation or sick leave, and those who do show up "waste," on the average, 20 percent of their time.

Although the leadership could take comfort in the overall figures on growth and productivity, several serious problems cropped up during the year. While not unexpected given all that Gorbachev was trying to accomplish, they will have to be corrected or offset if his modernization program is to proceed on track. The most serious of these problems are associated with the regime's efforts to improve the quality, reliability, and technological level of Soviet manufactured machinery and equipment over a short period. Soviet planners have established lofty targets for raising product quality during the 12th FYP--85 to 90 percent of all machinery is to meet what they call "world standards" by 1990. To date, however, progress in meeting this goal has been poor.

Leadership statements describe the problems encountered:

-- At the 27th Party Congress (March 1986), several speakers pointedly referred to continued problems in the quality of machinery, noting that some of the machinery installed during reconstruction was still grossly outmoded, while "new machinery" scarcely exceeded older models in terms of productivity.

-- At a special conference in September 1986, Politburo member Lev Zaykov criticized the recent performance of civilian machine-builders, indicating that targets for improving the quality of machinery were not being met and that poor quality machinery was being turned out even in showcase factories.

-- A recent TASS report of a Council of Ministers' evaluation of the 1986 plan results noted that there was enterprise resistance to the new state system of quality control and stated that the machine-building and other ministries "did not achieve a decisive breakthrough in ... raising the technical level and quality of output."

A sharp decline in the Soviets' real import capacity in 1986--the result of falling oil prices and the depreciation of the dollar--also does not bode well for Gorbachev's modernization program over the longer term. While the ultimate success of that program hinges largely on internal factors, its goals imply that some highly specialized imports from the West for such sectors as energy, machine tools, microelectronics, and telecommunications must be continued, if not increased. Moscow was able to cope fairly well with a difficult situation in 1986 by remaining an active borrower, increasing gold sales, and reducing imports, especially of agricultural products. Such adjustments may not be as easy in the future, however, unless Moscow is willing to increase sharply its debt to the West.

Finally, bureaucratic foot-dragging and outright opposition appear to have threatened some of Gorbachev's policies. Gorbachev apparently has become convinced that success in revitalizing the Soviet economy will depend on introducing major political and social as well as economic reforms. These reforms, particularly his campaign for greater "openness" and "democratization" of political life, have met with resistance within the party and government bureaucracy. A party plenum scheduled for December 1986 was, by Gorbachev's own admission, postponed three times. We believe the delay was the result of difficulties in gaining support within the Central Committee for the

Trends in Resource Allocation

While economic growth was picking up, Gorbachev tried to lay the ground work for future gains through his resource allocation policies. In line with the goals laid out in the FYP, investment growth surged, with the greatest attention being given to renovating and reequipping those facilities that produce machinery critical to the modernization effort (see table 3). According to Soviet statistics:

-- Total new fixed capital investment increased by 7.5 percent in 1986, the highest increase in over a decade and slightly above the 1986 plan.

-- State productive capital investment channeled into the reconstruction and retooling of existing enterprises increased by a hefty 17 percent, a good beginning to a plan that calls for about an 11-percent annual increase in renovation expenditures during 1986-90.

-- On a negative note, the overall amount of new capacity brought on stream was far less than planned--6.4 percent growth compared with a 1986 plan target of 14.1 percent. This suggests that Moscow's plans to reduce new construction and concentrate on finishing uncompleted projects were not realized.

Table 3

USSR: Selected Indicators of Capital Formation

Average Annual Rates of Growth in Percent

	1976-80	1981-85	1986	Plan 1986-90
New fixed capital investment	3.3	3.5	7.5	4.9
State productive capital investment in the reconstruction and retooling of existing enterprises	NA	7.0	17.0	11.0
Commissionings of new fixed capital	4.4	3.0	6.4	NA

[a] State capital investment is equal to total investment less investment by cooperatives, kolkhozes, and individuals (in housing). State productive capital investment further excludes investment by the government for services and housing.

Although there were a few surprises, the investment priorities laid out in the 12th FYP appear to have been adhered to in 1986. Within industry, the eleven civilian machine-building ministries apparently received the biggest boost. No yearend data were released, but based on nine-month results, investment in this sector increased by 17 percent. Similarly, plan goals and press commentary on the 1986 results suggest that investment in the energy industries rose sharply, although again no figures were released. Somewhat unexpectedly, investment in the agro-industrial complex (established in May 1982) increased by almost 10 percent in 1986--far more than the 3-percent average annual rate recorded during 1982-85. The largest gains were in the nonfarm sector--industries that supply inputs to agriculture and process farm products. While the increase seems somewhat high, the structure of agro-industrial investment appears consistent with Gorbachev's emphasis on providing more resources to agricultural support sectors.

In contrast to the rapid growth in investment, the consumer did not fare nearly as well from the economy's strong showing in 1986. Per capita consumption grew by less than 1 percent in 1986, in part because legal sales of alcohol--a major component of consumer expenditures--fell by 37 percent as a result of the anti-alcohol campaign. Nonetheless, gains in key components of consumption--food (excluding alcohol) and housing--may have earned Gorbachev some points with the populace and helped underscore his commitment to improving worker incentives. Food supplies--one of the main indicators by which citizens judge their well-being--improved in 1986. Fruit and vegetable production in particular rebounded from depressed 1985 levels. Construction of housing reached 118 million square meters, up 4.4 percent from 1985 and the largest increment to the housing stock in 20 years.

Despite improved supplies in some areas, unsatisfied consumer demand is reflected in continued queuing in state stores (with fixed prices) and rising prices in collective farm markets. Continued growth in wages, coupled with the drop in alcohol sales, resulted in a large increase in the amount of cash held by the consumer. One indication of the regime's concern over the lack of goods to buy was its failure to publish a figure on the addition to household savings in 1986.

While our information on defense spending in 1986 is less solid than that for consumption and investment, our preliminary estimate is that overall defense expenditures in constant prices increased by about 3 percent (see box insert for a discussion of Soviet defense spending in current prices). Although somewhat above the rate of recent years, it does not appear that this growth represents any change in defense spending policy since Gorbachev's arrival. Rather, it was largely driven by the start-up or acceleration of production of several new weapon systems that were under development before Gorbachev took office. In 1985 and 1986 at least, these programs helped raise proc

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Measuring Soviet Defense Spending in Current Prices

In Western estimates of defense spending, constant prices are used to measure the real growth in defense--that is changes in military manpower, the volume of procurement and construction, and the scale of RDT&E and operations and maintenance excluding the effects of inflation. The Soviets, however, do not use Western-style constant prices. Rather, most references in Soviet literature to defense spending are in terms of current prices, and presumably the leadership uses this measure, along with various physical indicators, to assess trends.

Because current prices show higher rates of growth, the leadership might have a different sense of defense spending trends than constant price estimates would suggest. Indeed, CIA and DIA agree that defense's share of Soviet GNP rose from about 12-14 percent in 1970 to about 15-17 percent in 1982. Although the real growth in defense activities and overall economic output was roughly the same in this period, defense's share of Soviet GNP increased when measured in current prices because costs and prices of defense-related goods and services increased more rapidly than those of nondefense goods and services. Our estimate of defense's claim on the output from individual sectors of the economy supports this view of a rising defense burden when measured in current prices. These shares generally grew between 1972 and 1982.

This notion of a rising defense burden is also consistent with leadership statements over the past decade. Although Soviet leaders have always made passing references to the high costs of defense from the late Brezhnev period onward, they have increasingly linked the USSR's inability to provide more rapid gains in consumer welfare and generate high economic growth to the high costs of its defense efforts. Gorbachev has been particularly vocal on this topic. In February, for example, Gorbachev said that defense spending was "a load on the economy... because it diverts enormous resources that could be redirected" to other problems.

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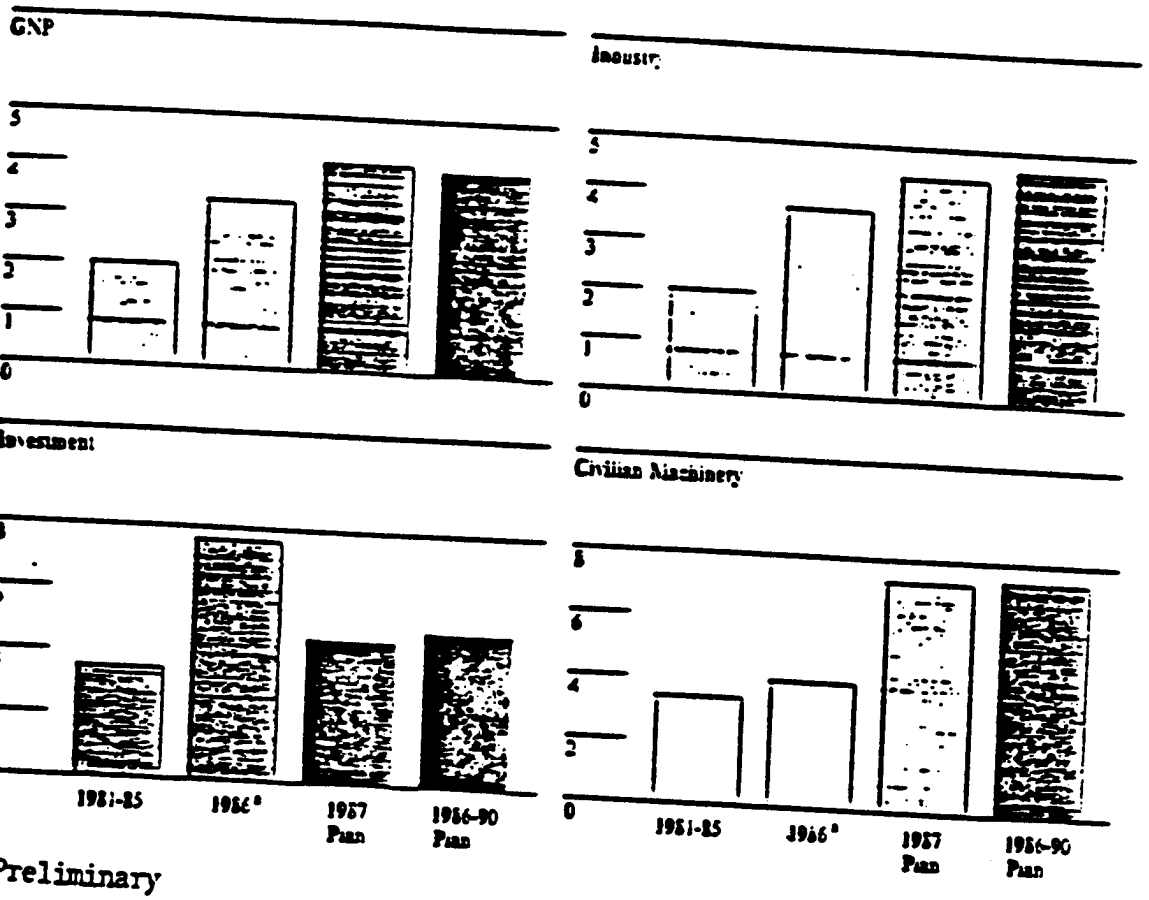
Figure 4

USSR: Selected Economic Indicators

Average annual, percent rate of growth



a Preliminary

The largest jump in expenditures in 1985 was in aircraft procurement. The initial stages of production of the new Blackjack bomber--whose development dates back to the early 1970s--and Moscow's continued emphasis on fighter production helped drive up aircraft expenditures, while increases in both tactical and strategic missile procurement--led by outlays for the SA-10 and SA-12 air defense systems--also raised missile procurement in 1985 and 1986 following a cyclical decline in the early 1980s.

At the same time, we believe Gorbachev has told military leaders that--like their civilian counterparts--they will have to use resources more effectively. One apparent manifestation of this has been a great emphasis on conservation and less costly training practices. For example, at a major naval conference in December 1985 attended by new appointed Commander of the Soviet Navy Admiral Chernavin, it was reported that some commanders had failed to understand the need for "an intensification of combat training" during 1985 and instead had "decided on an unnecessary increase in the number of sea exercises, which leads to overuse of engine capacity, overconsumption of fuel, and premature aging of equipment."

The 1987 Plan: Full Speed Ahead

Building on a fast 1986 start, the 1987 Plan shows no letup in Gorbachev's drive to revive the economy by modernizing the industrial base, improving management, and motivating worker effort. The goals for overall economic and industrial growth are high--both over 4 percent--but appear consistent with the targets originally laid out in 12th FYP (see figure 4).

The industrial plan focuses on producing more and better machinery for modernization and more goods for the consumer. The Soviets are apparently banking on the sharp rise in investment in civil machine building in 1986 to

spur an acceleration in output this year. Machinery output--after increasing by 4.4 percent last year--is slated to jump by 7.3 percent in 1987, a pace not achieved since the early 1970s. Machine builders are to concentrate their efforts on high-technology products for investment and durables for the consumer. The output of advanced machine tools, instrumentation equipment, and computers is to grow almost 50 percent faster than production of machinery as a whole. Machinery quality also is to improve substantially, with the share of equipment corresponding to "world standards" to rise to 60 percent in 1987.

Moscow's plans for some critical sectors remain unclear. A number of important agricultural targets have not been released, although grain production is to rise to 232 million tons. Similarly, targets for other consumer-related sectors have not been released, nor has information on production goals for such commodities as cement and other construction materials. The plan does make clear, however, that growth in steel output is to be achieved primarily from efficiency gains, not increases in production of inputs such as coke and pig iron.

Priority for Investment

In line with Gorbachev's modernization program, investment once again seems to have been given priority. Total new fixed capital investment in 1987 is slated to grow at 4.6 percent--faster than overall economic growth--and apparently somewhat above the rate originally called for in the 1986-90 Plan. The central role of the machinery sector in the modernization program and the need to invest more in the energy sectors, partly as a result of the Chernobyl' accident, may have resulted in these sectors getting higher allocations. In a speech outlining the Plan for 1987, State Planning Chairman Talyzin suggested that more investment than was originally planned would also

go to sectors serving the consumer. Based on the ambitious target for construction, housing is apparently scheduled for a particularly sharp rise.

As usual, no meaningful information was released on Soviet plans for defense spending in 1987. Given the defense industrial capacity already in place, the overall priority afforded the military, and Soviet concern about ongoing Western defense programs, we would expect allocations to remain at levels high enough to allow for continued modernization of the USSR's strategic and conventional forces. Major weapon systems such as the SS-25 ICBM, SA-10 surface-to-air missile, the T-80 tank, and the Bear Bomber should continue to enter the inventory at a steady pace, adding to Moscow's strategic and conventional capabilities.

Maintaining Momentum

Gorbachev is apparently counting on payoffs from past investments and continued returns from his "human factors" campaign--particularly his efforts to increase labor productivity through increased material incentives--to meet the ambitious 1987 targets. To this end, average wages are scheduled to increase by 3 percent in 1987, with the increases distributed in favor of good performers and technical personnel. The goals for wages, consumer durables, housing, and paid services exceed the targets called for in the 1986-90 Plan. As a further incentive to improved worker effort, Gorbachev also has enacted legislation--scheduled to take effect in mid 1987--that will allow some expansion of private production of consumer goods and services.

One dilemma Gorbachev faces in this regard is the circular loop of material incentives and productivity. Pay raises will not provide meaningful worker incentives without corresponding improvements in the quality and availability of food, housing, and consumer goods and services. Yet, higher productivity is needed to increase the supply of such incentives. Workers

will have to be persuaded to change their fundamental attitudes toward work based on the expectation of improved consumer welfare in the future.

Besides trying to improve worker incentives, Gorbachev probably is hoping that some of the numerous economic reforms and organizational changes that have been promulgated since he took over will begin to bear fruit. Most of the changes in these areas are just beginning to take effect, however, and Gorbachev probably realizes that, whatever the benefits to be reaped, they will materialize over the longer term. (See box insert for a discussion of economic reform under Gorbachev.)

Prospects for Modernization Over the Longer Term

While counting on the human factors campaign in the short run, Gorbachev is depending mainly on the proliferation of more technologically advanced equipment to improve productivity across the economy over the longer term. He has repeatedly said that the USSR must replicate the ongoing Western technological revolution in which advanced machine tools, robots, microelectronics devices, computers, and telecommunication systems are making operations more flexible, thereby raising quality and cutting costs. At the same time, Gorbachev is hoping that as a result of a series of organizational and administrative measures enterprises will have more incentives to demand and use the best equipment available.

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Economic Reform Under Gorbachev

Gorbachev has repeatedly stressed that major structural changes are needed in the Soviet economy if a real breakthrough in performance is to be achieved. His efforts have focused primarily on four areas: streamlining the bureaucracy, increasing enterprise autonomy, improving workers' ncentives and encouraging personal initiative. None of the measures adopted so far, however, could be classified as the "radical reform" that Gorbachev said was needed at the 27th Party Congress. Moreover, many of these measures have been only partially implemented and all are encountering the kinds of problems endemic to changing old institutions and creating new ones.

Reorganizing the Bureaucracy--The cornerstone of Gorbachev's reform program has been his efforts to reorganize and streamline the bureaucracy. According to his own statements, these policies are designed to achieve more effective centralized control over the main direction of the economy, while at the same time leaving more of the day to day management to lower levels. His insistence that the bureaucracy shift its focus to strategic planning has been reflected in a number of organizational changes. New superagencies answering directly to the Council of Ministers have been created to oversee key economic sectors. Such coordinating bodies have been set up for machine building, the agro-industrial complex, energy, construction, foreign trade, and social development. (See Chart) Most of these bodies are not yet fully operational, however, and progress in achieving intended sharp cutbacks in personnel has been spotty.

Increasing Enterprise Autonomy--An impressive number of new initiatives attempt to increase the authority and responsibility of the enterprise and to motivate them through "economic" rather than "administrative" levers.

- -- A new enterprise law codifies enterprise rights (including election of enterprise managers) and attemts to give them legal protection from bureaucractic meddling.
- -- The so-called five-ministry experiment, which makes contract fulfillment the major measure of enterprise success and expands enterpise control over investment and incentive funds, is being extended industrywide during 1987.
- -- The self-financing experiments in Sumy and Tolyatti will be expanded to additional ministries this year.
- -- Selected enterprises are given the right to trade directly with foreign firms.

Improving Workers' Incentives--Gorbachev's chief accomplishment in this area has been the passage of a wage reform designed to reverse the leveling trend of the Brezhnev years and to create a closer relationship between workers' pay and their performance. Although this reform calls for a pay

increase for many categories of workers, no state funds have been set aside for it.

Encouraging Personal Initiative--Gorbachev's promise to provide greater scope for individual initiative has brought new legislation sanctioning expanded business opportunities outside the state sector for individuals and small businesses, especially in consumer goods and services. Permissible action is greatly circumscribed, however, and the impact these actions will have remains to be seen.

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Major Reorganizations Since Gorbachev Took Over

Sector	Date Established	Action Taken	Current Status
Machine Building	Oct 85	Machine Building Bureau established to oversee 11 civilian machine building ministries. Bureau to carry out "unified technical policy." Given authority to redistribute resources of ministries but no line operational authority over enterprises. Management structure to be reduced.	In February 1987 Soviet press charged ministries were circumventing the order to streamline management and sharply reduce central staffs.
Agriculture	Nov 85	USSR State Agro-Industrial Committee (Gosagroprom) established by merging five ministries, one state committee, and elements of three other ministries. Similar reorganizations carried out at regional levels. Central staff reportedly reduced by 47 percent. Rights and responsibilities of regional and farm officials enhanced.	Thus far, the only "superministry" to be created. Some Soviet officials claim it has paid off in greater efficiency, but numerous press complaints suggest Gosagroprom still in state of confusion.
Fuel and Energy Complex	Mar 86	Fuel and Energy Bureau created to coordinate energy policy and carry out unified conservation and technological policies. Given authority over budgetary allocations within broad parameters set by Gosplan, but no operational authority over enterprises.	Still apparently in initial phase of organization with its responsibilities yet to be decided.
Nuclear Energy	Jul 87	Separate All-Union Ministry of Nuclear Poser Industry of the USSR was created following the Chernobyl' incident.	
Construction	Aug 86	Four existing construction ministries reorganized into regionally-focused ministries. Four specialized construction ministries unchanged. Reorganized to State Construction Committee and given enhanced authority over all construction ministries.	First serious attempt in over 20 years to bring some order into chaotic construction sector. Reorganization aimed at strengthening centralized direction while allowing regional authorities more control over local projects.

ector	Date Established	Action Taken	Current Status
oreign Trade	Sep 86	Foreign Economic Commission established to formulate and coordinate foreign trade policy, but does not have management authority of Gosagroprom and Gosstroy. Commission members include heads or deputy heads of all ministries or agencies concerned with foreign trade. 21 ministries and 70 enterprises given right to engage directly in export and import trade.	Too soon to assess. Reorganization ends Ministry of Trade's long-standing monopoly over foreign trade. Should give end-users more say in contract negotiations. Enterprise right to buy foreign goods limited to foreign exchange they are able to generate through sale abroad of above-plan production. Should help facilitate establishment of joint ventures.
ocial Welfare	Nov 86	Bureau for Social Development. Responsibilities have not yet been defined and may be still undecided. Gosplan Chief implied in November 1986 speech that the bureau would have broad oversight over various ministries and institutions concerned with consumer goods and services, health education and and social policy.	Still being formed.

Emphasis on Supply

Unlike in the West where modernization has been driven by both supply and demand factors--with interaction between the two stimulating self-sustaining growth--Gorbachev's modernization program has concentrated primarily on increasing the supply of more technologically advanced equipment. To this end:

- Production of computer equipment is slated to grow by 18 percent annually through 1990. By that time, the Soviets plan to produce 1.1 million personal computers annually, compared with almost none until the mid-1980s.
- Output of the main producer of instrumentation equipment is slated to grow by 11 percent per year in the 1986-90 period, up from 6 percent in the previous five-year period.
- Production of robots in the 1986-90 period is to increase by 120 percent, numerically controlled machine tools by 90 percent, and machining centers by 330 percent compared with 1981-85 production.

While the Soviets probably will not meet all of these targets, they have already taken a number of major steps to provide more and better machinery in each of these areas. Most significantly, as indicated above, investment in the eleven civilian machine building ministries is to increase by a massive 80 percent during 1986-90 compared with the 1981-85 period. Meanwhile, funding for "science"--a rough indicator of the resources committed to R&D--is also to increase sharply. The USSR has created interbranch scientific and technical complexes to expedite development and incorporation of new technologies into the machine-building production base. Finally, foreign support is to fill in the gaps that cannot be met domestically. Moscow probably plans to increase

the imports of capital equipment from both Eastern Europe and the developed West. Large, cooperative R & D programs have also been established with Eastern Europe in key manufacturing technologies.

In contrast, the Soviets have put far fewer mechanisms into place on the demand side to promote the innovation and diffusion of the appropriate technologies into machine building and the rest of the economy. They have yet to change the system of plan targets and incentives sufficiently to make it generally advantageous for managers to favor innovation over maintaining the status quo. Instead, they have tinkered with established programs--like the enterprise production development funds--to give factory managers greater authority and ability to procure new machinery and equipment. This won't work if managers are penalized for stopping production to accommodate modernization or cannot induce machinery suppliers to produce the right equipment and provide reliable installation and maintenance support. These are still likely obstacles confronting the innovation-minded manager.

The Soviets also continue to rely on administrative measures to regulate effective demand for new technology. They have attempted to improve quality by establishing independent quality-control inspectors in selected enterprises. They also have directed the State Committee for Science and Technology and the Academy of Sciences to act as proxies for machinery customers to determine just what technologies are suited for industrial users. But this is imposition from the top down and assumes that these agencies will make the right choice.

In short, given what we know of Gorbachev's modernization plans--and the results we have seen so far--we believe that the Soviet focus on supply-side factors will certainly result in the machine-building sector producing higher volumes of more modern equipment. It is not at all clear, however, whether

the sector will be able to transform itself or the rest of the economy unless managers throughout the economy demand, and are given the opportunity to select, the correct products.

Growth Through 1990

Judging the success of Gorbachev's modernization program will not be easy. Even approaching some of the technology goals or output targets for key items such as computers or numerically controlled machine tools would be quite an achievement. Since the beginning of the Brezhnev era in the mid-1960s, the Soviets have generally missed the major FYP targets, and this plan is likely to be no different. Gorbachev probably realizes this. While talking tough and saying that no excuses will be brooked, he has also acknowleged that the targets for 1986-90 were set at the upper limit and that their attainment will be difficult.

Gorbachev, however, is probably counting on a reasonable degree of success. At a minimum, he would like to reverse the decline in the rate of growth that has occurred in nearly all sectors of the economy over the last decade. While the measure of acceptable performance is somewhat arbitrary, Soviet leaders would probably give Gorbachev good grades if national income (the Marxist measure of overall production) and industrial growth increased by one percentage point per year over the depressed levels of the 11th FYP (1981-85).

We believe that Gorbachev probably will have some success for the following reasons:

-- The full potential of the "human factors" campaign--particularly the discipline and the anti-alcohol program, as well as his efforts to increase managerial and worker incentives--has yet to be tapped.

-- Similarly, there should be some improvement in higher-level planning and management. Gorbachev has promoted a number of younger officials, many of whom appear more willing to consider new approaches to solving economic problems. His efforts to improve incentives for enterprise managers and workers and to reorganize the machinery, trade, and agricultural bureaucracies could also pay some dividends, although how much is impossible to say.

-- Finally, for the reasons just given, the massive jump in investment in the civilian machine-building sector should yield some dividends in higher output growth and improved quality, even if the needs of major industrial users are not fully taken into account.

It would be misleading, however, for US and Soviet leaders to look at only aggregate measures of GNP and industrial growth. Gorbachev is interested not only in raising their rate of growth over the next few years, but also in changing the structure of the economy so that even higher rates can be achieved during the 1990s. In this context, observations of a number of other variables will give us a better handle on how modernization is proceeding. These include:

-- The Rate of Capital Renewal - Gorbachev has decreed that by 1990 more than one-third of the country's capital stock will be replaced. Of all the major goals Gorbachev has established, achieving this particular one will probably be the least difficult. Our calculations show that even with no increase in retirement rates, this goal will be achieved as long as the current target for overall investment is met.

-- The Level of Technology Embodied in New Equipment - Measuring this will be extremely difficult. Machine builders will be under intense

pressure to declare major quality improvements whether they are warranted or not, and we are likely to be bombarded by a host of statistics--some positive, some negative. A good surrogate measure of the USSR's ability to produce world-class machinery will be its success in increasing hard currency sales of manufactured goods--the test of the market place.

-- Factor Productivity Trends - Success in meeting the first two goals should be reflected here. Of all the variables to watch, this is the most critical because--unless the positive results achieved in 1986 can be sustained--there is little hope of accelerating growth during the 1990s.

Our overall assessment is that, while we expect some improvement in Soviet economic performance over the next few years, we doubt that sufficient progress can be achieved in improving the level of technology and reversing productivity trends to permit substantially faster growth in the 1990s. More concretely, we believe that the Soviets will fall well short of their implied goal of 4-percent average annual GNP growth during 1986-90. Similarly, the 5-percent target for 1991-2000 appears to be out of reach.

The regime's implicit goal of 4-percent average annual GNP growth during 1986-90 is questionable because of the huge gains in productivity it would require. According to Gorbachev, "human factor" gains are to account for one-third of the increase in productivity, and modernization the remaining two-thirds. Using an econometric model to project what this implies, the elasticity of output with respect to capital--the model's measure of the percentage change in output resulting from a one-percent increase in fixed capital would have to increase by nearly 26 percent compared with the 1981-85

period, and workers would have to be, on average, 7 percent more productive than they were in 1981-85.*

This much improvement in either factor seems implausible. In the late 1960s and early 1970s, output-capital elasticities of this magnitude were approached, but the relative cost of material inputs--fuels, ores, minerals--was much less. Material input costs since then have risen dramatically and are likely to continue to do so in the years ahead, making the required gains from capital expansion difficult to achieve. As for "human factors," while we still look for some improvements, there are limits to the gains that can be expected. Absenteeism, for instance, can only be reduced so much, and the slow growth in the supply of consumer goods and services is likely to rule out any significant increases in worker incentives in the years ahead.

Based on what we believe are more realistic assumptions about productivity, we project growth of GNP at an annual average rate of 2 to 3 percent during 1987-90. This assumes a substantial improvement in capital productivity over the 1981-85 period, but less than half of what would be required to meet plan.

* CIA's macroeconomic model of the Soviet economy, SOVSIM, was modified for use in evaluating Gorbachev's plans. Features were built into the model to assess the regime's efforts to modernize the capital stock. (An example would be the assimilation of more modern, domestically produced automation facilities or imported technology.) This was done by assigning higher returns to new capital than to old capital. In addition, the model was modified to allow for productivity gains originating from "human factors"--policies intended to increase the work effort--the other major element of Gorbachev's economic strategy. Model results suggest that without these initiatives the best the Soviets would be able to do in the 1986-90 Plan would be about 2-percent growth in GNP. Some gains from capital modernization and human factors will be realized, however, and growth rates approaching 3 percent may even be possible.

Coping with Shortfalls

We believe growth in the neighborhood of 2 to 3 percent, while better than that in the recent past, would still be insufficient to solve all the country's economic problems and could eventually lead to:

-- More severe battles over resource allocation,

-- Greater reliance on foreign economic ties, and, depending on Gorbachev's political standing,

-- A push for more ambitious economic reforms.

Battles Over Resource Allocation

The severity of Moscow's resource allocation bind during the current FYP will depend primarily on its ability to sustain the recent economic upturn. If, in fact, the economy's strong showing in 1986 proves transitory, then increasingly difficult resource allocation decisions will have to be made between competing civilian and defense interests, as well as among competing interests within the civilian and defense sectors themselves.

Over the next few years, the toughest decisions are likely to be in the investment arena. Despite the high investment growth targets for those branches of industry key to the modernization program, we believe achieving output targets in critical areas like the machine-building and the energy sectors will require further increases in investment above those currently planned for 1987-90. Investment is already being given priority, however, and finding additional resources will not be easy. A major part of Gorbachev's human factors campaign depends on increasing workers' incentives and, as noted earlier, the leadership has already deemed it necessary to boost investment in consumer-related areas in 1987. Further increases will probably be needed if momentum is to be maintained.

Soviet defense industries also will require substantial investment over the next few years. Analysis of Soviet requirements and programs under way indicates that the Soviets will maintain their historic level of weapons development--about 150-200 major new and modernized systems--into the 1990s. Our evidence shows that new programs are in progress to update or replace older systems with improved models in every mission area, with many likely to begin series production in the mid-1990s. The Soviets commit investment resources to prepare for weapons production roughly during the 10 years prior to initiation of series production, with the largest expenditures, including those to put in place most of the machinery and equipment, occurring in the last half of this period. This suggests that they will be allocating substantial investment resources in the late 1980s and early 1990s to prepare for systems entering production during the last half of the 1990s. At least some of these funds, however, would have already been included in the budget allocations for this FYP and the Soviet military would undoubtedly resist any efforts to renege on these commitments. Indeed, depending on the pace of major US defense programs--particularly SDI--the military might argue that their requirements have increased and press for additional funding.

We do not know how Gorbachev will respond to these pressures, but the state of the economy, Moscow's perception of the military threat, and Gorbachev's domestic political standing would all come into play. Even if economic growth has not picked up, however, Gorbachev would be unlikely to push modernization to the point whereby key military requirements would not be met.

While we believe that Gorbachev will face difficult decisions in the investment sphere over the next few years, we don't expect his focus on the civilian economy to have a major impact on military production at least

through 1990. As last year's joint CIA-DIA assessment argued, the defense establishment is well positioned to accomodate the shifts in machinery demands implied by the industrial modernization program.* Most of the weapons we expect to be delivered to Soviet forces through 1990 will be manufactured in plants already built, equipped, and operating. Although competition could be stiff for some basic materials and intermediate goods needed for both industrial modernization and weapons production--and might result in the delay or scaling back of some weapons systems--most major programs should go forward as planned.

As a result, we anticipate little change from the picture we presented in last year's assessment. Even with little growth in procurement over the next few years, the absolute magnitude will remain high enough to permit substantial upgrades of Soviet strategic and conventional forces. New generations of land- and sea-based ballistic and cruise missiles recently have entered or will soon enter production, which should result in a comprehensive modernization of the USSR's strategic offensive forces by the early 1990s. Strategic defense force improvements, although less substantial, also will permit sustained improvements in capabilities.

Conventional forces will undergo a similar upgrade. Two late generation fighters, the Mig-29 and Su-27, are entering the inventory, while new submarines and warships, including the USSR's first full-size aircraft carrier, are improving naval capabilities. Meanwhile, a variety of improved land arms (most notably new artillery weapons and the T-80 tank) are being deployed to the ground forces.

* See the Soviet Economy Under a New Leader, a joint CIA/DIA report published by DIA as DDB-1900-122-86, July 1986.

While this analysis suggests that the overall level of spending on weapons procurement need not be a major source of contention in this FYP, the picture would change if the military and some influential leaders wanted to undertake large new initiatives in either the USSR's conventional or strategic forces. In this case, the leadership would have to decide whether to reduce spending on other types of forces or increase the resources allocated to defense at the expense of civilian programs. Marginal increases at the expense of conventional forces might be possible, for example, if the Soviets decided to boost spending on strategic forces in reaction to SDI. Any large cuts, however, would almost certainly generate strong protests from those service elements being cut. The same would be true, of course, if the Soviets decided to raise spending sharply on conventional forces, as some elements in the military are currently arguing. The alternative, however, would be to shift resources from the civilian economy at the expense of industrial modernization.

Seeking Foreign Economic Support

Besides complicating resource allocation, failure of the modernization program to supply industry with the necessary machinery and equipment to sustain higher growth levels probably would also lead Moscow to make adjustments in its trade relations.

Eastern Europe. In the first instance, we would expect Moscow to increase demands on Eastern Europe. Gorbachev has pushed for greater CEMA integration since becoming General Secretary and demanded more and better quality goods from Eastern Europe. Existing trade protocols for 1986-90 probably call for the East Europeans to increase exports to run trade surpluses and pay back outstanding debts owed Moscow.

A serious shortfall in the modernization program is likely to lead Moscow to demand even more capital goods from the region. Such demands, however, would be resisted. The USSR already absorbs a large share of East European production in most high-tech industries, and even in those countries best able to meet Soviet requests--most notably East Germany and Czechoslovakia--there is a tremendous need for advanced machinery for domestic investment.

Eastern Europe, moreover, finds itself in a better position to oppose Moscow's demands because of its improving terms of trade. The value of Soviet energy deliveries to Eastern Europe--which comprise the bulk of exports to the region--will decline over the next few years as the CEMA pricing mechanism incorporates the drop in world oil prices. Without adjustments to current trade plans, the USSR could begin to run large trade deficits with its East European allies. Moscow would then have to rely on these countries to finance large trade credits if it wishes them to maintain or increase the net flow of resources to the Soviet Union.

Developed Countries. Faced with a precipitous drop in its hard currency earnings as a result of falling oil prices, the Soviet leadership has said that it hopes to increase machinery exports to the West. In fact, one of the rationales Gorbachev has used to sell his modernization program has been the need to produce machinery that will be competitive on world markets.

Failure of the modernization program to raise the technological level of new equipment substantially would seriously hinder any sharp increase in machinery sales, which now account for roughly 5 percent of Soviet hard currency exports. Even with the recent Soviet moves to reorganize the foreign trade sector and to promote joint ventures with Western firms, we believe that unless Moscow abandons its conservative borrowing strategy, the USSR's hard currency imports could fall even further over the next few years (see box insert for a discussion of Moscow's recent initiatives in the international trade area).

Box Insert

Recent Soviet Initiatives in the World Economy

Over the past year the Soviet Union has embarked on a far-reaching campaign to increase its role in world economic affairs. Soviet moves include restructuring the foreign trade apparatus, permitting the establishment of joint ventures with Western firms, and seeking greater participation in international economic organizations. Moscow's major objective is to raise both the quality and technical level of its domestic output, partly as a means to expand exports of manufactured goods. The leadership believes it must reduce its reliance on sales of energy and other raw materials and, instead, create a trade structure more suited to a large industrial nation.

Foreign Trade Reorganization

In September 1986 the Soviets announced a major overhaul of the foreign trade apparatus aimed at breaking the Ministry of Foreign Trade's monopoly over foreign trade. As of 1 January 1987, more than 20 ministries and 70 large associations and enterprises had been granted the authority to conduct trade directly with foreign partners. At present, the Ministry of Foreign Trade has retained control of trade in raw materials, food, and about 60 percent of machinery imports, although additional ministries and enterprises could eventually also be given the power to conduct trade transactions. Moscow also created the State Foreign Economic Commission composed of the heads of the major ministries and departments involved with foreign trade. This new body appears to have limited power over resources, however, with its function limited largely to giving guidance on trade matters.

Joint Ventures with the West

A second major initiative was the establishment of guidelines in early 1987 that permit formation of joint ventures with Western trading partners. The new resolution allows up to 49-percent foreign equity, repatriation of profits, and Western participation in management, although Soviets must occupy the positions of chairman of the board and director-general. In addition, Soviet law will apply to the wages, work hours, and vacations of Soviet citizens. The current joint venture resolution is somewhat vague on many key points of interest to Western firms, and further details are likely to be spelled out as the Soviets begin setting up these projects.

Soviet interest in joint ventures is widespread, with proposals sought on everything from the light and food industries to machine-building, petrochemicals, electronics, and communications. Indeed, Moscow is probably looking to joint ventures as a means of acquiring Western technology with little to no up-front hard currency expenditures. Moreover, the Soviets may also believe that joint ventures will allow for an easier transfer of technology and management skills than has been the case with traditional purchase of machinery and equipment.

Other Measures

The Soviet leadership has also explored expanding relations with international economic institutions such as the European Community and the General Agreement on Trade and Tariffs. Some interest in the International Monetary Fund has also surfaced, but Moscow does not appear to be as serious about this organization, at least at this time. Political motives may partly explain Moscow's actions, as the USSR may feel that its world power status requires that it be a player with major world bodies. But the Soviets have said that they are counting on the association with important economic institutions to open up new trade opportunities, especially through tariff reductions.

In conjunction with recent trade activity, Moscow has also broadened the scope of its financial dealings. For example, Soviet or Soviet-owned banks in the West have stepped up the use of acceptance facilities and some of the newer financial instruments. Last year the USSR invested in an international bond issue for the first time and reached a settlement with the British on outstanding Tsarist bonds, prompting speculation that the Soviets may soon issue their own bonds. These actions not only help diversify Moscow's sources of funds but also cut borrowing costs.

Outlook

Although Moscow will continue with its recent trade-related endeavors, it will proceed cautiously. Moreover, continued hard currency shortages act as a further constraint on the USSR's ability to become a major player in international trade circles anytime soon. The reorganization of the trade apparatus is noteworthy, but most trade still remains dominated by central planners. In fact, many systemic weaknesses--such as distorted prices and the lack of incentives--remain and will continue to thwart the qualitative improvement of Soviet-manufactured exports. Some joint ventures will be established, but most Western firms appear unenthusiastic so far, especially considering the problems they have encountered with joint ventures in other socialist countries. Finally, the foreign trade sector does not operate in a vacuum, and rapid expansion in the international arena is unlikely until numerous shortcomings in the domestic economy are corrected.

End Box Insert

Regardless of the trends in Soviet hard currency earnings, we expect Moscow to continue its massive efforts to steal Western technology. In numerous instances, illegal acquisition of technology has reduced development time and/or allowed Moscow to field a weapon system more capable than otherwise would have been the case. On occasions this technology has also benefited the civilian economy. Diversion of advanced manufacturing technology--for example, microelectronic processing know-how and equipment--has raised the quality and performance of devices used in both military and civilian products. Indeed, this probably will be even more the case in the future. Many of the products needed for Gorbachev's modernization program in the areas of information processing, computers, and micro-electronics also have military applications.

Prospects For Economic Reform

Ultimately, under the pressure of hard decisions on resource allocation and insufficient foreign support for his modernization program, Gorbachev may decide to put more teeth into his calls for "radical reform." Adopting some of the bolder proposals that have been put forward--such as a major decentralization of price setting or real competition among state enterprises (see box for a discussion of reforms being talked about)-- would be aimed at stimulating production and innovation, and would certainly be consistent with the direction in which Gorbachev is already heading. Still, he would have to overcome stubborn political and bureaucratic opposition, which could be expected to intensify if his programs were faltering.

-- A broad spectrum of the apparat would probably oppose moving too far in this direction on the grounds that economic decentralization would threaten a loss of political control.

-- A major decentralization would threaten the jobs, status, power, and privileges of thousands of officials now running the economy.

Box Insert

Reforms Under Discussion

Some reform-minded economists in the USSR have taken advantage of the more open environment under Gorbachev to advocate bold measures that could transform the economy. Some of the more far-reaching ideas now being discussed include:

-- Increased competition among state enterprises. Abel Aganbegyan, an economic adviser to Gorbachev, has indicated that inefficient enterprises should be allowed to fail.

-- A major decentralization of the price formation and supply systems. Articles in the Soviet press have called for allowing suppliers to deal directly with their customers and set prices by negotiation, bypassing the central supply system.

-- The use of "family contracts" for agriculture production and long-term leases of land and machinery by small groups of farmers. Such measures have been used successfully on an experimental basis, and their broad introduction is being promoted by some Soviet economists.

End Box Insert

-- The specter of unemployment, inflation, and widening class divisions within society would undermine what Soviet citizens and leaders consider to be some of the principal advantages of socialism.

Indeed, there has been significant opposition to some of Gorbachev's political reform efforts in 1986, and Gorbachev certainly recognizes the threat posed to his programs. Many of the actions he has taken since coming to power can be explained as an effort to trim the bloated party and government bureaucracies so that they will be more receptive to his policies. Since taking over, he has made sweeping personnel changes, replacing about half of the government ministers and over one-third of the provincial party leaders. Substantial changes have taken place at the mid-and-lower levels of the bureaucracy as well.

Just how far Gorbachev will go on reform is impossible to say, although we should have a clearer idea over the next year or so. During the major party plenum dedicated to the economy scheduled for June 1987, issues of economic reform almost certainly will be debated. At the recently completed Party Plenum in January 1987, Gorbachev also called for an All-Union Party Conference to be held in 1988. Second only to a Party Congress in expressing the official "will of the Party," the All-Union Party Conference, said Gorbachev, should address changes in the political system--changes that might lay the groundwork for more substantial reform. The fact that Party Plenum did not endorse his call for an All Union Party Conference, however, shows just how hard changes in these areas are likely to be.

Gorbachev's Political Standing

Despite the opposition shown to some of his policies, Gorbachev is likely to benefit politically from his modernization program over the next few

years. As long as the economy shows some improvement over the record posted in the recent past--which seems probable--Gorbachev will be in a position to declare his program a "success."

Over the longer term, how Gorbachev fares politically is much more open to question. Under a favorable scenario, if:

-- the economy continues to show some progress (even if the FYP goals are not met),

-- the military environment appears less threatening either because of an arms control agreement, a slower Western defense buildup, or other factors, and

-- external factors (e.g. weather, oil prices) are favorable,

then Gorbachev could emerge at the end of the decade in a much stronger position politically.

But the course Gorbachev is pursuing is inherently risky, and things could just as easily go wrong. Although he may be able to claim some success in the immediate future, his repeated attacks on those slowing the process of reconstruction and the strenuous nature of his goals suggest that he is by no means confident of the future. The decisions he will have to reach over the next few years in areas ranging from resource allocation to political and economic reform will be controversial and could well solidify opposing interests in the Party and Government.

Appendix A: 1986 Economic Performance: A Good Showing

The 12th FYP got off to a fast start in 1986. Record farm output and a relatively solid performance in industry helped propel GNP growth to more than 4 percent, the highest in nearly a decade. On the strength of a strong showing in the livestock sector and a good grain crop, agriculture rebounded from a poor performance last year and increased by a hefty 7.3 percent. Industry, meanwhile, also did well, growing by over 3.5 percent with all major branches doing as well or better than last year.

Despite the strong start, a number of problems cropped up during the year that were not captured in the aggregate growth figures. In particular, the machine-building sector--the key to longer term growth--attracted repeated criticism from the leadership for its failure to meet goals for output quality, product mix, and deliveries. Meanwhile, shifting terms of trade resulted in a decline in hard currency imports and led Moscow to cancel a number of important projects scheduled for the 12th FYP.

Industry

Industrial output increased by about 3.6 percent in 1986 (see table A-1), the best in nearly a decade and only slightly below plan. Growth slowed during the year, however. Industrial growth during the first quarter of 1986 was up by nearly 6 percent compared with the first quarter of 1985, reflecting the very poor industrial performance during the winter of 1984-85 when severe cold and heavy snows hampered production and transportation. During the last three quarters of 1986, industry grew at an annual rate of about 3 percent.

Table A-1

USSR: Growth of Industrial Production by Branch[1]

Annual Percentage Growth Rate

	1981-85	1981	1982	1983	1984	1985	1986
Industry	2.0	1.3	0.7	2.7	2.6	2.7	3.6
Machinery	1.7	0.2	-0.2	1.8	2.7	4.2	4.4
Industrial materials	2.2	1.6	0.5	3.8	2.4	2.8	3.9
Ferrous metals	1.2	-0.3	-0.4	3.0	0.9	2.8	2.8
Nonferrous metals	2.0	0.3	0.8	3.0	3.0	3.0	3.0
Chemicals	3.8	3.8	2.0	5.8	3.4	4.3	4.4
Wood products	2.1	2.0	0.6	3.0	2.8	2.1	5.4
Construction materials	1.5	1.5	-0.9	3.5	1.7	1.5	3.2
Energy	2.3	1.8	2.3	2.4	2.8	2.0	3.7
Fuels	1.2	1.3	1.7	1.3	0.9	0.7	3.9
Electric power	3.6	2.5	3.1	3.7	5.2	3.5	3.6
Consumer nondurables	1.7	2.2	1.3	2.4	2.4	0.2	1.1
Soft goods	1.6	1.8	-0.5	1.2	2.8	2.4	1.5
Processed foods	1.8	2.5	2.9	3.4	2.1	-1.6	0.7

[1]Value added at 1982 factor cost. Based on CIA's index of Soviet industrial production.

Machinery. While substantially better than the 1.7-percent average annual growth rate achieved during 1981-85, the performance of the machinery sector was probably somewhat of a disappointment to the leadership. Output grew by 4.4 percent, below plan. One of the reasons for the below-plan output may have been that the very heavy investment in the civil machinery sector last year--the 1986 plan called for a 30-percent increase--increased the amount of downtime in enterprises as they installed new equipment or renovated their facilities. Whatever the reason, targets were not met for a number of important types of equipment, including industrial robots, electric motors, chemical equipment, forging and pressing machines, and petroleum equipment. Production targets were exceeded, however, for the majority of items--including metal-cutting machines and computer equipment.

In addition to failing to meet plan targets for some key items, machinery producers also had trouble getting their products to their customers. As indicated in figure A-1, 10 of the 11 civilian machine-building ministries were criticized during the course of the year for not meeting contractual deliveries. In most machine-building ministries, fulfillment of contractual commitments deteriorated compared with 1985. According to the Central Statistical Administration's report on 1986 plan fulfillment, "violations of contract discipline were committed by one in four enterprises."

Industrial Materials. Output of industrial materials (ferrous and nonferrous metals, chemicals, construction materials, and forest products) grew by 3.9 percent in 1986, reflecting in part poor performance in 1985. Most individual sectors performed well, exceeding 1985 growth targets. Shortages of industrial materials caused bottlenecks throughout the economy during the late 1970s and early 1980s. Continued strong showing by these branches is needed if Gorbachev's modernization program is to stay on track:

Figure A-1

Civilian Machine-Building Ministries Criticized for not Meeting Delivery Goals, January-December 1986

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Power Machine Building		●									●	
Heavy and Transport Machine Building		●				●	●	●	●		●	●
Electrical Equipment Industry	●	●							●		●	●
Chemical and Petroleum Machine Building					●	●	●	●	●		●	
Machine Tool and Tool Building Industry					●	●	●	●	●			
Instrument Making, Automation Equipment, and Control Systems												
Automotive Industry		●										
Tractor and Agricultural Machine Building												●
Machine Building for Animal Husbandry and Feed Production				●			●		●			●
Construction, Road, and Municipal Machine Building												●
Machine Building for Light and Food Industry and Household Appliances						●			●		●	●

Source: Central Statistical Administration plan fulfillment reports. Ten of the 11 civilian machinery ministries have been criticized. These criticisms take several forms: "contractual obligations not met," "contractual deliveries not met," "contract discipline breaches," and "output delivery shortfalls."

-- Production of ferrous metals increased by 2.8 percent from the previous year, led by healthy increases in crude steel and rolled products. Output plans were not met, however, for specialty steels, a key product in the modernization program.

-- Helped by Gorbachev's "chemicalization" drive, the chemical industry registered healthy production increases.

-- Timber output, while exhibiting the sharpest growth for basic materials, still did not reach the 1975 level. Rapid growth was fueled by the opening of new timber tracts along the Baikal-Amur Mainline railroad (BAM) corridor.

-- Construction materials were able to shake off the lingering effects of the 1985 harsh winter and posted a rebound in growth to 3.2 percent.

-- Light industry continued its slow, but steady progress, with the largest gains in textiles and knit goods.

Developments over the past three years--the modernization and expansion of capital stock, administrative reforms, personnel reshuffling, and better transport--built a strong foundation for the 1986 acceleration in output. Expanded use of contract fulfillment indicators, while not without problems, improved the flow of raw materials. Meanwhile, managers--feeling the heat from new ministers in the ferrous metal and construction materials branches--apparently succeeded in finding hidden caches of labor, materials, and equipment. Finally, several key industrial facilities initiated a second work shift under an intensification program.

Energy. The energy industries recorded a strong performance in 1986. Targets for coal and natural gas were exceeded, oil production recovered most

of the ground lost over the past two years, and the electric power industry coped well with the disruptions caused by the Chernobyl' nuclear power accident and by reduced hydroelectric output. The price of that success was a large fuel bill, however, another setback in Moscow's drive to conserve energy.

Reversing a two-year decline in output, oil production in 1986 rose to 12.3 million barrels per day (b/d), 400,000 b/d above the 1985 level. All of the increase resulted from growth in West Siberian output, based largely on the return of idle wells to production and a sharp increase in the pace of drilling and well completions. The cost of raising output was apparently high. Although figures on investment have not been released so far, it was slated to rise by 31 percent in 1986.

Natural gas output grew by 6.7 percent to 686 billion cubic meters last year, once again outstripping growth in other energy industries. The increase was, however, smaller than the record 56 billion cubic meters posted in 1985. Production at Urengoy supplied most of last year's increment. Yamburg, the USSR's second largest field, did not begin producing until the final quarter.

Coal production in 1986 soared to 751 million tons, an increase of 25 million tons above the 1985 level and one of the largest gains since World War II. Improvements in labor productivity (possibly through lengthening work hours in selected mining activities), as well as higher output from surface mines located east of the Urals, accounted for most of the production gains. Because most of the coal from the Eastern basins is much lower in heat value than that produced elsewhere in the USSR, the net addition to energy output was probably less than the amount implied by the reported production.

Electricity output was only slightly below plan, despite a troubled year for the power industry--the loss of capacity in the Chernobyl' nuclear accident and drought-reduced hydroelectric production. Electricity output grew by 3.6 percent to 1,599 billion kilowatt hours. A strong performance from fossil-fuel power plants--electricity from this source grew by 5 percent during the year--boosted total output enough to assure an adequate power supply to most of the USSR. (For a discussion of the economic impact of Chernobyl', see the box insert).

Agriculture

Farm production reached a new high in 1986. Continued growth in the livestock sector combined with substantially increased production of important crops such as grain, potatoes, and vegetables resulted in a 7.3-percent increase in farm output (net of feed, seed, and waste)--nearly 5 percentage points above the previous record in 1983.

A 210-million-ton grain crop--the largest grain harvest since the record crop of 237 million tons in 1978--helped Moscow reduce grain imports and contributed to a 5-percent increase in net livestock production. Probably most welcome from the consumers' view, meat production rose by 3.5 percent to 17.7 million tons, exceeding planned output by a surprising margin of 400,000 tons. Meanwhile, potato production reached the highest level since 1979, increasing by nearly 15 million tons from the depressed 1985 level, and vegetable production was up by nearly 2 million tons.

Box Insert

Economic Impact of the Chernobyl' Accident

Analysis of the Chernobyl' accident indicates that the ultimate cost to the economy and in human lives will be high, even though the direct damage to agriculture, industrial facilities, and the environment last year was limited to a fairly small area.

The biggest economic cost so far has been the loss of electricity generated by the Chernobyl' reactors and the resultant increase in fossil fuel used by replacement power plants. We estimate that an additional 15 million barrels of fuel oil (40,000 b/d), 3 billion cubic meters of natural gas, and 5 million tons of coals were used in 1986. In addition, Eastern Europe, particularly Hungary, may have been asked to bear the burden of some electricity cuts during the 1986-87 winter period of peak demand.

Longer term consequences for the Soviet civilian nuclear industry include the investment writeoffs of one or more Chernobyl' reactors and the costs of modifications to improve safety at other reactors. A rough total of these capital costs shows them to be equivalent to 1 to 3 years' investment in the industry. Nevertheless, we expect that the Soviets will strive to minimize the impact of the Chernobyl' accident on their long-term plans for nuclear power and will continue to expand the role of this energy source.

In contrast, Chernobyl's impact on agriculture was small. According to the Soviet press, the area contaminated by radioactive fallout is largely restricted to about 1,000 square kilometers, implying a radius of 18 kilometers, and a few outlying pockets. Over half of the contaminated area consists of forest and swampland. Soviet data show that the region accounts for a minuscule share of total Ukrainian farm output. Damage to farming regions beyond the Chernobyl' area was probably minimal.

In addition to the economic costs, human costs will be substantial. The initial casualties--reportedly 29 people died of acute radiation sickness--will probably account for only a part of the ultimate human toll of the Chernobyl' disaster. Many thousands of persons were exposed to radiation, increasing their long-term cancer risk. Theoretical calculations indicate that over the next 70 years radiation exposure from Chernobyl' could result in an additional 500 deaths from cancer among the 135,000 people evacuated. This would increase cancer risk from the natural population incidence of 12.5 percent to 12.7 percent. The potential death rate due to radiation-induced cancer among those involved in the cleanup is double that of the evacuees. This cancer threat poses unique medical and psychological problems, even though the over statistical increase in cancer rates will be minimal.

End Box Insert

Most of the growth in agricultural output was the result of productivity gains according to the Soviet press. Milk yields increased markedly, as did average slaughter weights, and the period of time required to raise animals to marketable size--nearly twice as long as in the United States--was reduced. After a one-year hiatus, feed efficiency also appeared to improve somewhat.

Transportation

Helping to support industry's and agriculture's strong showing was the improved performance of the transport sector. Better weather in 1986 spurred the general recovery of major industrial customers and increased the demand for transport services, particularly rail freight. This traffic rose by 4.8 percent and rail passenger turnover by 3.8 percent--both well ahead of planned rates. A good year for agriculture also increased shipments on rail and highway carriers, and the increase in oil production during 1986 raised the overall growth rate for freight traffic by reversing last year's fall in oil pipeline traffic.

The railroads squeezed an extra 2.8 percent more tonnage on the mainlines and met the increased demands of industry and agriculture by increasing train weights and reducing turnaround times for freight cars. In addition, as part of their overall campaign to increase efficency and control rising costs, the railroads began trimming excess labor last year. As a result, labor productivity soared by 7.5 percent last year.

Meanwhile, the volume of traffic moved by highway carriers increased by 5.2 percent last year, reversing a three-year decline. We suspect that the turnaround in performance reflects the adjustments of carriers to policies in the early 1980s--notably higher fuel prices, an increased emphasis on conservation, and a crackdown on padding trucking statistics.

Trade

The USSR's trade sector was battered for the second consecutive year, although the Soviets coped fairly well with a difficult situation. The collapse of world oil prices coupled with a sharp drop in the dollar relative to other major Western currencies resulted in an estimated 15-20 percent deterioration in the USSR's hard currency terms of trade. The dollar value of hard currency exports in 1986 dropped by 8 percent, based on Soviet trade data for January-September 1986. Despite Soviet attempts to mitigate the effects of the falling oil price by boosting sales, the value of oil exports to the West fell by an estimated 35 percent. While Moscow increased the dollar value of arms exports to the Third World by roughly 15 percent, the beleaguered position of many of Moscow's principal arms customers probably has limited the Soviets' ability to increase hard currency receipts from these sales.

Reduced hard currency earnings contributed to an estimated 9-percent decline in the dollar value of hard currency imports in 1986, with real purchases dropping more. The largest decline in imports was registered in grain, as improved domestic agricultural performance and lower world grain prices allowed reduced foreign expenditures without jeopardizing consumption goals. Deliveries of machinery and equipment last year increased slightly in dollar terms, but dropped in real terms. The Soviets were able to limit the extent of import cuts, however, by selling markedly more gold at higher prices last year, as well as by borrowing actively in world financial markets. Moreover, Moscow sought to expand its financial horizons by tapping new sources of credit outside of traditional syndicated loans and export financing.

In contrast to trade with the West, Soviet trade with the Communist world grew slightly, increasing to about two-thirds of total trade compared with about 61 percent a year earlier. Moscow's terms of trade with its Communist trading partners improved slightly last year because the large drop in world oil prices has not yet been factored into the CEMA oil pricing formula. One outcome was an increase in the USSR's trade surplus with its East European partners, despite Moscow's repeated calls for more balanced trade.

Appendix B: Tables on Soviet Economic Performance

Table 1

USSR: GNP by Sector of Origin at Factor Cost
(billion 1982 rubles)

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	Preliminary 1986
GNP*	288.9	327.3	415.3	531.5	616.8	691.6	701.4	719.7	742.8	753.2	761.1	793.4
Industry	59.3	86.1	118.1	159.8	208.3	237.8	240.8	242.5	249.0	255.4	262.2	271.6
Agriculture	91.1	110.5	127.2	149.8	133.1	135.4	132.6	144.1	152.3	149.2	143.2	155.4
Construction	14.0	22.6	28.4	36.9	46.0	53.1	55.5	56.9	58.7	59.9	61.4	63.7
Transportation	10.6	18.8	30.5	43.8	59.1	70.6	73.5	74.4	76.5	77.7	79.3	82.4
Communications	1.4	1.9	2.8	4.2	5.7	7.2	7.5	7.7	7.9	8.3	8.7	9.1
Trade	11.6	17.1	21.8	31.0	38.6	44.2	45.1	45.1	46.3	47.4	47.8	48.8
Services	49.1	60.0	74.8	92.4	109.8	125.8	128.9	131.0	134.0	137.2	140.5	143.9
Other (including military personnel)	11.9	10.3	11.7	14.3	16.0	17.5	17.6	17.9	18.1	18.2	18.2	18.4

* Components may not add exactly to total because of rounding.

Table 2

USSR: Value Added in Industry at Factor Cost
(billion 1982 rubles)

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	Preliminary 1986
Industry*	59.3	86.1	118.1	159.8	208.3	237.8	240.8	242.5	249.0	255.4	262.2	271.6
Ferrous metals	4.8	7.0	10.0	12.9	15.9	16.5	16.5	16.4	16.9	17.0	17.5	18.0
Nonferrous metals	2.1	2.8	4.1	6.0	7.9	8.5	8.6	8.6	8.9	9.1	9.4	9.7
Fuel	5.4	8.6	12.1	15.8	20.6	24.3	24.6	25.0	25.4	25.6	25.8	26.8
Electric power	2.5	4.2	7.3	10.6	15.0	18.6	19.1	19.7	20.4	21.5	22.2	23.0
Machine building & metal working	17.6	23.7	33.0	46.1	64.0	77.3	77.5	77.3	78.7	80.9	84.3	88.0
Chemicals	2.2	3.9	6.9	10.5	15.6	18.1	18.7	19.1	20.2	20.9	21.8	22.8
Wood, pulp, and paper	7.5	9.9	11.3	12.9	14.6	14.1	14.4	14.5	14.9	15.4	15.7	16.5
Construction materials	2.9	5.8	7.6	10.3	13.2	14.1	14.3	14.2	14.7	14.9	15.2	15.6
Light industry	6.6	8.8	10.0	13.7	15.5	17.5	17.8	17.7	18.0	18.5	18.9	19.2
Food industry	5.5	8.2	11.4	15.1	18.5	19.8	20.3	20.9	21.6	22.0	21.7	21.8
Other industry	2.2	3.2	4.4	6.0	7.8	8.9	9.0	9.1	9.3	9.5	9.8	10.2

* Components may not add exactly to total because of rounding.

Table 3

USSR: Average Annual Growth of Per-Capita Consumption

(1982 established prices)

	1956-60	1961-65	1966-70	1971-75	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	Preliminary 1986
otal consumption	3.9	2.6	5.2	2.8	1.7	2.0	0.9	2.5	2.6	1.3	-1.1	1.1	1.8	-0.5	0.8
ood	3.1	2.0	4.5	1.8	0.1	1.1	-0.5	2.1	1.7	-0.2	-1.5	1.2	0.8	-4.5	-1.3
oft goods	5.6	2.2	7.2	2.7	3.4	2.5	1.9	3.0	3.3	2.1	-1.5	0.6	2.4	3.2	1.4
urables	10.4	3.9	9.5	9.7	5.4	7.9	3.3	3.6	6.7	6.3	-2.6	1.7	4.6	5.2	5.0
ervices	3.3	4.6	4.2	2.9	2.4	0.9	2.3	2.3	2.2	1.4	1.4	1.3	1.8	1.8	2.1
Housing	3.1	2.5	2.1	1.7	1.4	1.4	1.4	1.2	1.2	1.3	2.0	1.9	1.6	1.6	1.5
Utilities	4.7	7.8	5.4	5.3	5.0	3.0	3.0	3.3	3.7	2.7	3.1	3.2	4.1	3.3	2.9
Transportation	9.3	9.0	8.2	6.4	5.2	-3.9	2.4	4.1	3.5	3.2	1.1	1.4	1.6	1.4	2.7
Communications	5.4	5.7	7.6	5.4	4.2	3.6	3.4	3.9	3.9	3.5	1.3	2.5	3.7	3.7	4.0
Repair and Personal care	3.7	5.0	6.4	4.4	4.0	3.2	4.0	4.2	4.4	3.4	2.1	3.5	3.1	3.5	4.0
Recreation	5.3	3.6	2.6	4.1	-3.2	-2.1	1.3	2.4	3.0	-1.0	-0.6	-0.5	-1.0	1.1	1.0
Health	3.5	2.3	3.3	1.5	1.0	0.0	1.0	1.0	-0.2	-0.0	0.9	0.6	1.0	0.3	0.0
Education	1.5	5.3	3.0	1.5	1.7	1.2	1.3	1.4	1.5	-0.1	0.9	-0.2	1.0	1.4	1.0

Preliminary.

Table 4

USSR: Growth of GNP and Factor Productivity
(average annual percentage change)

	1966-70[a]	1971-75[a]	1976-80[a]	1981	1982	1983	1984	1985	Preliminary 1986
Gross national product[b]	5.1	3.0	2.3	1.4	2.6	3.2	1.4	1.1	4.2
Combined inputs[c]	4.1	4.2	3.4	3.0	3.1	2.9	2.8	2.5	2.5
Workhours	2.0	1.7	1.2	0.9	1.0	0.7	0.5	0.4	0.6
Capital	7.4	8.0	6.9	6.4	6.3	6.3	6.3	5.8	5.5
Land	0.0	0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.7	0.0
Total factor productivity	0.9	-1.1	-1.1	-1.6	-0.4	0.3	-1.3	-1.4	1.7
Workhour productivity	3.0	1.3	1.1	0.5	1.6	2.5	0.9	0.7	3.6
Capital productivity	-2.2	-4.6	-4.3	-4.7	-3.4	-2.9	-4.6	-4.5	-1.2
Land productivity	5.0	2.9	2.5	1.5	2.7	3.1	1.5	1.8	4.2

[a]For computing average annual rates of growth, the base year is the year prior to the stated period.

[b]Based on indexes of GNP (1982 rubles) by sector of origin at factor cost.

[c]Inputs of workhours capital, and land are combined using weights of 56.5 percent, 40.5 percent, 3.0 percent, respectively in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages, social insurance deductions, and other income), capital costs (depreciation and a calculated capital charge), and land rent in 1982, the base year for all indexes underlying the growth rate calculations.

Table 5

USSR: Growth of Industrial Output and Factor Productivity
(average annual percentage change)

	1966-70[a]	1971-75[a]	1976-80[a]	1981	1982	1983	1984	1985	Preliminary 1986
Industrial production	6.2	5.5	2.7	1.3	0.8	2.7	2.6	2.7	3.6
Combined inputs[b]	6.0	5.2	4.7	4.4	4.0	3.8	3.8	3.7	3.4
Workhours	3.1	1.5	1.4	0.7	0.8	0.4	0.5	0.4	0.4
Capital	8.8	8.7	7.7	7.8	7.0	6.9	6.8	6.6	6.1
Total factor productivity	-0.2	-0.2	-1.9	-3.0	-3.2	-1.1	-1.1	-0.9	-0.2
Workhour productivity	3.1	3.9	1.3	0.6	0.0	2.2	2.1	2.2	3.1
Capital productivity	-2.3	-3.0	-4.7	-6.1	-5.9	-4.0	-3.9	-3.7	-2.4

[a]For computing the average annual rates of growth, the base year is the year prior to the stated period.

[b]Inputs of workhours and capital are combined using weights of 47.4 percent and 52.6 percent, respectively, in a Cobb-Douglas (linear homogeneous) production function. These weights represent the distribution of labor costs (wages, social insurance deductions, and other income) and capital costs (depreciation and a capital charge) in 1982, the base year for all indexes underlying the growth rate calculations.

Table 6

USSR: Gross Fixed Capital Investment

(billion rubles, 1984 prices)

	1965	1970	1975	1980	1981	1982	1983	1984	1985
Total Investment	64.2	92.2	128.5	150.9	156.5	161.9	171.0	174.3	179.5
By source:									
State	55.3	79.4	111.8	133.1	138.5	143.2	150.7	153.7	157.9
Collective farms	5.5	8.6	12.2	13.3	13.4	13.9	14.8	14.7	15.4
Cooperative enterprises and organizations	1.7	2.6	2.7	2.9	2.9	3.1	3.5	3.6	3.7
Private housing and apartments	1.7	1.6	1.8	1.6	1.7	1.7	2.0	2.3	2.5
By sector:									
Industry	23.6	32.5	44.9	53.3	55.4	57.0	60.1	62.7	65.5
Agriculture	10.6	16.0	26.1	29.8	30.5	31.0	32.1	31.1	31.5
Transportation and communications	6.4	9.0	14.4	18.1	18.9	19.9	21.4	22.3	21.9
Construction	1.6	3.3	4.8	6.0	5.8	6.3	6.3	5.8	6.1
Housing	11.2	15.8	19.2	21.1	22.4	24.0	25.9	27.3	28.1
Trade and services	10.8	15.6	19.1	22.6	23.5	23.7	25.2	25.1	26.4

*Source: Narodnoe Khoziastvo v SSSR, 1985.

. USSR: Estimated Hard Currency Balance of Payments

(Million Current US Dollars)

	1970	1975	1980	1981	1982	1983	1984	1985	1986[a]
Current account balance	114	-4,638	-1,904	-175	4,333	4,663	4,484	317	220
Merchandise trade balance	-306	-4,814	1,714	200	4,433	4,713	4,434	517	700
Exports, f.o.b.	2,405	9,443	27,788	27,978	31,977	32,428	31,726	26,370	24,200
Imports, f.o.b.	2,711	14,257	26,070	27,778	27,544	27,715	27,292	25,853	23,500
Net interest	-80	-670	-700	-1,375	-1,200	-1,150	-1,050	-1,300	-1,500
Other invisibles and transfers	500	760	890	1,000	1,100	1,100	1,100	1,100	1,100
Capital account balance	265	6,520	1,630	5,840	-1,340	1,650	500	5,800	9,200
Net foreign borrowings[b]	290	5,400	-185	3,000	-865	500	-100	6,000	6,400
Net change in assets held in Western banks[c]	25	-395	-235	-140	1,575	-400	400	2,000	1,000
Gold sales	negl.	725	1,580	2,700	1,100	750	1,000	1,800	3,800
Net errors and omissions[d]	-379	-1,896	-3,534	-5,665	-2,993	-6,313	-4,984	-6,117	-9,420

[a] Preliminary.

[b] Including additions to short-term debt.

[c] A minus sign signifies a decline in the value of assets.

[d] Includes hard currency assistance to and trade with Communist countries, credits to the LDCs under military and economic aid programs, credits to developed Western countries to finance sales of oil and other commodities, as well as errors and omissions in other line items of the accounts. Among the omissions is an adjustment for fluctuations in the US dollars vis-a-vis other Western currencies.

Table 8

USSR: Total Trade, 1981-85[a]

(Billions of Current US Dollars)

	Annual Average 1981-85	1981	1982	1983	1984	1985	1986[b]
USSR: Exports by region							
Total	87.3	79.4	87.2	91.7	91.5	86.9	94.7
Communist	49.3	43.4	47.1	51.0	51.9	53.2	63.1
Developed countries	25.2	24.4	26.2	26.7	26.4	22.5	19.2
Less developed countries	12.7	11.6	13.8	13.9	13.2	11.2	12.4
USSR: Imports by region							
Total	78.3	73.2	77.8	80.5	80.3	82.9	90.2
Communist	44.3	37.2	42.5	45.5	47.0	50.6	59.0
Developed countries	24.6	25.4	26.2	25.4	24.2	23.3	23.2
Less developed countries	9.4	10.6	9.1	9.6	9.1	9.0	8.0

[a]Includes both hard currency trade and trade conducted with soft currency partners on a clearing account basis.

[b]Preliminary.

Table 9

USSR: Selected Indicators of Agricultural Output

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986
tion tons)	63.8	78.8	94.0	112.5	109.4	114.6	113.7	121.9	129.3	128.3	126.2	135.3
	103.7	125.5	121.1	186.8	140.1	189.1	158.2	186.8	192.2	172.6	191.7	210.1
	71.8	84.4	88.7	96.8	88.7	67.0	72.1	78.2	82.9	85.5	73.0	87.2
	31.0	57.7	72.3	78.9	66.3	81.0	60.8	71.4	81.8	85.4	82.1	79.3
	3.80	3.97	5.45	6.14	4.99	4.62	4.68	5.34	5.06	4.53	5.23	5.3
	3.88	4.29	5.66	6.89	7.86	9.96	9.64	9.28	9.21	8.62	8.75	8.23
	14.1	16.6	17.6	21.2	23.4	27.3	27.1	30.0	29.5	31.5	28.1	29.7
	6.3	8.7	10.0	12.3	15.0	15.1	15.2	15.4	16.4	17.0	17.1	17.7
	43.0	61.7	72.6	83.0	90.8	90.9	88.9	91.0	96.5	97.9	98.6	101.1
	.256	.357	.357	.419	.467	.461	.460	.452	.462	.465	.447	.465
	18.5	27.5	29.1	40.7	57.4	67.9	70.9	72.4	75.1	76.5	77.3	80.3

and waste, in constant 1982 prices.

he comparable to Western measures, an average reduction of 11 percent is required.

Table 9

USSR: Selected Indicators of Agricultural Output

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986
	63.8	78.8	94.0	112.5	109.4	114.6	113.7	121.9	129.3	128.3	126.2	135.3
	103.7	125.5	121.1	186.8	140.1	189.1	158.2	186.8	192.2	172.6	191.7	210.1
	71.8	84.4	88.7	96.8	88.7	67.0	72.1	78.2	82.9	85.5	73.0	87.2
	31.0	57.7	72.3	78.9	66.3	81.0	60.8	71.4	81.8	85.4	82.1	79.3
	3.80	3.97	5.45	6.14	4.99	4.62	4.68	5.34	5.06	4.53	5.23	5.3
	3.88	4.29	5.66	6.89	7.86	9.96	9.64	9.28	9.21	8.62	8.75	8.23
	14.1	16.6	17.6	21.2	23.4	27.3	27.1	30.0	29.5	31.5	28.1	29.7
	6.3	8.7	10.0	12.3	15.0	15.1	15.2	15.4	16.4	17.0	17.1	17.7
	43.0	61.7	72.6	83.0	90.8	90.9	88.9	91.0	96.5	97.9	98.6	101.1
	.256	.357	.357	.419	.467	.461	.460	.452	.462	.465	.447	.465
	18.5	27.5	29.1	40.7	57.4	67.9	70.9	72.4	75.1	76.5	77.3	80.3

aste, in constant 1982 prices.

mparable to Western measures, an average reduction of 11 percent is required.

Table 9

USSR: Selected Indicators of Agricultural Output

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986
Value of output[a] (billion rubles)	63.8	78.8	94.0	112.5	109.4	114.6	113.7	121.9	129.3	128.3	126.2	135.3
Commodity production (million metric tons)												
Grain[b]	103.7	125.5	121.1	186.8	140.1	189.1	158.2	186.8	192.2	172.6	191.7	210.1
Potatoes	71.8	84.4	88.7	96.8	88.7	67.0	72.1	78.2	82.9	85.5	73.0	87.2
Sugar beets	31.0	57.7	72.3	78.9	66.3	81.0	60.8	71.4	81.8	85.4	82.1	79.3
Sunflower seed	3.80	3.97	5.45	6.14	4.99	4.62	4.68	5.34	5.06	4.53	5.23	5.3
Cotton	3.88	4.29	5.66	6.89	7.86	9.96	9.64	9.28	9.21	8.62	8.75	8.23
Vegetables	14.1	16.6	17.6	21.2	23.4	27.3	27.1	30.0	29.5	31.5	28.1	29.7
Meat	6.3	8.7	10.0	12.3	15.0	15.1	15.2	15.4	16.4	17.0	17.1	17.7
Milk	43.0	61.7	72.6	83.0	90.8	90.9	88.9	91.0	96.5	97.9	98.6	101.1
Wool	.256	.357	.357	.419	.467	.461	.460	.452	.462	.465	.447	.465
Eggs (billion)	18.5	27.5	29.1	40.7	57.4	67.9	70.9	72.4	75.1	76.5	77.3	80.3

[a] Net of feed, seed, and waste, in constant 1982 prices.

[b] Bunker weight. To be comparable to Western measures, an average reduction of 11 percent is required.