

ED A. HEWETT

Reforming the Soviet Economy

Equality versus Efficiency

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the interim, when the population is feeling the cold impersonal effect of the new rules without seeing any dramatic improvement in its economic situation, the pressures will grow rapidly for a retreat. The result is a test of political will that few leaders in the Soviet Union or Eastern Europe have ever passed.

Retrenchment

The typical response is a retrenchment. It may come early, in the failure to implement a reform; in midstream if the leadership allows the bureaucracy to get away with sabotage; or later, in new decrees that have the effect of neutralizing the reform. When, if, and how the retrenchment comes depends on the interplay of a number of factors already discussed: most notably, the design of the reform, the strength of the resistance, the degree of unity in the leadership concerning the reform, and therefore the strength of political will the leadership brings to the inevitable battle.

Each reform has its particular array of forces, factors, and personalities that are critical to determining the final outcome. A study of the reform efforts from Khrushchev to Brezhnev provides information on four reform cycles in which the combination of critical components was fatal to the reform and the outcome was virtually complete retrenchment. Whether Gorbachev's reforms are likely to suffer the same fate cannot be adequately addressed without analyzing the nature of the system, the history of previous reform efforts, and the design of his emerging reform.

CHAPTER TWO

Soviet Economic Performance: Strengths and Weaknesses

In general, comrades, there are many pressing problems in the economy. I have, to be sure, no prepared prescriptions for their resolution. But it falls to all of us—the Central Committee of the Party—to find answers. . . . I wish to emphasize that these questions are of the highest order and of vital importance for the country. By deciding them successfully, the economy will continue to advance, and the welfare of the population will increase.

—Iurii V. Andropov, November 22, 1982¹

The historic fate of the country, the position of socialism in the modern world in large part depends on how we proceed from here. . . . We must achieve a significant acceleration in social-economic progress. There simply is no other path.

—Mikhail S. Gorbachev, April 23, 1985²

There has been a tendency for some Government spokesmen to describe the Soviet economy as one in crisis, a basket case in danger of collapse. My view is that this exaggerates the seriousness of Soviet economic problems, which are serious enough without exaggeration. I do not think it serves a useful purpose to magnify their economic difficulties out of proportion, and I think it is counterproductive to deceive ourselves about the strength as well as the weakness of the Soviet Economy.

—Senator William Proxmire, June 28, 1983³

1. "Rech' General'nogo sekretaria TsK KPSS Iu. V. Andropova na Plenum TsK KPSS 22 Noiabria 1982 goda" (Speech of the general secretary of the CC of the CPSU Iu. V. Andropov at the Plenum of the CC of the CPSU, 22 November 1982), *Kommunist*, no. 17 (November 1982), p. 16.

2. "O sozyve ocherednogo XXVII s'ezda KPSS i zadachakh, svyazannykh s ego podgotovkoi i provedeniem. Doklad General'nogo sekretaria TsK KPSS M. S. Gorbacheva na Plenum TsK KPSS 23 Aprelia 1985 goda" (On the convocation of the regular XXVII Congress of the CPSU and the tasks connected with its preparation and execution. The report of the general secretary of the CC of the CPSU, M. S. Gorbachev at the Plenum of the CC of the CPSU, 23 April 1985), *Kommunist*, no. 7 (May 1985), p. 6.

3. U.S. Joint Economic Committee, *Allocation of Resources in the Soviet Union*

FOR SOME TIME many in the West have taken for granted that the USSR is in an economic crisis. The primary evidence supporting that conviction comes from the most authoritative of sources: the Soviet economic press and economic journals, official Soviet economic statistics, and Soviet leaders themselves. Even a casual reading of the economic literature over any of the past four decades turns up an abundant supply of stories that add up to an economy in which obsolete, unreliable products are the norm, not the exception. Official statistics provide further support in their documentation of a slowdown in economic growth seemingly impervious to the almost constant efforts of Soviet planners to stabilize the situation through policy changes and economic reforms.

Soviet economic leaders have traditionally been more circumspect than Soviet publications in their public comments on the country's economic performance. Since the death of Brezhnev, however, top Soviet political leaders have joined the ranks of the economy's harshest critics. Mikhail Gorbachev, picking up on a theme introduced forcefully by Yuri Andropov, leaves no doubt that he regards the resolution of Soviet economic problems as his top priority. "The . . . fate of the country, the position of socialism" rest, he tells us, on the leadership's ability to turn this economy around.

As if all this were not enough, a visit to the USSR provides even more evidence of an economy in deep difficulty. The service sector is incredibly primitive by Western standards, indeed by world standards. Consumer durables are scarce; the selection is modest; the underlying technology dates from the early postwar years; and the quality is frequently poor. This economy seems unable to produce a cheap, reliable, automatic washing machine, radio, or phonograph, and cheap, powerful hand calculators and personal computers are still no more than a distant hope. Decent fruits and vegetables available throughout the country in quantity at reasonable prices are seemingly out of reach even though 20 percent of the labor force works in agriculture.

Yet this same economy produces a titanium-hulled "alpha-class" submarine that goes faster and deeper than any submarine in the world. It has also managed to build one of the world's largest natural gas distribution systems by relying primarily on domestically produced compressors and turbines, and all of this realized ahead of schedule,

and China—1983, Hearings before the Subcommittee on International Trade, Finance, and Security Economics, 98 Cong. I sess. (Government Printing Office, 1984), pt. 9, p. 2.

despite the U.S. administration's best efforts to delay construction. With its own technology the Soviet Union has sent remote-operated machinery to the moon, established and maintained a working space station, drilled the deepest oil wells in the world, and developed a technology for producing continuous cast aluminum that U.S. defense contractors have purchased. More important, over the last quarter century, it has moved from a position of distinct strategic inferiority vis-à-vis the United States to one of at least parity, if not superiority.

The manual washing machine—which may not work anyway—the titanium-hulled submarine, the abacus a Soviet clerk uses to add up a customer's bill in the bookstore, and the world's largest-capacity, long-distance power lines are symbols of the vast range of Soviet economic capabilities. An adequate description of Soviet economic performance must accommodate all of them.

On the Need for a Balanced Picture

It is dangerous, as Senator Proxmire so rightly points out, to either under- or overestimate Soviet economic capabilities. To underestimate them—for example, to believe that the Soviet economy is incapable of an adequate response to President Ronald Reagan's Strategic Defense Initiative—is self-delusion, which at best could lead the United States to engage in a very expensive round of the arms race and could result in far less than the anticipated improvement in U.S. national security. To overestimate Soviet economic capabilities, particularly as they relate to defense technologies, could lead to unnecessarily large defense expenditures, efforts at embargo or export restrictions, and other measures that in fact are unnecessary. The only sensible way to assess Soviet economic performance is to draw up a balance sheet that captures both the strengths and weaknesses of performance and to relate those to specific capabilities, for example, in the area of national security.

There are compelling reasons to begin a study of the dynamics of economic reform in the Soviet Union by drawing up such a balance sheet. It is possible, without much effort at all, to list performance problems associated with Soviet central planning that add up to a clear justification for immediate and far-reaching economic reforms. Indeed, the problems are so serious, and the solutions seem so obvious, that many despair of finding a rational explanation for the persistence of the

old system. The plausible explanations seem to boil down to the leadership's desire to retain power at virtually all costs, supported by the ideological blinders that automatically exclude the more effective responses to Soviet economic problems.

Although those considerations surely capture part of the explanation, they do not tell the entire story. Soviet leaders are neither as irrational nor as blind as a superficial familiarity with the system might suggest. There have been, and still are, some strong points in the performance of the Soviet economic system that distinguish it from Western economies and are valued by both the leadership and the population. In the past, Soviet leaders have encountered tremendous difficulties in devising and implementing reforms that adequately address economic performance problems because they have sought a compromise that preserves the strengths in the old system while eliminating, or reducing, the weaknesses. Because the strengths and the weaknesses are intertwined, they have not yet succeeded. But they have not yet exhausted the options they think they have. Only by understanding this point is it possible to make sense of the reforms that have *not* been introduced, as well as those that have.

This chapter considers Soviet economic performance, focusing first on the strengths, and then on the weaknesses. The data used in the analysis span the quarter century from 1960 to 1985. These are the years that form the immediate backdrop to the efforts to improve the system, including the ongoing Gorbachev reforms. The more recent data available for 1986–87 already show, or can be used to test for, the consequences of Gorbachev's early policy measures. Those issues and the data necessary to explore them are discussed in chapters 7 and 8.

Assessing Soviet Economic Performance

Any analysis of the strengths and weaknesses of Soviet economic performance is complicated by the fact that there is no universal norm to which one can refer in labeling a particular aspect of Soviet economic performance as "strong" or "weak." Different social groups in the USSR naturally have different viewpoints about a particular aspect of the system: Soviet leaders regard the defense buildup as a strong point of Soviet economic performance; Soviet consumers may—with justification—regard that as one reason they have such a poor selection of consumer goods. Soviet workers value highly the job security in the

USSR, whereas Soviet leaders are coming to regard job security as one of the causal factors behind low labor productivity. These are just two instances in which the preferences of the leadership and the population diverge. It is important, therefore, to be clear on whose preferences are being used to measure performance.

The Norms Used

The preferences of Soviet leaders—defined for convenience as encompassing the Central Committee of the Communist Party of the Soviet Union (CPSU), but giving heavy weight to the Politburo—obviously matter the most. If the leaders judge economic performance to be satisfactory, then there is little reason to expect actions to change it. In theory, whether or not the population at large concurs in that assessment is not, or at least need not be, of great concern. If, on the other hand, the leaders are dissatisfied with performance, then they are likely to seek improvement, either through changes in policy or through changes in the system itself.

Although Soviet leaders can ignore societal preferences concerning the economy, they do so at their own peril. Economic performance is an important source of whatever support may exist for government policies, and, ultimately, for the party's control over society. Consequently political leaders pay close attention to the population's concerns regarding the economy and make an obvious, constant effort to show that they understand the population's concerns and are doing their best to respond to them.

Nevertheless, Soviet leaders' preferences count most. Soviet leaders are the "gatekeepers" defining which problems are sufficiently serious to merit attention and what policy and reform measures are acceptable responses to those problems. The preferences of the population can change the leadership calculus only when the political risks of not changing are judged high enough to require remedial action. These considerations all suggest that leadership preferences and perceptions are the ones to focus on in discussing the strengths and weaknesses of Soviet economic performance.

A Brief Note on Statistics

The aggregate data used in this chapter to evaluate the strengths and weaknesses of Soviet economic performance are drawn primarily from

official Soviet statistics, supplemented by data from the CIA and other sources wherever the latter sources tell a different story or fill a gap left by Soviet data. There are many reasons to be very careful about basing judgments solely on Soviet data. Soviet official data tend to be poorly documented, if documented at all; and what we do know suggests that many of the data sets have limited validity as indicators of the underlying processes to which they refer. Even CIA data should be approached with great care since they derive primarily from Soviet micro data.

Soviet data seem least reliable in the area of national income statistics. One obvious problem is that official statistics are limited to output of material branches, excluding all services (legal or, of course, illegal), so that the government publishes no comprehensive measure of aggregate economic activity. But more important is the growing conviction, shared by Soviet and Western economists, that Soviet macroeconomic statistics overstate the rate of real growth and understate the true rate of inflation.⁴ The strongest case has been made for high rates of hidden inflation in the machinebuilding and metalworking sector, and therefore in the investment statistics, with estimates in the range of 4–10 percent per annum for recent years.⁵ That may account for 10 percent of national income.⁶ The case has yet to be made for the remaining 90 percent, but high rates of hidden inflation there are not excluded. To the extent that there is hidden inflation, it probably increased in recent years.⁷

4. For arguments that Soviet real growth is less than official statistics claim, see Alec Noye, "Has Soviet Growth Ceased?" paper presented to the Manchester Statistical Society, November 15, 1983; and Michael Ellman, "Did Soviet Economic Growth End in 1978?" in Jan Drewnowski, ed., *Crisis in the East European Economy: The Spread of the Polish Disease* (London: St. Martins Press, 1982), pp. 131–41. For a Soviet economist's argument in the same vein, see Vasilii Seliunin and Grigorii Khanin, "Lukavaia tsifra" (Cunning figures), *Novyi mir*, no. 2 (February 1987), pp. 181–201.

5. For a general discussion of the literature on this, see Philip Hanson, "The CIA, The TsSU and the Real Growth of Soviet Investment," *Soviet Studies*, vol. 36 (October 1984), pp. 571–81. Also see David Dyker, "More on Inflation in Soviet Investment Statistics," *Radio Liberty Research Bulletin*, RL 104/85, April 2, 1985. The estimate of a 10 percent rate of inflation for machinery and equipment is attributed to a Gosstat official, V. Doronin; see Vasilii Seliunin, "Eksperiment" (Experiment), *Novyi mir*, no. 8 (August 1985), p. 186.

6. Machinery accounts for 40 percent of gross investment; and gross investment is roughly one quarter of national income. That means investment works out at about 10 percent of national income.

7. See "Panel on Soviet Economic Performance: Perceptions on a Confusing Set of Statistics," *Soviet Economy*, vol. 3 (January–March 1987), pp. 3–39.

At this point the doubts about Soviet data are not sufficiently grave, or at least those in the West and the USSR have not sufficiently documented their grave doubts, to justify ignoring Soviet national income accounts. In any event, they are generally acknowledged to accurately reflect—in general trends, although not in detail—the data available to the leadership. Nonetheless, care must be exercised in drawing conclusions from these data. My general rule in this chapter is to focus on general trends that are likely to survive a revision of Soviet data, which appears increasingly likely under Gorbachev.⁸ Turning points in a particular year, or differences of only a few percentage points, are generally ignored, since they may in fact be an illusion.

Soviet Economic Performance: Strengths

From the point of view of Soviet leaders, the performance of the system has been strong, or positive, in three respects: historically, the growth rates of economic activity and living standards have been high; an extraordinarily high degree of economic security has been maintained throughout this growth process; and an egalitarian bias has been built into the system. Soviet leaders are obviously dissatisfied with some aspects of the performance in these areas, but on the whole they think the record here is good.

The Growth Record

Soviet leaders have good reason to be proud of their country's economic growth, which was particularly impressive during the first quarter century of Soviet power. Based on Soviet official data, growth rates for the period are simply unbelievable. But even Abram Bergson's meticulous efforts to eliminate the upward bias and construct a fair measure of Soviet GNP growth come up with very respectable rates for

8. There is an increasingly acrimonious debate about the Central Statistical Administration and the weaknesses of its data, symbolized by the publication of the Seliunin and Khanin article in *Novyi mir*. Also the Politburo in its April 2, 1987, meeting reviewed the work of statistical organs and called for a major overhaul of the statistical system; a new decree on reforms in statistics is scheduled for the fall of 1987.

1928–55, which are in the range of 4.4–6.3 percent per annum.⁹ These years witnessed the first and most important spurt of industrialization in the Soviet Union. Entire industries were created, along with millions of jobs that drew peasants away from the countryside and into higher-paying jobs and higher living standards. They were also higher-productivity jobs, a major source of the high growth rates.¹⁰

The postwar record, while less impressive, is still decent by world standards. Soviet statistical yearbooks indicate that by the mid-1980s the level of economic activity was ten times higher than in 1950 and that per capita consumption had increased fivefold. Simultaneously a massive and successful effort was under way to achieve rough parity with the United States in military capabilities.¹¹

More conservative U.S. Central Intelligence Agency estimates of Soviet national income accounts still suggest a very good performance record, according to Western concepts. The CIA estimates that Soviet real GNP rose about 4.5 times between 1950 and the mid-1980s, an average of slightly under 4.5 percent per annum. Over roughly the same period, GNP in the United States rose 2.7 times, and in the United Kingdom it doubled. The remainder of Europe did better than that—real GNP in Germany, France, and Italy rose 4–4.5 times—but even by that standard, Soviet economic performance over the past third century is quite satisfactory.¹²

As for Soviet leaders' views of their performance, their own data probably have much more weight than CIA reestimates (although the latter are probably known to Soviet leaders and may carry some

9. Abram Bergson, *The Real National Income of Soviet Russia since 1928* (Harvard University Press, 1961), p. 261. The lower figure is an estimate of GNP growth, weighted by Bergson's estimate of 1937 ruble factor costs, for all years during the 1928–55 period. The upper figure is the result of a "composite" index that blends weights from 1928, 1937, and 1950, and, in addition, attempts to impute to the wartime years the growth rates that would have obtained if there had been no war over the entire period. There are other figures within the interval under different assumptions.

10. Ibid., p. 284.

11. Data are from Tsentral'noe statisticheskoe upravlenie SSSR, *Narodnoe khoziaistvo SSSR v 1984 g: Statisticheskii ezhegodnik* (Moscow: "Finansy i statistika"), p. 36. (Hereafter cited as *Narkhoz*.)

12. Central Intelligence Agency, *Handbook of Economic Statistics, 1985: A Reference Aid*, CPAS 85-10001 (Directorate of Intelligence, September 1985), p. 39; Joint Economic Committee, *USSR: Measures of Economic Growth and Development, 1950–1980*, Joint Committee Print, 97 Cong. 2 sess. (GPO, 1982) pp. 64–67; and U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1985*, 105th edition (GPO, 1984), p. 434.

weight).¹³ They would like to continue that growth performance in the future and improve on it, if possible. Indeed, that is an important thrust of Mikhail Gorbachev's efforts to revitalize the Soviet economy. The motive behind this desire for sustained high growth rates is easily discernible: a preference for dividing a rapidly expanding pie among consumption, investment, and defense. There is also the perpetual goal to close the gap between Soviet living standards and those of developed Western countries, particularly the United States. Thus rapid economic growth is one of the major criteria by which leaders will judge the success or failure of new policies and economic reforms.

Economic Security

Possibly even more impressive to Soviet leaders, and to the population, is the economic security provided by the system. This is basically a fixed-price system with an internally generated excess demand for labor and a relatively flat income distribution. The result is something as close to full employment as any industrialized economy can hope to achieve, with a relatively low level of uncertainty about nominal and real incomes, both of which add up to a degree of personal economic security in the workplace virtually unparalleled in Western countries. In effect, the party and government in the USSR have issued workers as a whole an insurance policy against personal economic risk that no insurance company in the West could afford to offer, and that no government in the West has been inclined to offer.

FULL EMPLOYMENT. The official position of the Soviet government is, in effect, that involuntary unemployment is close to zero; if there is

13. An interesting question in itself is how carefully Soviet leaders, or at least their advisers, follow Western analyses of their economy and what conclusions they draw from divergences between their own data or analyses and Western data and analyses.

In recent years Soviet specialists in the West have encountered increasing interest in their work on the part of Soviet economists working on the Soviet economy. The U.S. Joint Economic Committee's collection of articles on the Soviet economy published every three years, which contains a number of pieces written primarily by Soviet specialists (including those working in the Central Intelligence Agency), is always ordered in significant quantities for direct shipment to the USSR. The volume *The Soviet Economy: Toward the Year 2000*, edited by Abram Bergson and Herbert Levine (George Allen and Unwin), has been translated into Russian, and was circulated in numbered copies, accompanied by a special introduction. These are a few of many indications that the work of Western specialists on the Soviet economy is followed in the USSR. How much of that filters to the top and is taken seriously is not known.

unemployment, it is transitional in nature (as individuals move from one job to another). As a consequence, there are no unemployment statistics, nor is there a well-developed network of institutions designed to help the unemployed find a new job. For both of these reasons it is difficult to say what the employment situation in the Soviet Union actually is.

In fact, unemployment does exist in the Soviet Union. By world standards, however, the level of unemployment appears to be low, and a high proportion of it is voluntary and not the result of a lack of jobs.

The existence of unemployment is documented in scattered surveys of workers who have either been dismissed or have left their jobs in particular factories or regions. Berliner cites a study of new workers in four Gorky factories in the mid-1960s that found that 28 percent of the workers had been out of work for at least twenty days, and 12 percent had been without a job for over a month. Another survey of workers who left their jobs voluntarily in Sverdlovsk in the mid-1960s concluded that the average length of unemployment for those individuals was twenty-three days.¹⁴

More recent studies suggest the length of unemployment is certainly no shorter in the 1980s, and may be considerably longer than it was in the 1960s. A 1981 survey of enterprises in Novosibirsk concluded that although half of the unemployed found a new job within a month, the average period of unemployment—excluding those who were out of work more than 180 days—was 40 days; when all the unemployed were included, the average rose to 53 days. This is not strictly comparable to the 1960s studies, since they covered only those who voluntarily left their jobs, whereas the later study covers workers unemployed for all reasons, including dismissal.¹⁵

There is also some circumstantial evidence of unemployment in small towns and in regions that receive only limited capital funds for new investments because they are of relatively low priority.¹⁶ Speaking in

14. Joseph S. Berliner, *The Innovation Decision in Soviet Industry* (MIT Press, 1976), p. 168.

15. Z. V. Kupriianova, "Tekuchest' kadrov: perelomit' nezheletel'nye tendentsii" (Turnover of cadre: reversing undesirable tendencies), *EKO*, no. 5 (May 1984), p. 23. Kupriianova notes that an important reason for the length of periods of unemployment in her Novosibirsk sample was that people coming into the region required a substantial amount of time to arrange permission to stay in the city, arrange for children, and so on. She also found a significant increase since 1964 in absences due to illness or the family situation, an important element of the latter being the unavailability of places in children's preschools, which forced a parent to stay home from work.

16. Berliner, *Innovation Decision*, p. 163. Both Gorbachev and Ryzhkov tacitly

broad terms, it is probably the case that most of the Asian republics, which account for the bulk of additions to the Soviet labor force, are sufficiently capital-poor to have significant pockets of unemployment.

The same surveys mentioned earlier, and others, provide some indications of why workers leave their jobs. Soviet enterprises have the theoretical right to fire workers for disciplinary reasons, but also when demand for their products falls. However, enterprise managers are required to help workers who are released because of staff reductions to find new jobs, either within the factory or within the area in which the factory is located.¹⁷ The demand for labor is so high, particularly in the European USSR, that enterprise directors probably fire workers only if they cause disciplinary problems.¹⁸

Surveys at the Novosibirsk Institute of the Economics and Organization of Industrial Production for the years 1964, 1970, and 1981 provide useful information on the motives of those who voluntarily leave their jobs. The most important reason for leaving, and it is becoming increasingly important, has been living standards, which in 1981 accounted for 39 percent of resignations. Within this category the most important issue was housing; 10 percent of the workers who left voluntarily cited that as a reason in 1964, 16.5 percent in 1981. The second most important reason has been working conditions, which in 1981 accounted for 27 percent of the leavings.¹⁹

Housing is a major problem because enterprises provide housing for their workers and compete for workers through housing. In addition, however, economic motives probably play a role in voluntary departures. There is much money to be made in the second economy, and presumably some of the "unemployed" workers—we do not know how many—are in fact working quite hard in proscribed activities. For example, the director of an unnamed instrument-making factory in the Novosibirsk

admitted to these pockets of unemployment in their speeches to the Twenty-seventh Party Congress in which they supported the creation of small enterprises in part to create new employment opportunities in rural areas.

17. *Ibid.*, p. 161.

18. Kupriianova implies that in the Novosibirsk enterprises she surveyed—which have higher labor turnover than in the USSR as a whole—about one-half of the job leavings are a result of workers being fired for disciplinary reasons. In the absence of other studies with comparable information, this proportion can only be taken as one piece of anecdotal information; my guess is that for the USSR as a whole involuntary leavings have in fact accounted for well under half of total job leavings, but that can only be a guess. Kupriianova, "Tekuchest' kadrov," pp. 19–20.

19. *Ibid.*, p. 19.

region complains that about a third of his 600 workers "disappear" for three to four months in the summer months to sell vegetables from their kitchen gardens, for which they are apparently far better compensated than they would be if they stayed in the factory.²⁰

In any case, these surveys do clearly indicate the existence of involuntary unemployment. However, the proportion of involuntary unemployment is probably low throughout the country, but lowest in large urban areas of the European USSR, where the demand for labor far exceeds supplies. It is probably higher in rural areas, and in the Asian republics, where the labor force is growing relatively rapidly and the capital-to-labor ratio is still far below what it is in European USSR.

Without systematic information, it is impossible to reach any precise conclusions regarding unemployment in the USSR. If the Soviet Central Statistical Administration were to collect and publish unemployment statistics in a fashion similar to that in the United States, the rate of unemployment would probably come out under 2 percent for the mid-1980s.²¹ Western countries, and particularly Western workers, can only envy a society with such a consistently low level of unemployment.

CERTAINTY ABOUT INCOMES. The economic security provided in the USSR today is only partly a result of the relatively high demand for labor and the low level of unemployment. It is also related to certainty concerning the worth of income in real terms, which is much higher in the Soviet Union than in Western countries. To be sure, Soviet workers face uncertainties in all of these areas, but the relative security of job and real income combine to produce a high degree of personal economic security in the Soviet Union.

Nominal incomes. Workers' concerns about future income in any society are a combination of their expectations that they can find and hold a job, and that they will receive a certain income in that job. The most important difference between the Soviet Union and Western countries in this regard is in the area of job security. Individual workers in the Soviet Union know that the likelihood they will have to leave their job involuntarily is low, and for that reason alone Soviet workers enjoy

20. V. A. Aranovskii, "Obshchii poriadok i ditsiplina—zven'ia odnoi tsepi" (General order and discipline—links in one chain), *EKO*, no. 5 (May 1984), pp. 34–37.

21. If labor turnover in the Soviet Union is 20 percent, which is not out of line with what some studies indicate, and if the average duration of unemployment is in the range of 30 days, then that suggests a rate of unemployment of $30/365 \times .2 = 1.6$ percent, which is well below what many Western economists suggest is the minimal level of unemployment in a Western country consistent with price stability.

more certainty than their Western counterparts regarding their incomes from earnings. The main sources of this job security are the high demand for labor and the fact that the ministries—and ultimately the central planners—are willing to subsidize enterprises operating at a loss so that they can cover the wage liabilities.

What one might call "income security"—high certainty of what one's nominal income will be in a job—also seems to be the rule in the USSR, unlike the West. However, this is a more complicated issue, both because situations differ among various groups in the labor force, and because the data necessary to reach a conclusion are not all available.

For Soviet managers, who constitute a minority of the labor force, bonuses are a relatively high share of their income and may vary over time. According to the most recent data, unfortunately only for the early 1970s, reported bonuses of managerial and professional employees in all Soviet industry accounted for about one-quarter of their income; in the same year apparently one-third of high-level managers of all enterprises supervised by the Russian Republic office of the State Bank had total earnings at least twice the base salary for their post.²² There are no published data on the degree of variability of managerial bonuses over time at the national level. But it is likely that the variation in bonus payments combined with their relatively high share in total compensation contributes to some uncertainty regarding managerial incomes in the USSR.

The remainder of the labor force would seem to enjoy somewhat greater predicability in their incomes. Bonuses for workers on a salary are a relatively small share of their income and are apparently fairly stable over time; hence the informal designation of these bonuses as the wage for the "thirteenth month." Workers on piece-rate systems, whose share has declined over time, enjoy less income security. Just how much less depends on how total wages from piece rates fluctuate over time, about which no data have been published.

Real incomes. In any society it is real, not nominal, incomes that are the ultimate concern of the population. Rising nominal incomes associated with high rates of inflation may, for a short time, create a "money illusion" that masks the modest or nonexistent rise in real incomes; but

22. David Granick, "Institutional Innovation and Economic Management: The Soviet Incentive System, 1921 to the Present," in Gregory Guroff and Fred V. Carstensen, eds., *Entrepreneurship in Imperial Russia and the Soviet Union* (Princeton University Press, 1983), p. 246.

that is unlikely to work for long. In Western countries the minority of workers employed under union contract are typically insured against inflation through escalator clauses, whereas other workers must negotiate with their employers and take their chances.

In the Soviet Union there are no escalator clauses built into labor contracts that guarantee some excess rate of growth of nominal wages over the rate of inflation. Instead there is an informal understanding between the leadership and the population to the effect that (1) rates of inflation will either be zero or very low, and when consumer prices rise they will do so in an orderly manner; (2) the prices of necessities will be low and stable; and (3) real incomes will rise continuously. In general, Soviet leaders have kept their side of the bargain, although the uneven quality of Soviet economic statistics leaves much room for doubt.

Official Soviet statistics on retail prices report rates of inflation averaging 0.3 percent in the 1970s and approximately 1 percent in the 1980s.²³ These figures do not include second economy transactions, part of the daily life of Soviet citizens, or the prices of imported consumer goods. Furthermore, the costs of forced substitution (which means accepting available products, even when they are not what the consumer intended to buy) are not captured in the index, and the costs of long queues are ignored.²⁴

However, even if the rate of inflation reported for state retail prices understates by two, three, or even four times the actual rate of inflation that would show up in a properly estimated consumer price index (CPI), the figure is still quite low by Western standards, as is evident from the CPIs for the major industrialized countries shown in table 2-1. Even if the actual CPI in the USSR in the 1970s had not been the 0.3 percent implied in the state retail price index, but had been, say, 2-3 percent, it would still have been far below the 7.8 percent of the United States or the 13 percent plus in Italy and the United Kingdom.

It appears that necessities are relatively cheap in the Soviet Union. Consider, for example, data assembled by Abram Bergson on lira-dollar and ruble-dollar ratios for 1975 and 1976, respectively (see table 2-2).

23. Narkhoz 1984, p. 493. But there are ample reasons to be skeptical about this poorly documented index, and every reason to believe that it understates the true rate of inflation. See, for example, the discussion of Soviet price statistics in "1987 Panel on the Soviet Economic Outlook: Perceptions on a Confusing Set of Statistics," *Soviet Economy*, vol. 3 (January-March 1987), pp. 3-39.

24. Derived from data on nominal and real national income produced as reported in various issues of Narkhoz.

Table 2-1. *Consumer Price Indexes for Major Industrialized Countries, 1970-85*

Country	1970	1980	Percent annual change, 1970-80	1985	Percent annual change, 1980-85
United States	100	212	7.8	277	5.5
Canada	100	217	8.1	310	7.4
Japan	100	237	9.0	271	2.7
France	100	252	9.7	399	9.6
Italy	100	365	13.8	700	13.9
United Kingdom	100	360	13.7	510	7.2
West Germany	100	165	5.1	199	3.8

Source: U.S. Central Intelligence Agency, *Handbook of Economic Statistics, 1986* (Washington, D.C., 1986), p. 53.

Each figure in table 2-2 is a ratio, the numerator being the ruble-dollar, or lira-dollar, ratio of prices in the given product group; the denominator being the ruble-dollar, or lira-dollar, ratio for all household consumption. A number greater than (less than) unity indicates that prices in that product group are relatively higher (lower) in the USSR or Italy than in a comparable product group in the United States.

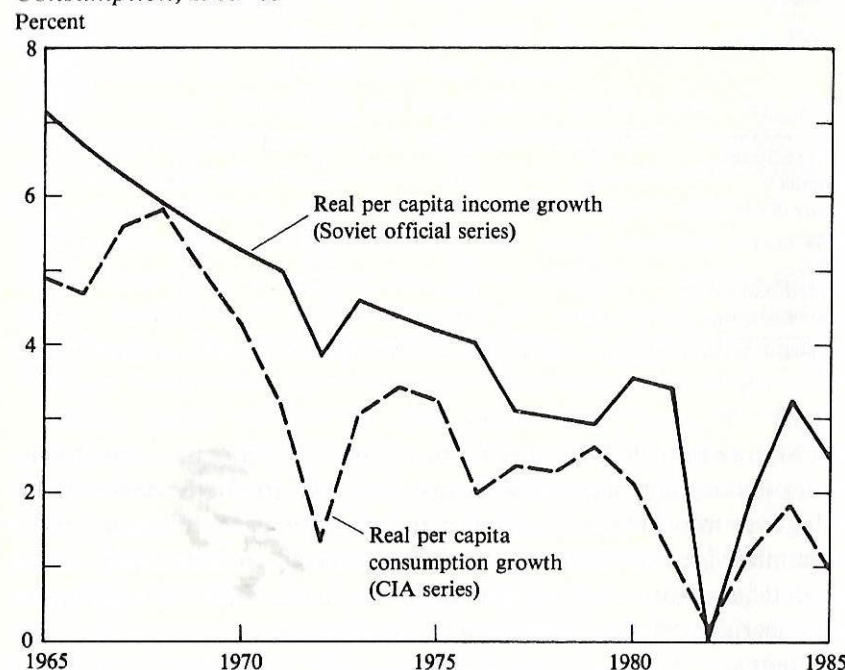
Compared with the United States, the USSR has relatively low prices for housing, transport, publications, and recreation, and relatively high

Table 2-2. *Ruble-Dollar and Lira-Dollar Ratios for Major Consumer Goods, Mid-1970s*

Consumer goods category	Ruble-dollar ratio (1976)	Lira-dollar ratio (1975)
All household consumption	1.00	1.00
Food	1.23	1.10
Beverages	1.42	1.11
Tobacco	1.66	1.09
Clothing, footwear	1.75	1.24
Gross rent, utilities	0.34	0.94
House furnishings	1.00	0.83
Transport, communications	0.52	0.81
Publications, school supplies	0.35	n.a.
Recreation	0.58	1.18

Source: Abram Bergson, "Income Inequality under Soviet Socialism," *Journal of Economic Literature*, vol. 22 (September 1984), p. 1060.
n.a. Not available.

Figure 2-1. Growth Rate of Real Per Capita Income and Consumption, 1965–85



Sources: Soviet official data and sources in note 25.

prices for food, clothing and footwear, beverages, and tobacco. Within the food category, breads, cereals, and fish are relatively cheap. This certainly looks like a price structure that favors necessities, as is part of the contract. But it inevitably loads very high prices on luxuries, in comparison with the West. Italy's price structure seems closer to that of the United States than that of the USSR, which is further evidence of a particular slant in the Soviet price structure.

The third part of the contract—that real incomes will continuously rise—has also been kept, to judge from both official statistics on real per capita income growth and independent CIA estimates of real consumption growth rates. Figure 2-1 shows the record since the mid-1960s; the official data are from *Narkhoz*, and the CIA data are estimates by Schroeder and Denton for the CIA.²⁵ To be sure, real income growth

25. Gertrude E. Schroeder and M. Elizabeth Denton, "An Index of Consumption in the USSR," in Joint Economic Committee, *USSR: Measures of Economic Growth and Development*, Joint Committee Print, pp. 317–401. The Schroeder-Denton index is built up from the best available information (Soviet official) on consumption in individual

rates are falling, but they are falling from a high level, and the general downward trend is similar to one observed throughout the world. Even in recent years per capita personal incomes have been growing in the range of 2–3 percent, which is quite respectable by world standards.

Egalitarian Bias

Marx's central criticism of capitalism was that its inner logic automatically produced and perpetuated inequities in the distribution of wealth, income, and power. The reserve army of the unemployed was one important indicator of that system at work, but so was the fact that even most of those who were employed received a pittance for their work, while the few who owned the means of production received the bulk of society's income, and therefore its newly created wealth. In the half-century preceding the Russian revolution, socialists focused on the distribution of income and wealth as the critical issue; hence their preoccupation with socialization of the means of production. The Russian revolution was the first effective implementation of the idea in a nation-state, an implementation that took more than a decade to realize and was completed only after Stalin's brutal collectivization of the peasantry during 1929–31.

The result is a system in which—with insignificant exceptions—the state is the only legal owner of productive and financial capital, and in which what would otherwise be rents, dividends, and interest are state income collected primarily through confiscation of what the state determines to be excess enterprise profits. In theory the only way one can earn income in the Soviet Union is to be gainfully employed; income through lending money, owning income-producing assets, or enjoying economic rents from scarce assets (land, for example) are all legally excluded. Even with the second economy, there is probably relatively little income from nonlabor sources.²⁶

categories, aggregated in a way to maximize conformity with techniques used to estimate consumption in Western national income accounts. The index only goes to 1980; subsequent years were estimated using estimates of the growth of real consumption in the Central Intelligence Agency *Handbook*, 1985, and Soviet data on population growth.

26. The anecdotal information suggests that much of the economic activity in the second economy consists of labor in proscribed goods- or service-producing activities, although it is certainly true that returns to risk-bearing activities and economic rents also occur in this portion of the economy.

The mere fact that wages and salaries are the major source of personal income in the Soviet Union should have a leveling influence on the distribution of personal income in the Soviet Union. Additional flattening comes from the low rate of unemployment and the implicit income protection offered workers in enterprises that are unprofitable. The tendency to equalize wages in the same job, and even a tendency to hold down the variance among all wages, has also worked in the same direction. One further consideration applying to families is the high (by world standards) participation of women in the labor force, which should have a leveling influence on the distribution of income among consuming units. Thus, if a correction is made for the level of development, the income distribution among wage and salary workers in the Soviet Union is probably somewhat more equal than in most Western countries, and the income distribution among consuming units is far more equal than in some Western countries, such as the United States.²⁷

An egalitarian bias is built into the system in several other ways. When there is a loss to the economy (for example, a crop failure or a decline in the terms of trade), the incidence of the loss is spread across society. When grain production falls way below trend as a result of poor weather conditions, the general effects on income in the agricultural sector are far less serious than they would be in a Western country. Workers on state farms receive their wages, irrespective of the size of the crop; and there is no accumulation of private debt flowing from the crop failure. The debt is socialized and shows up in the form of increased imports from the West, which are financed either with dollar debt, a drawdown in dollar reserves, or some other maneuver.

By the same token, when an explosion in oil prices, such as the one that occurred in the 1970s, provides windfall gains to the Soviet Union, these are automatically socialized, as the system captures the higher dollar revenues "at the border," diverting them from the balance sheets of individual enterprises and into the state budget. In a Western society, those people with control over oil-bearing formations reap large rents;

27. Abram Bergson, "Income Inequality under Soviet Socialism," *Journal of Economic Literature*, vol. 22 (September 1984), p. 1092. This is a very useful survey comparing research on income distribution in the USSR with results of similar research on Western countries. In both cases—the distribution of income among wage and salary workers and the distribution of income among consuming units—Bergson concludes that some Western countries are no less equal than the USSR. Sweden, Norway, and the United Kingdom, for example, exhibit distributions of income among consuming units that are either indistinguishable from or very close to the Soviet distribution.

in the Soviet Union the rents are no smaller, but the state captures them and in effect distributes them to society as a whole.

The fact that the distribution of wealth is so equal weakens any potential link between income or wealth and power. The shortage of goods is also to some extent an equalizer (rich and poor alike must stand in line).

Nevertheless, some parts of the system have developed an anti-egalitarian bias, most notably in the hierarchy of special privileges afforded the elite. Special stores, special service organizations, special health care facilities, and the right to travel are all available to the elite, but not to the population as a whole. In a society where goods are in short supply, the right to have access to them through a preferential network is itself worth the equivalent of some (possibly substantial) amount of income. In that sense the income distributions reported here understate somewhat the degree of inequality flowing from special access afforded those at the very top of the income distribution. But in view of the fact that we are talking of relatively few people and that—with the exception of the top leaders—the resulting differences in living standards are not huge, this element of inequality does not overwhelm the general egalitarian bias of the system.

Gains to Be Preserved

The three strengths of the system described here—high growth, economic security, and an egalitarian bias—are all regarded by the leadership, and probably by much of the population, as the gains of socialism that should be preserved as far as possible. Clearly they are desirable attributes of any economic system and understandably the pillars supporting the political leadership in a country so absorbed in its revolutionary roots. Any political leader introducing economic reforms will make every effort to minimize the impact of reforms in these three areas in order to secure popular support for the required measures.

Yet many of the weaknesses in the USSR's economic performance can be traced to this very framework of economic security and to the egalitarian bias. Consequently, any economic reform that is to address these performance problems at their roots must seek to redefine the meaning of economic security and egalitarianism under Soviet socialism. That is why economic reform in the Soviet Union is so difficult to carry

out and why previous efforts at reform have had such a checkered history.

Soviet Economic Performance: Weaknesses

In recent years Soviet leaders have publicly expressed increasing dissatisfaction with the performance of their economic system. Frequently in speeches on the economy a particular leader will provide a long list of problems without singling out one or two as the most important and without noting the interrelationships among the problems (for example, between the low rates of technical change and the low rates of labor productivity growth). By reviewing the recent leadership speeches on the economy, however, particularly since Andropov assumed office, it is possible to delineate the critical issues and to identify those that are secondary.

The leadership's greatest concern is the inefficiency of the USSR's economic system. In terms familiar to Western economists, the concern is not so much with allocative inefficiency (the misallocation of resources among sectors or subsectors), but with technical inefficiency (the misuse, actually pure waste, of resources in the production of particular products). The anecdotal evidence that Soviet enterprises have a hunger for all inputs—labor and material—is overwhelming. As a result, inputs are used at far higher rates than are typical in the world economy, or even necessary in the Soviet context.

Much of the effort at economic reforms in the postwar period has been directed at forcing enterprises to economize on inputs, simply by paying more attention to costs and by introducing innovations in production processes. The general failure of those reforms and the consequent slow rate of technological progress have assumed greater importance over time as input growth rates have fallen and thus have led to a secular decline in national income growth rates.

In recent years falling growth rates have left Soviet leaders with less room for maneuver in responding to the competing claims from the military, consumers, and the investment needs of the economy itself. "The acceleration of social-economic development of the country," said Mikhail Gorbachev at the Twenty-seventh Party Congress, "is the key to all of our problems: near-term and long-term, economic and social, political and ideological, internal and foreign. Only by such a

path is it possible and desirable to attain a qualitatively new situation in Soviet society."²⁸

Gorbachev, in calling for a reversal in the downward decline in growth rates, is doing no more than expressing the general leadership view that this is essential for the future of the system. In their search for the causes of the decline, Soviet leaders have increasingly focused their attention on falling labor productivity growth rates and their underlying causes: the low level of mechanization in Soviet industry, lack of innovative activity, and labor discipline problems.

A second major concern of the Soviet leadership—separable from, but not unrelated to the concern over the growth slowdown—is that the system has had a chronic tendency to produce low-quality goods that fall far short of world standards and of the needs of Soviet users. This issue is also linked to technical efficiency in the sense that enterprises are using valuable resources to produce goods that many consumers find dissatisfying and some simply refuse to buy. The problem, outside the defense industry, is widespread, although not universal. It has adverse consequences for consumer welfare, economic performance, and hard currency export capacity. If Soviet leaders could manage to bring about a dramatic improvement in system performance in this area, then even if low growth rates were to persist, they would judge this to be an important achievement.

A third concern, also separable from, but not totally unrelated to, the growth slowdown, is the persistence of imbalances in the system. Some are macro imbalances, an excess demand for consumer goods or investment goods; some are imbalances among sectors, for example, a tendency for industrial development in certain areas to far outpace the development of infrastructure. Some are imbalances in the supply and demand for particular factors, including labor. If these imbalances could be reduced, then the leadership would value the mere reduction in chaos and improvement in the smooth running of the system, whether or not growth rates might rise.

Deteriorating Growth Performance

There are basically three issues here. First, what is the nature of the deterioration in performance? Second, what consequences has it had for

28. "Doklad General'nogo sekretaria TsK KPSS tovarishcha Gorbacheva M. S. 25 Fevralia 1986 goda" (Report of the general secretary of the Central Committee of the CPSU Comrade M. S. Gorbachev, February 25, 1986), *Pravda*, February 26, 1986.

Table 2-3. Soviet Economic Performance Indicators, 1961-85, and Plans to 2000

Average annual growth rate (percent)

Item	1961-65		1966-70		1971-75		1976-80		1981-85		1986-90, 1990-2000,	
	FYP7	Actual	FYP8	Actual	FYP9	Actual	FYP10	Actual	FYP11	Actual	FYP12	Plan
Macroeconomic activity												
National income produced	n.a.	6.5	n.a.	7.8	n.a.	5.7	n.a.	4.4	n.a.	3.5	4.5	n.a.
National income utilized	7.3	6.0	6.9	7.1	6.7	5.1	4.7	3.9	3.4	2.7 ^a	4.1	5.0
GNP (Western estimate)	n.a.	4.7	n.a.	5.0	n.a.	3.0	n.a.	2.3	n.a.	2.0	n.a.	n.a.
Sectoral output												
Industrial production	8.6	8.8	8.2	8.3	8.0	7.4	6.3	4.5	4.7	3.7	4.6	4.8
Machinebuilding and metalworking	n.a.	12.4	n.a.	11.8	11.4	11.6	n.a.	8.2	7.0	6.2	7.4	n.a.
Agricultural production	7.9	2.4	4.6	4.3	4.0	0.6	3.0	1.5	2.5	2.1	2.7	n.a.
Labor productivity												
In all material production	n.a.	5.5	n.a.	6.8	n.a.	4.6	n.a.	3.3	n.a.	3.1	4.2	6.5-7.4
In industry	5.7	4.5	6.0	5.6	6.8	6.0	5.5	3.1	3.6	3.2	4.6	n.a.
In agriculture	n.a.	3.3	7.3	6.2	6.7	1.4	n.a.	2.8	n.a.	2.7	4.1 ^b	n.a.
In construction	n.a.	5.2	n.a.	4.1	6.5	5.2	n.a.	1.5	n.a.	2.7	3.9	n.a.
Capital formation												
Gross total investment	n.a.	6.3	8.0	7.5	6.7	7.0	n.a.	3.3	n.a.	3.5	4.3	n.a.
Gross state investment ^c	8.8	7.3	n.a.	7.2	6.2 ^d	7.1	2.8	3.7	1.1	3.5	2.9 ^e	n.a.
Real per capita income	4.9	3.9	5.4	5.9	5.5	4.4	3.9	3.3	3.1	2.1	2.7	3.4-4.7

Sources: GNP estimates are from CIA, *Handbook of Economic Statistics, 1986: A Reference Aid*, CPAS 86-10002 (Directorate of Intelligence, September 1986), p. 70. Plan data are from Ed A. Hewett, "Gorbachev's Economic Strategy: A Preliminary Assessment," *Soviet Economy*, vol. 1 (October-December 1985), p. 289; Ed A. Hewett, Bryan Roberts, and Jan Vanous, "On the Feasibility of Key Targets in the Soviet Twelfth Five Year Plan (1986-90)," in Joint Economic Committee, *Gorbachev's Economic Plans*, 100 Cong. 1 sess., vol. 1 (GPO, forthcoming); and the following plan documents: *Promyslenno-ekonomicheskaya gazeta*, February 7, 1959; *Pravda*, April 10, 1966; *Gosudarstvennyi plan razvitiia narodnogo khoziaistva SSSR na 1971-1975 gody* (Moscow: Politizdat, 1972) (hereafter *Gosplan 1971-1975*); *Ekonom. gaz.*, no. 45 (November 1976); *Pravda*, November 20, 1981; *Pravda*, June 19, 1986; and *Sovetskii khozraschet*, March 9, 1986 (hereafter *Sots. ind.*). Performance data are from Hewett, "Gorbachev's Economic Strategy"; Hewett and others, "On the Feasibility of Key Targets"; and Tsentrall'noe statisticheskoe upravlenie SSSR, *Narodnoe khoziaistvo SSSR: Statisticheskii ezhegodnik* (Moscow: "Finansy i statistika," various years) (hereafter *Narkhoz*).

n.a. Not available.

a. *Narkhoz* 1985 (p. 40) reports two figures for the growth of "National income utilized" in 1985: 3.1 percent and 0.8 percent (implied from p. 410 of *Narkhoz* 1985 and p. 425 of *Narkhoz* 1984). The higher figure yields a growth rate for 1981-85 of 3.1 percent (*Narkhoz* 1985, p. 41). The lower figure yields a growth rate for 1981-85 of 2.7 percent (*Narkhoz* 1984, p. 425). The problem appears to be in the treatment of alcohol production. See "1987 Panel on the Soviet Economic Outlook: Perceptions on a Confusing Set of Statistics," *Soviet Economy*, vol. 3 (January-March 1987), pp. 3-39. I have tentatively accepted the lower figure as the best indicator of performance over that period.

b. Average from the draft of the Twelfth FYP. See *Sots. ind.*, November 9, 1985.

c. Excludes investments by collective farms and private individuals.

d. See *Gosplan* 1971-1975, p. 352; and *Narkhoz* 1972-1972, p. 321.

e. State "centralized" investment, which presumably excludes investments by state enterprises financed from their own funds.

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the economy? And third, what are the apparent causes of the performance problems? The discussion of the second and third issues is necessarily brief, pending the discussion in chapters 3 and 4 of how the system works, but much can be said even though the focus is only on the performance of the system. Before these three issues are taken up, however, it is useful to review the economy's overall performance in order to provide the context for a discussion both of performance itself and of some of the major causal factors.

Table 2-3 summarizes the basic statistics for five-year periods over the last quarter century along with plans to the year 2000. The data refer to targets specified in the five-year plans for each period and to actual performance in the same period.

The first three rows of table 2-3 provide three different measures of macroeconomic performance. National income produced (or net material product; hereafter, NIPR) is value-added only in the production of material goods.²⁹ National income utilized (hereafter NIUT) is NIPR minus losses and the trade surplus (in domestic prices); it therefore measures the actual value, in domestic prices, of goods and those services related to material production purchased by the population.³⁰ Gross national product is a CIA estimate arrived at by using accounting conventions of developed Western countries. It differs from NIPR in several ways, most notably in that it includes all services in social product as well as gross investment, which includes depreciation.

Whichever measure of macro activity one uses, the downward trend in growth rates from a recent peak in 1966-70 is unmistakable. The CIA's estimate of GNP shows a lower growth rate; but the downward trend is virtually identical to that shown in the two official national income series. Moreover, actual growth since the 1970s has been lower than planners had hoped for. This does not necessarily mean they were "surprised" by the outcome. Five-year plans are not simply an effort to generate a best forecast; they are also meant to motivate producers to achieve maximal improvement in performance. But at the very least the decline was to some extent involuntary from the point of view of planners. The

29. Goods produced in industry, construction, agriculture and forestry, transport and communications, trade, and water, net of depreciation; this excludes all services produced in education, health, housing, and public administration sectors, but includes some services produced in the material goods sectors.

30. If, for example NIPR does not change, but the trade surplus or losses rise, then NIUT falls as the actual goods available for final use fell because of increased net exports or increased losses.

cornerstone of Mikhail Gorbachev's strategy is a turnaround in that downward trend, the hope being that by the 1990s growth will be back at the rates of the early 1970s.

The next three rows provide information on growth in sectoral outputs: industry, within that the subsector involved in machinebuilding, and agriculture. These are all gross output indexes where inputs can be counted multiple times as they move up the chain in the production process; therefore the series are not directly comparable to the two Soviet national income series based solely on value-added in material production. Still, the sectoral indexes have an interesting story to tell.

Growth rates in agriculture are erratic and in recent years have been quite low, which is one explanation for their slowdown. Not only does slow growth in agriculture directly affect national income growth rates, but it indirectly affects performance by pushing up the demand for food imports (which means either the energy sector requires more resources than it otherwise would to maintain exports, or available hard currency is spent on food at the expense of imports of intermediate and final products) and by constraining industrial output in sectors dependent on agricultural inputs.

The slowdown in the growth of industrial output has been somewhat more pronounced than for national income as a whole. The slowdown was clearly greater than planners had expected, the biggest apparent surprise coming in the latter half of the 1970s. Although some of this slowdown may be directly or indirectly related to agriculture's problems (indirectly, for example, in that bad weather exacerbates transport bottlenecks and thus reduces industrial production), industry has its own problems, which show up in the sharp declines in labor productivity.

The subsequent four rows report on labor productivity in the production of all material goods, and in three key sectors. These figures represent ratios of the growth of gross sectoral outputs to the employed labor force, and thus are not directly comparable to Western figures, which frequently relate value-added in a sector to hours worked. However, they are the figures on which Soviet leaders base their greatest dissatisfaction with the system's performance. Industry is the only sector for which plan data are consistently available, and they show underfulfilled labor productivity targets since the beginning of the 1970s, with—again—the greatest surprise in the latter half of the 1970s. As with national income growth rates, the most recent peak in labor productivity growth was in 1966–70; since then it has slid down to about half the rates of

those years. It is here that Soviet targets for the 1990s are the most ambitious, calling for growth rates in labor productivity during the 1990s to surpass any in the last quarter century. Although the attainability of such targets is in doubt, they are the logical consequence of trying to accelerate growth while labor force growth rates fall to close to zero.

The next two rows report two separate, but closely related, investment series. "Total investment" is investment from all sources, including a small private investment component. "State investment" excludes private and cooperative investments. These latter two account for about 10 percent of total investment. Both total and state investments are reported here because sometimes the plan fulfillment reports give one, but not both.

Investment growth rates have fallen along with national income growth rates, but not by as much as planners had hoped. In each of the last three five-year plans the investment and national income targets combined implied a hoped-for improvement in investment efficiency that was unattainable. Thus planners were forced into a compromise in which investment grew faster than planned, whereas national income grew more slowly than planned. This was most notable in the last two five-year plans, covering the latter half of the 1970s and the first half of the 1980s. The decision for the 1976–80 plan was that investment growth could be halved without a proportionate effect on national income growth by decreasing the time required to finish investment projects. The rationale behind cutting investment was apparently the need to improve the supplies of consumer goods.³¹ As it turned out, investment growth rates were cut—although not as far as the plan called for—but national income growth rates fell further than planned. During the Eleventh FYP planners sought to introduce even deeper cuts in investment growth, with no success at all. Gross investment grew slightly faster in 1981–85 than in 1976–80. Soviet plans for 1986–90 implicitly admit that the extraordinarily slow growth of investment called for in the Eleventh FYP is unattainable.

According to official Soviet data (bottom row of table 2-3), the growth of per capita personal income has fallen from the recent peak in 1966–70. Like total national income, it has grown more slowly than plan targets called for.

31. For an explicit statement to that effect, see B. Plyshevskii, "Nakoplenie i intensifikatsiia" (Accumulation and intensification), *Ekonomicheskaiia gazeta*, no. 3 (January 1986). (Hereafter *Ekon. gaz.*)

The data in table 2-3 suggest several general observations that will prove important in understanding how Soviet leaders and their planners interpret the current state of the system. First, note that in the 1960s actual performance came reasonably close to medium-term plan targets, whereas in the 1970s actual performance was far inferior to planned performance. Planners in the 1970s must have felt that their control of the system was deteriorating, precisely as these data suggest.

Second, the best economic performance in recent years occurred in 1966–70, immediately after the introduction of the “Kosygin” reforms. Most of the five-year plan targets were fulfilled at the aggregate level; the growth rates of national income, labor productivity, and real personal incomes were all above plan.

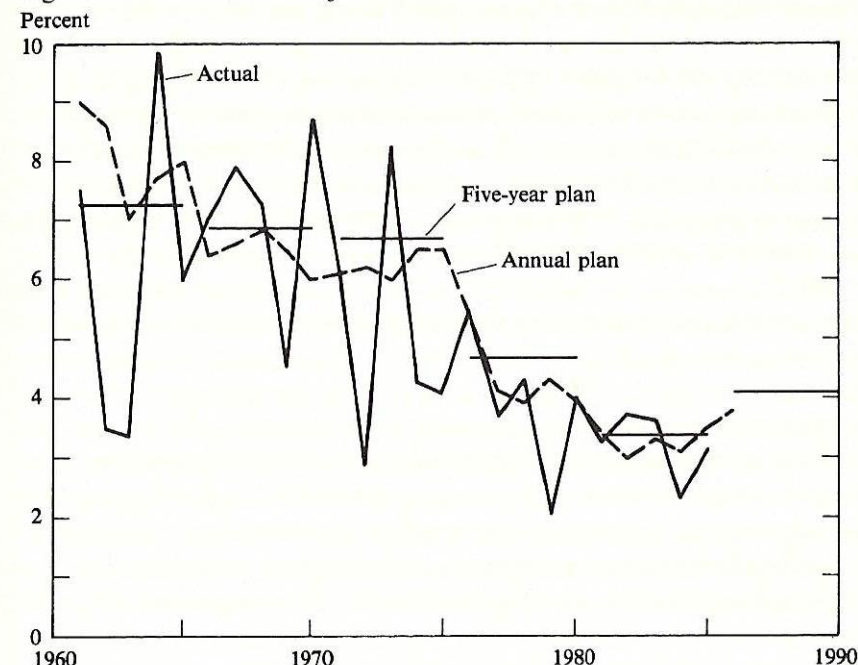
Finally, there was a major break in the middle of the 1970s, after which performance was much worse than before. That break, coming on top of the general downward trend begun in the first half of the decade, has fed the reform debate.

A CLOSER LOOK AT ANNUAL DATA. In order to better understand how Soviet leaders and planners perceived and sought to deal with the deterioration in Soviet economic performance, it is necessary to analyze the annual data on planned and actual performance. Although the five-year plans give some notion of planners’ hopes, tempered by a sense of what is possible, annual plan data provide an annual reading on what planners think is possible, even if that differs significantly from five-year plan targets. The result provides interesting insights into the ways planners have resisted the growth slowdown, but with little success.

National income growth. The nature of the deterioration in the performance of the Soviet economy can be seen in figure 2-2, which reports data on planned and actual growth of Soviet national income since 1961. The solid black lines spanning five-year intervals are NIUT growth rate targets from five-year plan documents; or—for the 1961–65 period—the last five years of the seven-year plan, referred to as the Seventh Five-Year Plan.³² The thin solid line is the actual growth rate

32. Macro data for the five-year plans are generally growth rates, but come in one of two forms. Drafts of the plans rely almost exclusively on the ratio between the macro aggregate in the upcoming plan period and that of the period just concluded (for example, national income during 1971–75 divided by national income during 1966–70). The actual plan law passed by the Supreme Soviet relies almost exclusively on growth rates relative to estimated actual performance in the last year of the previous plan period (for example, relating the level of national income in 1975—and all intervening years—to that of 1970).

Figure 2-2. *Growth Rate of National Income Utilized, 1961–90*



Source: Author's calculations using Soviet official and plan data.

for NIUT; the dashed line is annual plan targets for NIUT growth. These are all official Soviet data. Like the five-year data, CIA estimates of Soviet GNP tell a story of decline, the only difference being that the growth rates are somewhat lower.

The secular trend downward in growth rates is unmistakable. Clear also is the lower amplitude of fluctuations over time; by the early 1980s growth rates were in a narrow and low range. The mid-1970s break point stands out: performance in the period since 1974–75 is markedly worse than before. This abrupt decline in the middle of the last decade is what has deepened the concern of Soviet leaders.

Also clear in figure 2-2 is the reluctance of Soviet leaders to acquiesce,

The latter format is clearly preferable for relating five-year plans to annual plans and to actual performance as it unfolds during the five-year plan. I have used data from the plan law where they are available, namely in the Ninth FYP (1971–75) through the Eleventh FYP (1981–85). The seven-year plan and the Eighth FYP were controversial and never passed into law. Where the law was not available, growth rates from the draft plans were used as an indication of what the plan law growth rates would be, but they may be off somewhat.

in the economy's tendency toward lower growth. The story implied in these data cannot be understood without some idea of the different functions of five-year and annual plan targets. Five-year plan targets, which are generally not even published in final form (that is, as a law) until the end of the first year of the new plan period, are not, in fact, what the planners use to control economic activity. Rather, five-year plans are meant to be a detailed and formal statement of what Soviet leaders hope they can accomplish over the ensuing five-year period.

→ The annual plans are the operational plans in the system. Although they are supposedly drawn up in the framework of the five-year plans, in fact the annual plans are—on the whole—a more realistic assessment of what planners judge to be possible. To be sure, even the annual plans represent a mixture of a hard-headed forecast and a fervent wish; but the weight in annual plans is probably more heavily on the forecast than it is in the five-year plans. The combination of five-year and annual plan data with data on actual performance provides three useful, and separable, bits of information: a reading on what planners wish they could do over a five-year period, tempered by a reluctant recognition of constraints; an annual update on targets for that five-year period, which is based on what planners are learning about the constraints under which they are working; and the actual outcome.

✓ The patterns of the 1960s are fascinating, and somewhat puzzling. In the first half of the decade, NIUT growth targets were above the seven-year plan (SYP) target in all years save one, whereas actual performance fluctuated widely, and annual plan targets were significantly underfulfilled in four out of the five years. That may be one reason why planners set annual targets for 1966–70 significantly lower than those for 1961–65, and even consistently below the Eighth FYP target. They were surprised again, but in the other direction: national income growth rates were higher than the annual plans in four out of the five years, and they came out slightly higher than the five-year plan target.

✓ In the 1970s the annual plans fluctuated in a range of 6–6.5 percent, which was consistent with targets of the late 1960s, but below the 6.7 percent of the five-year plan. The first major disappointments came in 1974–75 when NIUT growth rates fell way below targets, although not below rates that had been experienced in the previous fifteen years. To judge from the data, the two years of slow growth and the considerable underfulfillment of the NIUT target for the Ninth FYP led to a much more modest target for NIUT growth in the Tenth FYP.

The interesting point about the abrupt deterioration in performance in the mid-1970s is that the annual plans anticipated it, moving very quickly below the five-year plan targets. They were in general a decent predictor of actual outcomes, except in 1979, another bad year in agriculture. Either planners saw the slow growth of 1974–75 as signs of deeper problems, and therefore the annual plans were simply predicting the downturn, or there was a conscious decision to grow more slowly in an effort to regain control of the system.

The targeted national income growth for 1981–85 (Eleventh FYP) was still more modest, and both annual plans and performance were reasonably close to that target. At least during the last plan constructed under Brezhnev, planners managed to produce realistic plans. But they did so by choosing a target lower than one political leaders could ultimately accept.

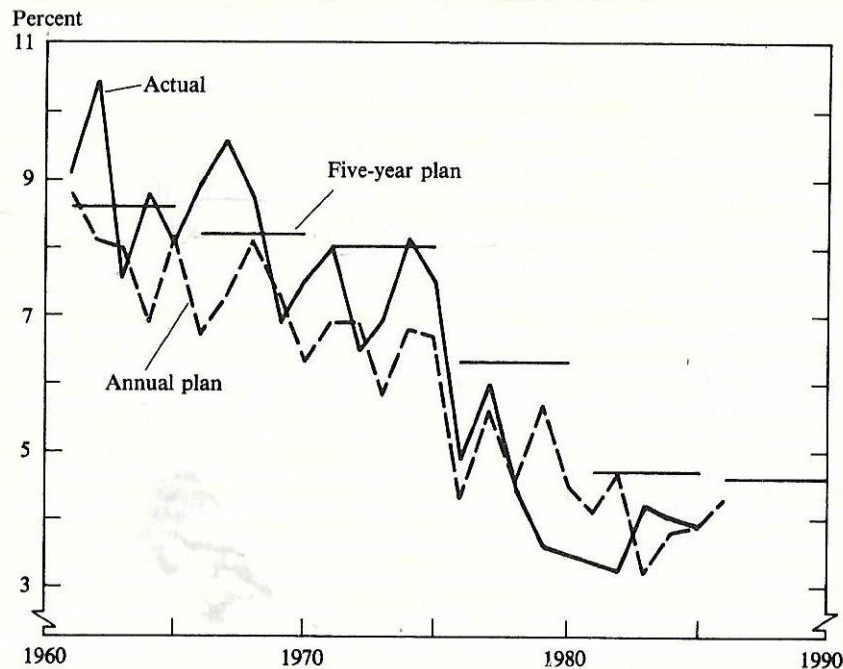
The plan for 1986–90 seeks to raise growth rates to an average of 4.1 percent, which is still well below the high rates of the early 1970s, but a significant reversal of the downward trend since then.

Industry. The data for planned and actual output in industry indicate even greater frustrations for planners, but also some very strange behavior (see figure 2-3). In the 1960s the SYP and the Eighth FYP targets for industrial output were fulfilled, even though the annual plan targets were always lower than the medium-term targets, and therefore were generally overfulfilled. Since then the five-year plan targets for the growth rate of industrial output have been too ambitious. The targets in the annual plans, on the other hand, have continued to be far more conservative in a way that suggests they are hardly connected to the five-year plan targets. Until the mid-1970s the annual plans were overfulfilled significantly in eleven of the fifteen years between 1961 and 1975. This may indeed mean that, for inexplicable reasons, planners tended to be very conservative in annual plans during this period. But it is equally likely that unplanned hidden inflation in actual performance figures is the culprit; therefore one should be careful not to read too much into the result.³³

In the period after 1978, planned (annual) and actual industrial output growth rates diverged in a way unprecedented in the previous two

33. Since hidden inflation is most likely focused on manufactured goods and since planners are unlikely to build hidden inflation into the output plans, one would expect actual output in general to grow faster than planned. I am grateful to Douglas Diamond for pointing this out to me.

Figure 2-3. Growth Rate of Industrial Output, 1961-90

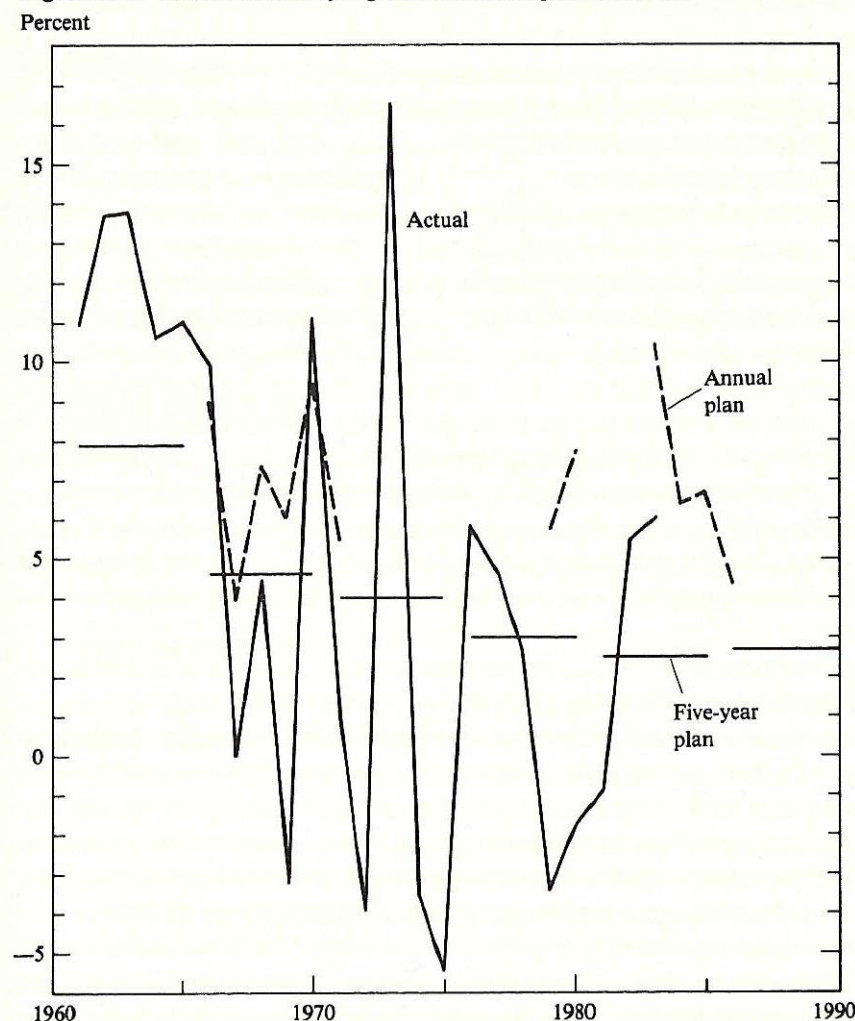


Source: See figure 2-2.

decades as planners resisted, but eventually acquiesced to, a precipitous decline in the growth of industrial production. Notice that if hidden inflation tends to push actual output above the plan, then something peculiar happened in the late 1970s and early 1980s. The most likely explanation would be unrealistic annual plans reflecting a reluctance to accept the precipitous decline in industrial output growth during that period. In 1986-90 planners hope to sustain the high growth of the last few years, but no more than that.

Agriculture. Figure 2-4 gives data on growth rates of agricultural output since 1961, which consist of a complete series on output, but an incomplete series on annual and five-year plans. Performance has been so erratic in agriculture that Soviet authorities have chosen not to commit themselves to a growth rate in many years, at least not in public. The scanty information available suggests that this is a sector over which planners have little control. Weather is surely an important variable here; in each of the years of negative growth poor weather conditions

Figure 2-4. Growth Rate of Agricultural Output, 1961-90



Source: See figure 2-2.

led to a sharp drop in harvests of grains. But the weak infrastructure in this sector and the incentives in the system itself provide weak defenses against the vagaries of weather.

CONCLUSIONS FROM THE OBSERVED INTERACTION BETWEEN PLANNED AND ACTUAL MACRO PERFORMANCE. Several implications emerge from these data on planned and actual macro performance. First, it is with great reluctance that planners have lowered plan targets and thus ratified the

growth rate decline of the last quarter century. The five-year plans have indicated a persistent hope that the decline could be at least attenuated, and the plans for 1986–90 announce that the decline is over.

In the interaction of five-year and annual plans with actual performance, the differences between the annual and five-year plans are clearest in the case of national income. The five-year plans contain a strong sense of hope; the annual plans are—with the exception of bad weather years—a decent predictor of annual growth, even when that prediction departs considerably from the five-year plan target for that period. In industry the relationship between the two plans themselves, and with actual performance, is more difficult to discern. This appears to be a sector in which planners' best efforts produce only modest predictive success. Agriculture has the characteristics of a lottery.

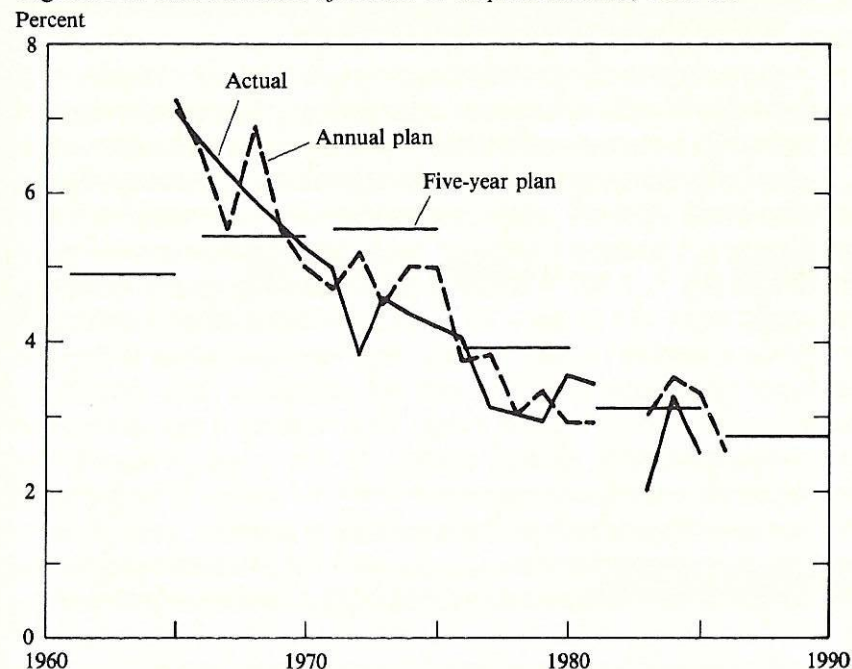
CONSEQUENCES OF THE GROWTH SLOWDOWN. With the slowdown in growth, Soviet leaders have had less room for maneuver in choosing among the competing demands of consumers, enterprises and ministries seeking investment resources, and government, most notably defense. The constraints on the first two categories of final demand can be analyzed by using official Soviet statistics; the constraints on defense spending are much more difficult to quantify.

Consumption. The impact of the growth slowdown on real per capita consumption is easy to see in figure 2-5, which presents official Soviet data on the growth of real per capita personal incomes and on annual and five-year plan targets for that measure. This is a measure of real incomes (including income in kind), not consumption, but it is the best one can do with Soviet statistics. As noted earlier, the CIA's estimate of real consumption shows slower growth, but otherwise a similar pattern of decline.

The story that figure 2-5 tells is striking, and unsettling for Soviet political leaders. First, the decline in the growth rate of real per capita incomes is rapid, and virtually unrelieved. During 1966–70 both annual plans and performance were above the five-year plan, but the growth of real per capita incomes fell steadily, from 7.1 percent in the beginning of the period to 5.3 percent at the end. The annual plans—with the odd exception of 1968—were somewhat more modest than actual performance, but still close, and above the five-year plan.

The five-year plans in the 1970s were unrealistic, and the annual plans implicitly recognized that by setting targets consistently below the five-

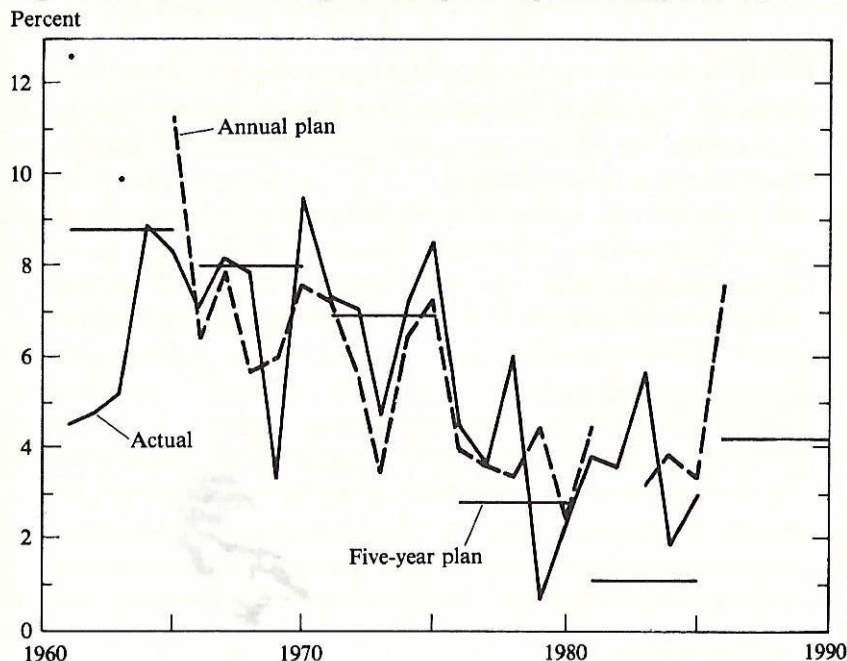
Figure 2-5. Growth Rate of Real Per Capita Income, 1961–90



Source: See figure 2-2.

year plan target. Actual performance has generally run below even the annual plan targets. As with national income, so with real per capita incomes—planners resisted the growth slowdown in 1974–75 (which was presumably a direct consequence of the slowdown in national income growth); then in 1976–80 they seem to have accepted it, setting plan targets below the five-year target and reasonably close to actual.

Investment. Figure 2-6 provides data on actual and planned growth rates of total investment. The five-year plan data are for total investment where that target is available, and otherwise for state investment only. Plan targets for total capital investment are only available for 1966–70, 1971–75, and 1986–90. Targets for state investment were used for the other years. Where both targets have been published simultaneously, they are generally close to each other. However, for 1986–90, where the target for total investment is set at 4.3 percent, the target for state investment is 2.9 percent. The difference implies a predicted burst in investments by private individuals and *kolkhozy*.

Figure 2-6. *Growth Rate of Total Capital Expenditures, 1961–90*

Source: See figure 2-2.

Although investment competes with consumption and defense in the use of national income, it is different because it is both output and input, simultaneously using national income and being put to use to sustain and expand productive capacity. The natural tendency for planners is to attempt to minimize the growth of investment required to attain national income growth targets. Because planners cannot know precisely how little investment will be sufficient to meet their goals, they must work by trial and error; in addition they must constantly choose between consumption now and investment (consumption later). Both of these factors were at work in the last several decades.

In figure 2-6, notice first that investment is much more volatile than consumption. Also, the five-year plan targets were fairly realistic until the second half of the 1970s, after which planners sought to significantly reduce investment growth, presumably to check the growth slowdown and to make room for consumption growth. The annual plan targets during the seven-year plan were pure fantasy, but after that during 1966–

75 they tracked fairly closely to actuals in a way that presaged the five-year investment cycles.

Like the other five-year plan targets in 1976–80, the investment targets were too ambitious, which in this case means they were too low if it is assumed that national income growth rate targets could be met with a lower investment growth rate than turned out to be feasible. At the same time, the annual plan targets were consistently set above the five-year target; this implies that the five-year target was regarded as unachievable from the beginning.

Nevertheless investment growth during 1976–80 was lower than in the previous five-year period, and planners, apparently deciding it could go even lower during 1981–85, set a target of 1.1 percent per annum. Yet the annual plans totally ignored that ambitious five-year plan, and actual investment grew at about the same pace as in 1976–80 (the average for 1976–80 was 3.3 percent for total investment; the average for 1981–85 was 3.5 percent). The plan for 1986–90 calls for a growth rate of 4.3 percent, approximately one percentage point above the average of actual growth over the preceding two five-year periods.

Priorities for investment versus consumption. One distinctive feature of the interaction between annual plan targets and actuals for NIUT, real per capita income, and investment is the reluctance of planners to give in quickly to downward trends, which thus led to unfulfilled targets. The interesting question, when national income grows more slowly than planned, is whether the practice is to protect investment or consumption. A casual glance at figures 2-5 and 2-6 suggests that investment is taking more than its share of the adjustments to below-plan growth in national income, and a simple econometric test corroborates that notion.

Table 2-4 reports the results of two equations that explore the correlation between deviations of NIUT growth from the annual plan target (NIUTPLFF, the independent variable in both, equal to actual NIUT growth minus planned NIUT growth, divided by planned) and deviations of actual and planned growth of, respectively, investment (TCEPLFF) and consumption (CTOTPLFF).³⁴ The numbers in the body

34. TCEPLFF and CTOTPLFF are calculated using formulas identical to that for NIUTPLFF. Soviet officials do not publish data on actual or planned growth of total consumption. I have estimated those variables here using the growth rate of planned and actual real per capita income summed, in each case, with the growth rate of the population. Thus, the estimated growth of total consumption (CTOTGR) equals the growth rate of real per capita income plus the growth rate of population.

Table 2-4. *Regressions Exploring the Implications for Consumption and Investment of Deviations of National Income Growth from Annual Plan Targets^a*

Independent variable	Dependent variable	
	TCELFF	CTOTPLFF
Constant	0.056 (0.744)	-0.011 (-0.489)
NIUTPLFF	0.642 (20.634)	0.121 (1.700)
\bar{R}^2	0.205	0.076
Standard error	0.352	0.103
Durbin-Watson	2.368	1.961
Time period	1961-84	1965-84

Source: Author's calculations.

a. The numbers in parentheses are *t*-statistics.

of the table are coefficients, the numbers in parentheses are the *t*-statistics.

The correlation between deviations from plan in NIUT and deviations from plan in consumption and investment is surprisingly weak given the fact that investment and consumption account for most of the national income utilized. Either the plans as constructed are not interconnected via national income identities (for example $C + I + G + X - M = GNP$), in which case a deviation from plan in national income does not necessarily require a compensating deviation from plan in one of the final demand categories; or the final demand categories not accounted for are taking the brunt of the adjustments.³⁵ The only statistically significant coefficient is for investment; this suggests that a deviation in NIUT plan fulfillment of 1 percent is accompanied by a 0.64 percent deviation in the investment plan in the same direction. The coefficient on the consumption equation is statistically insignificant at the 0.05 level, and one cannot reject the hypothesis that deviations in the NIUT plan have no perceptible effect on fulfillment of the consumption plan.

35. The main items excluded are inventories and government spending, the latter including the important category of defense spending. Remember, though, that both variables used here are only proxies for consumption and investment. The consumption figure is actually based on the growth rate of real incomes, including income in kind, and may not correspond to the figure for material consumption embodied in NIUT. The figure for investment is gross, while NIUT only includes investment net of depreciation.

Therefore investment appears to carry the burden of the adjustment. Note, however, that neither category takes the full adjustment of NIUT (which would be indicated by a coefficient of unity). It seems that when NIUT falls below plan, consumption is protected relative to investment. But the opposite also appears to operate: overfulfillment of the planned growth for NIUT benefits investment more than consumption.

Government expenditures. The "silent partner" in this analysis is government expenditures, most notably those for defense. There is little useful official information on total defense expenditures. The only published figure comes from the state budget and is ludicrously low.³⁶ Therefore any analysis of the important role defense plays in the Soviet economy must rely for its statistical information on Western estimates, the most well known being those of the Central Intelligence Agency.

According to the CIA, defense in recent years has accounted for 15-17 percent of Soviet GNP, estimated in dollars; in contrast, the U.S. share is currently about 7 percent of GNP.³⁷ That share cannot be translated directly into an estimate of the share of defense in NIUT; differences in relative prices and in the proportion of services in total defense may be great enough to produce a considerably different number in rubles when Soviet national income accounting concepts are used. Nevertheless, defense clearly accounts for a significant share of NIUT, and fluctuations in national income could well influence defense expenditures. To what extent such fluctuations could affect defense would

36. In 1981-84 the defense figure in the state budget was an unchanged 17.1 billion rubles, which amounted to 3 percent of 1984 NIUT (*Narkhoz 1984*, pp. 424, 573). During 1985-86 plans call for an increase to 19.063 billion rubles (annual plan documents for 1985 and 1986, *Pravda*, November 18, 1986). The universal assumption among Western observers is that this figure includes part, but far from all, of the defense budget, and therefore that it is of little use for analytical purposes.

37. "Gorbachev's Modernization Program: A Status Report," joint CIA-DIA paper submitted to the Subcommittee on National Security Economics, Joint Economic Committee, March 19, 1987, p. 15. The figure of 15-17 percent is somewhat controversial; others believe it is considerably higher. Some of the difference of opinion can be traced to different underlying numbers; in other cases, those who favor a higher number favor a definition for Soviet defense that includes expenditures excluded on the U.S. side (the space program and security forces, for example). I am comfortable with the CIA's estimate as the best possible estimate of a defense burden similar in concept to the figure of 7 percent often cited for the United States. For a discussion of the full range of issues, see Abraham S. Becker, *Sitting on Bayonets: The Soviet Defense Burden and the Slowdown of Soviet Defense Spending*, JRS-01 (Santa Monica, Calif.: Rand Corp., and University of California, Los Angeles, 1985).

clearly depend on the priority given to defense and the ability of planners to push that priority if economic performance deteriorates.

The estimates of the growth of Soviet defense expenditures suggest that in fact there was a break downward in 1976, simultaneous with the general downturn in growth. Before 1976, CIA-estimated defense expenditures were increasing at approximately 4 percent per annum, which was close to the growth rate of GNP; from 1976 into the early 1980s, that figure was closer to 2 percent by CIA estimates. According to these estimates, military procurement stagnated during 1976–82.³⁸ The causes of the slowdown in defense are not fully understood, but certainly one of the leading candidates is the troubled economy. Despite the high priority accorded to the military, the economic difficulties, particularly in sectors such as transportation and metallurgy, spilled over into defense. However, the fact that the slowdown stretched out over at least seven years suggests policymakers consciously decided to reduce defense expenditure growth, possibly because they wanted to make room for consumption growth as national income growth fell or because they felt the USSR was approaching military parity with the United States, or both.³⁹ Without trying to resolve this complicated issue here, it seems fair to conclude that defense probably shared in the adjustments planners made in response to the growth slowdown of the mid-1970s.

The widespread repercussions of the growth slowdown for all of the Soviet economy affect, in a fundamental way, the options open to Soviet planners. Their search for the causes of the slowdown, which is now being led by Mikhail Gorbachev, has been vigorous and constant. What Soviet leaders and Soviet economists have considered to be the causes

38. CIA does not publish information on underlying details behind these calculations, but the general principles and basic findings are publicly available. For an excellent summary of the CIA's estimates, which represented a revision of previous estimates for the second half of the 1970s, see Richard F. Kaufman, "Causes of the Slowdown in Soviet Defense," *Soviet Economy*, vol. 1 (January–March 1985), pp. 9–31, with comments by John Steinbruner (pp. 32–36) and David Holloway (pp. 37–41). After some initial controversy between DIA and CIA over the estimates showing a growth slowdown from 1976 into the early 1980s, DIA now is in substantial, although far from complete, agreement. See Joint Economic Committee, *Allocation of Resources in the Soviet Union and China*, pt. 10, pp. 127–29.

39. John Steinbruner makes the case for a conscious decision related to strategic, rather than economic, considerations in *Soviet Economy*, vol. 1 (January–March 1985). For a discussion of the various possible explanations, see the articles by Kaufman, Steinbruner, and Holloway in *ibid.*, and Joint Economic Committee, *Allocation of Resources*, pt. 10, pp. 52–53, 129–31.

of the slowdown and the remedies they have recommended to check it should be given close attention.

FACTORS BEHIND THE SLOWDOWN: SOVIET ANALYSES. Soviet economists tend to view growth rates in their country in terms of "extensive" and "intensive" patterns. Extensive growth occurs when inputs expand, whereas intensive growth occurs when increased factor productivity accounts for the bulk of national income growth. The working assumption of Soviet economic analysis today is that the Soviet Union has relied on extensive growth in the past, but that if the growth decline is now to be reversed, intensive factors will have to be emphasized.

The few Soviet economists who have made an effort to quantify the relative contribution of extensive and intensive factors have resorted to production function concepts familiar to Western economists, although they have used a different terminology and far inferior data sets.⁴⁰ Abel Aganbegian discusses this approach in an analysis of the sources of growth in the Soviet Union, an analysis made all the more interesting because of his apparent role as an economic adviser to General Secretary Gorbachev. Table 2-5 contains the basic concepts Aganbegian uses in his analysis, but relies on data taken directly from *Narkhoz* (which are very close to his) so that series can be constructed for periods both more recent and earlier than those in his table.⁴¹ All the data are average annual growth rates for five-year plan periods from 1961 to 1980 and for 1981–84.

The first two rows report growth rates for NIUT and NIPR. The next three rows report the growth rate of inputs: productive capital stock (in

40. The production functions divide the forces influencing growth into two groups: factor inputs and factor productivity. Factor inputs include land (shorthand for natural resource endowments), labor effort, and the services of real capital (machinery, buildings, inventories). All of a society's national income, including intermediate products such as steel, can eventually be traced back to inputs from these three sources. An increase in one or more of these inputs will—other things being equal (most notably factor productivities)—cause national income to rise.

The productivity of these factors, measured as output per unit of input, may rise because of technical changes that introduce a new production process requiring fewer inputs. Productivity may rise simply because resources are moved from less, to more, efficient uses (for example, from low-productivity agricultural work to higher-productivity factory work). They may rise because of major improvements in the economic system itself.

41. A. G. Aganbegian, "Vazhnye pozitivnye sdvigi v ekonomicheskoi zhizni strany" (Important positive changes in the economic life of the country), *EKO*, no. 6 (June 1984), pp. 3–16. Table 2-5 uses the concepts behind Aganbegian's tables 1 and 2, pp. 9, 11.

Table 2-5. *Output, Input, and Efficiency Indicators for the Entire Economy*

Average annual growth rate (percent)

Item	1961-65	1966-70	1971-75	1976-80	1981-84	Weights
National income utilized (NIUT)	6.0	7.1	5.1	3.9	3.2	...
National income produced (NIPR)	6.5	7.8	5.7	4.4	3.6	...
Total productive inputs	4.5	3.9	3.8	2.6	2.1	...
Employment (material sectors)	1.8	1.5	1.4	1.0	0.6	0.5
Capital (<i>Proizvod. osnov. fondy</i>)	9.3	8.3	8.7	7.4	6.6	0.2
Material inputs	5.7	5.1	4.6	1.9	1.6	0.3
Total factor productivity	1.5	3.2	1.3	1.3	1.1	...
Capital productivity (<i>Fondootdacha</i>)	-2.6	-0.5	-2.8	-2.8	-2.8	...
Labor productivity	4.6	6.2	4.2	3.4	3.0	...
Intensive/extensive (ratio)	25.0	45.0	25.0	33.0	34.0	...

Source: Tsentral'noe statisticheskoe upravlenie SSSR, *Narodnoe khoziaistvo SSSR: Statisticheskii ezhegodnik* (Moscow: "Finansy i statistika," various years).

"comparable" prices, gross of depreciation; inventories are excluded, as are buildings and equipment associated with the nonproductive, or nonmaterial, sectors); the rate of growth of employment in material sectors; and the rate of growth in the output of extractive industries (an imperfect proxy for material inputs because it does not adjust for the growth of export-output ratios in extractive industries).

Aganbegian aggregates the three inputs into one aggregate input, the results here shown in the row labeled "total productive inputs," using unspecified weights, which through experimentation I have estimated to be those indicated in the last column of the table. The difference between NIPR and productive inputs is what is generally referred to in Western economic literature as total factor productivity growth, namely that part of national income growth not accounted for by input growth.⁴² That row is also calculated in table 2-5, and it indicates that total factor productivity growth peaked in the second half of the 1960s, and then fell precipitously in the 1970s, hovering a little above 1 percent.

→ The growth of total factor productivity divided by NIUT growth

42. One of the puzzling aspects of Aganbegian's analysis, also found in the work of other Soviet economists using similar techniques, is his use of NIUT instead of NIPR. NIPR is what is actually produced with the factors; NIUT is only the part that is used and may include imports as well as losses. Possibly the rationale is that even though NIUT does include net imports, it still best approximates use values actually available to the population after losses and depreciation. Thus a decline in losses would increase NIUT and therefore show up quite rightly as an increase in factor productivity.

yields Aganbegian's measure of intensity. A ratio of 100 indicates that growth resulted entirely from intensive factors; a ratio of zero, that extensive factors were the sole source of growth.⁴³

The figures in table 2-5 support the conventional wisdom in the Soviet Union that extensive factors have dominated Soviet growth in the past. Aganbegian's measure of intensity never rises above one-half, and is generally closer to one-third. He suggests it should be the reverse: intensive factors should account for two-thirds of the growth of the economy, which, judging from the performance of Western economies, is rather optimistic.⁴⁴ Assuming that productive inputs can continue to sustain their growth at 2 percent per annum, total growth would then approach 6 percent, which is in the range of targets for the 1990s approved at the Twenty-seventh Party Congress.

The two rows of table 2-5 under total factor productivity show growth rates of NIPR relative to capital and labor, each of which are frequently discussed in Soviet economic analyses. According to these data, the productivity of capital has fallen at a fairly steady pace in the

43. Although he does not say so, Aganbegian is assuming that NIPR is linked to inputs via a Cobb-Douglas production function in which

$$(1) \quad NIUT = e^{rt} \cdot K^a \cdot L^b \cdot M^c,$$

where $a + b + c = 1$, K = capital stock, L = labor, and M = materials. Taking the logs of both sides of equation 1, and the first derivative, yields

$$(2) \quad niut = (ak + bl + cm) + r,$$

where $niut$, k , l , and m are the growth rates of NIUT, capital, labor, and materials. The coefficients " a , b , c " are Aganbegian's weights; the expression in brackets, his aggregate measure of productive inputs. In market economies conforming to a very stringent set of assumptions, these weights represent each factor's share in national income. In the real world, and in particular in the Soviet economy, it is best to think of these coefficients as no more than an estimate of the contribution of each factor to the growth of national income, in the form of an "elasticity" stating the percentage increase in NIUT that will result from a 1 percent increase in each of the productive factors. Given the growth rate of NIUT, the three weights, and the growth rate of each productive factor, r is a residual representing the change in total factor productivity. Aganbegian's measure of intensive growth is defined as $r/niut$.

44. Bosworth's data for the U.S. economy show "intensity" ratios of 0.5 during 1948-67, 0.36 for 1967-73, and -0.05 in 1973-80 (total factor productivity fell -0.1 percent per annum while output grew 2.1 percent per annum). But the data he quotes for other Western industrialized countries show total factor productivity accounting for two-fifths or more of total growth in most of those countries in the 1960s and 1970s. Barry P. Bosworth, *Tax Incentives and Economic Growth* (Brookings, 1984), tables 2-3 and 2-5 on pp. 26, 39.

last quarter century. Although disaggregated capital data are not available, other evidence indicates that capital productivities in extractive industries are plummeting, whereas those in manufacturing may be rising.⁴⁵ Labor productivity growth rates peaked during 1966–70 and have fallen since then. The fact that materials output has consistently grown more slowly than NIPR suggests that the “productivity” of materials has increased.

Table 2-5 points to four conclusions, which in some cases go beyond what Soviet economists have drawn from the data:

1. There was a burst in total factor productivity and in the individual factor productivities in 1966–70, immediately following the Kosygin reforms.

2. Total factor productivity growth dropped dramatically in the 1970s and fell off slightly more in the early 1980s.

3. The problem was compounded by a significant decline in total factor inputs during the second half of the 1970s, led by a sharp drop in the growth of material inputs.

4. Data on individual productivity factors suggest that labor productivity played a particularly important role in the productivity decline. Whereas capital productivities have fallen at a fairly steady pace (except during 1966–70), labor productivities fell dramatically during 1971–75, relative to the previous five-year period, and then fell again in 1976–80, and yet again during the first half of the 1980s.

FACTORS BEHIND THE SLOWDOWN: WESTERN ANALYSES. Although these data and the interpretation of them reported above reflect a broad consensus among Soviet economists, there are several good reasons to look more carefully at the factors behind the growth slowdown in the Soviet Union. While the data that underlie estimated production functions for any country are typically less than ideal for the purposes to which they are put, Soviet data are fraught with all those difficulties and more. The output data in table 2-5 are suspect since they are probably upwardly biased. The data on the labor input are for total employment, not hours worked. The capital stock data are undepreciated, which

45. For example, if constant price investments are taken as a proxy (admittedly a loose approximation) of increments to capital, the data suggest a dramatic shift in efficiencies. During 1971–75 investment grew at 92 percent the rate of output growth in industry as a whole; 81 percent in the MBMW sector; but 131 percent in fuels. During 1976–84 investment grew at 88 percent the rate of output in industry as a whole; 45 percent in the MBMW sector; and 333 percent the rate of output growth in fuels.

means that no account is taken of the deteriorating capabilities of older equipment in the capital stock; the utilization of capital is not taken into account, so that idle machines are counted as being in use; and the capital stock may also embody hidden inflation that overstates the growth of capital over time. All of these problems are compounded for the late 1970s and early 1980s, when hidden inflation may have grown worse, work stoppages may have increased (owing to bottlenecks), and therefore capital utilization rates may have fallen.

In addition, objections might be raised concerning the form of the production function assumed to underlie the link between inputs and outputs. The Cobb-Douglas production function assumes a particular relationship between capital and labor, the practical consequence of which is the constant weights Aganbegian uses to aggregate factor inputs over time.⁴⁶ A more general form of the production function, which attempts to draw information on how easily capital substitutes for labor directly from the data, allows for the possibility that the weights on factor inputs change over time, and thus implies that the weight of capital may fall over time. Since capital is the fastest growing input in the Soviet Union, a decline in the weight placed on its growth and a concomitant increase in the weight placed on much-slower-growing labor input would produce a lower rate of growth for total inputs. That in turn would lead to a higher estimate for total factor productivity growth; indeed, it could lead to a conclusion that total factor productivity growth has not fallen at all.

Western researchers have devoted considerable attention to the behavior of factor productivities in the Soviet economy, in the process correcting for some of the weaknesses noted above. But the results are mixed, and some important weaknesses in Soviet data cannot be rectified. As a result, the precise causes of the growth slowdown remain unclear.

Data issues. To address the data issues first, table 2-6 utilizes the Cobb-Douglas specification Aganbegian used, but CIA data on GNP and man-hours, instead of employment.⁴⁷ The capital stock data are official

46. The assumption is that as capital is substituted for (grows more rapidly than) labor, that capital's productivity will fall relative to labor's productivity at precisely the rate that maintains capital's and labor's respective shares in national income. In well-functioning market economies, those factor shares are the weights in the Cobb-Douglas production function.

47. CIA, *Handbook of Economic Statistics*, 1985, p. 68. The input and output data

Table 2-6. *Total Factor Productivity Calculations Using CIA Data*
Average annual growth rate (percent)

Item	1961-65	1966-70	1971-75	1976-80	1981-84	Weights
GNP	5.0	5.3	3.7	2.6	2.7	...
Total productive inputs	4.5	4.1	4.2	3.5	3.0	...
Man-hours	1.6	2.0	1.7	1.1	0.8	0.56
Capital	8.8	7.4	8.0	6.9	6.3	0.41
Land	0.6	-0.3	0.8	-0.1	-0.2	0.03
Total factor productivity	0.5	1.2	-0.5	-0.9	-0.3	...
Man-hours	3.4	3.2	2.0	1.5	1.9	...
Capital	-3.5	-2.0	-4.0	-4.0	-3.4	...
Land	4.4	5.6	2.9	2.7	2.8	...
Intensive/extensive	0.10	0.23	-0.14	-0.35	-0.11	...

Source: CIA, *Handbook of Economic Statistics, 1985: A Reference Aid*, CPAS 85-10001 (Directorate of Intelligence, September 1985), p. 68, which uses 1970 prices.

Soviet statistics; no adjustment has been made for capital utilization. The format is slightly different from Aganbegian's ("land" instead of "materials" is the third input), and the output and input data are not solely for material production, but for all value-added. Still, the comparison seems sufficiently close to judge roughly the impact of accepting the CIA's data as an adjustment for hidden inflation on the output side and of accepting the CIA estimate of man-hours to adjust for the bias of relying on total employment data.

The story in table 2-6 differs somewhat from that of table 2-5, but is also similar in several important respects. The burst in productivity growth during 1966-70 is still there, as is the decline in 1971-75 and beyond. The drop in input growth in the mid-1970s is still there. Finally, labor and capital productivities behave almost the same in the two tables, although the absolute numbers are different, as is to be expected.

The shape of the production function. The other question raised earlier is whether the Cobb-Douglas specification is the right one, or whether another specification that allows the growth weights to vary is superior. The economic issue here is, how easy is it to substitute capital for labor over time? If it is very difficult to do so, then when capital grows more rapidly than labor (in effect a "substitution" of capital for labor), capital productivities rapidly decline and consequently are blamed for any growth slowdown not attributable to a decline in factor inputs.

for the quinquennial from 1961-65 through 1976-80 are taken directly from table 41 on p. 68, while the data for 1981-84 are calculated from the annual data given for each of those years. The total factor productivity residual is calculated directly, and differs slightly from that reported in the *Handbook* (presumably because of rounding).

If, however, capital is relatively easy to substitute for labor, then the blame falls on whatever is affecting total factor productivity. The logical suspect in that case is the system itself, in view of its inability to handle the growing complexity of the economy. If, on the other hand, the explanation is the increasing difficulty of substituting capital for labor, then more technical or nonsystemic factors may be at work rather than factors specific to the Soviet system.

Numerous Western analysts have explored this issue, but the results have been inconclusive. With statistics like those in table 2-6, it is virtually impossible to choose between a Cobb-Douglas production function that presupposes constant weights and a more general constant elasticity of substitution (CES) production function (of which the Cobb-Douglas is a special case) that allows for the possibility that capital-labor substitution causes the weight of capital to fall and that of labor to rise. If the estimates associated with the more general CES function are accepted, then total factor productivity in the Soviet Union has not declined in the postwar period, and the growth slowdown reflects the combined effects of a falling growth rate for inputs and increasing difficulty in substituting capital for labor. If estimates associated with the more restrictive Cobb-Douglas are accepted, then the growth rate decline reflects the decline in total inputs, and some general factors leading to a decline in total factor productivity, but not increasing difficulties in substituting capital for labor.⁴⁸

48. Martin L. Weitzman, "Industrial Production," in Abram Bergson and Herbert S. Levine, eds., *The Soviet Economy: Toward the Year 2000* (London: George Allen and Unwin, 1983), pp. 178-90, discusses the difficulty of distinguishing between the two types of production functions, using data only for industry. Despite Weitzman's convincing argument that it is, statistically speaking, too close a call to distinguish between the CES production function and its more restrictive Cobb-Douglas version, there are analysts on each side of the issue who are sure they are right.

Robert Whitesell has argued—using data just for Soviet industry—that the evidence tilts in favor of a CES production function with an elasticity of substitution of about one-half (indicating far more difficulty in substituting capital for labor than the unitary elasticity of the Cobb-Douglas function), implying a constant rate of growth of total factor productivity of 2.6 percent over 1950-80. However, he agrees with Weitzman that statistically it is a close call between this CES function and a Cobb-Douglas function. Robert S. Whitesell, "The Influence of Central Planning on the Economic Slowdown in the Soviet Union and Eastern Europe: A Comparative Production Function Analysis," *Economica*, vol. 52 (May 1985), pp. 235-44.

Padma Desai explores a number of specifications for all of Soviet industry, and for ten subbranches, and concludes that the Cobb-Douglas function fits best, implying a falling growth rate for total factor productivity from about 1 percent during 1961-65 to

Remaining weaknesses in the data. In general Western studies have relied on CIA estimates of value-added in industry (although many also use the official Soviet series on industrial output), some estimate of man-hours, and the official Soviet series on capital stock. It is probably the weaknesses in these data, not further experiments with various statistical techniques, that can provide some insight into the Soviet growth slowdown. The hours-worked series for the labor input is actually an hours-paid figure, derived by multiplying the average legal workweek by the number of weeks in the year. That is very similar to data used to estimate production functions in Western countries, which use hours worked without allowance for downtime due to strikes, work stoppages, and the like. But in the Soviet case, the anecdotal evidence suggests significant downtime due to broken machinery, inadequate labor force, or unavailable inputs to such an extent that the official labor-hours series is of dubious value. More important, it is probably the case that work stoppages increased in the second half of the 1970s and that actual hours worked did not rise as much as the official data (or the CIA estimates) would indicate. That means labor productivity growth rates may not have fallen as far as the data suggest.⁴⁹

about -1 percent during 1976-80 (according to data similar to that in table 2-6). Padma Desai, "Total Factor Productivity in Postwar Soviet Industry and Its Branches," *Journal of Comparative Economics*, vol. 9 (March 1985), pp. 1-23. Abram Bergson has reviewed the various estimates and concludes that a Cobb-Douglas function would seem to make much more sense economically. Abram Bergson, "Notes on the Production Function in Soviet Postwar Industrial Growth," *Journal of Comparative Economics*, vol. 3 (June 1979), pp. 116-26; and Bergson, "Technological Progress," in Bergson and Levine, eds., *The Soviet Economy*, pp. 34-78.

49. It is easy to show that interruptions in production due to the lack of inputs, or of labor, are an important influence on economic activity in the Soviet Union, but it is somewhat more speculative to suggest that they have grown more important in the past decade. To give some flavor of the anecdotal evidence, note, for example, a statement by one Soviet economist that a survey of a number of enterprises and construction projects suggests that production interruptions take up 10 percent of the labor force's time. E. Rusanov, "Proizvoditel'nost truda i zarplata" (The productivity of labor and wages), *Sotsialisticheskaiia industriia*, January 24, 1985. Another study analyzed more than forty factors contributing to variations in labor productivity among enterprises in one of the Soviet Union's major construction ministries. One of the most important factors identified was worker absence, including absences authorized by the factory. V. Balan, "Pofaktornyi analiz proizvoditel'nosti truda" (A factor analysis of labor productivity), *Ekonom. gaz.*, no. 12 (March 1985).

The evidence supporting lower labor utilization rates in the last decade is circumstantial. As output growth rates fell in the second half of the 1970s and energy and transport shortages grew worse, it is likely that the incidence and length of work

The problems with capital stock are even worse. First, the data are gross, not net. Most production function estimates for Western countries can at least utilize an estimated net capital stock series to avoid that problem. The particular difficulty with Soviet data is that—again, according to anecdotal information—Soviet enterprises keep old equipment on the books far beyond the end of its useful life. Thus the gross capital stock series may be even more misleading in the Soviet case than they would be for a Western country.

Varying rates of capital utilization suggest a related concern. The proper capital input into a production function is capital services, not capital stock, gross or net.⁵⁰ If the ratio of capital services varies relative to capital, then estimates of total factor productivity using a production function with capital as an input may misstate the growth of total factor productivity. For the Soviet case, if the anecdotal evidence is to be believed, a significant, and possibly growing, portion of the capital stock stands idle, primarily because of problems in manning the new machines. If this is true, then the capital services-capital ratio may have fallen over time, and using capital as a proxy for capital services in the production functions has overstated both the growth of the capital input and the decline in the productivity of the capital.⁵¹

This is not to suggest that the considerable research Western economists have done on Soviet productivity should be treated lightly, but that caution should be exercised in reaching conclusions on the growth

stoppages grew, and hence that both capital and labor utilization rates grew. In an economy with a policy of full employment, output variations will fall almost totally on labor productivity since there will be virtually no layoffs for pure cyclical reasons. Thus a secular decline in output growth rates will automatically appear as a decline in labor productivity growth, even though in fact some of the decline is accounted for by decreased utilization of the labor force.

50. For an explicit treatment of the capital services-capital stock ratio for the U.S. economy, see Martin Neil Bailly, "The Productivity Growth Slowdown and Capital Accumulation," *American Economic Review*, vol. 71 (May 1981), pp. 326-31; and Bosworth, *Tax Incentives*, pp. 35-37.

51. For example, V. V. Kazarezov, first secretary of the Novosibirsk Gorkom, notes that a growing labor shortage in the 1970s and 1980s has led to a reduction in capital utilization. He found in Novosibirsk that between 1972 and 1982 the number of machines rose 19.5 percent, whereas the number of machine operators fell 6.9 percent. As a result, the number of undermanned machines rose and stands now at 15 percent. Similarly, Gertrude E. Schroeder, "The Slowdown in Soviet Industry, 1976-1982," *Soviet Economy*, vol. 1 (January-March 1985), p. 52, quotes from a Soviet source that estimates capacity utilization increased in Soviet industry during the first half of the 1970s to somewhere in excess of 90 percent, but it fell during the remainder of the decade.

slowdown. It would appear that Westerners have a somewhat more reliable notion of the behavior of national income than of the dynamics of the inputs, particularly the dynamics of capital inputs. Until, and if, better input data can be constructed, it is unlikely that production function analysis will yield more than the ambiguous results obtained to date.

Even if the data problems were to be resolved, it is well to remember that analyses of the slowdown of total factor productivity growth rates in Western countries, which work with data generally superior to what is likely to ever be available for the USSR, usually can explain no more than half of that slowdown.⁵² There is no reason to expect that Western or Soviet economists will be able, under the best of conditions, to better that record in their efforts to explain the productivity slowdown in the Soviet Union.

Persistent Problems in the Quality of Goods and Services

Soviet leaders have become concerned not only about the downward trend in growth rates, but also about the chronic and widespread problems with the quality of goods and services, which in some areas (particularly consumer goods) appear to be growing worse. Quality problems appear to be so severe that consumers are refusing to buy some goods, even though in general there is an excess demand for consumer goods. As a result, retail inventories seem to be growing much more rapidly than the supplies of consumer goods;⁵³ and dissatisfied customers are sending a constant stream of letters to the Soviet press complaining about the quality of manufactured goods. Moreover, enterprises in Western countries are reluctant to buy Soviet manufactures in any significant quantities.

These problems led Iurii Andropov to ask: "Can we really be satisfied, with the fact that . . . good-quality raw materials and other inputs are utilized to produce goods which will not find a market, which will lie in stocks, and later require markdowns?"⁵⁴ Obviously not. As

52. Bosworth, *Tax Incentives*, p. 30.

53. During 1971–80 retail sales grew at a rate of 5.4 percent per annum; total inventories grew at a rate of 3.9 percent. During 1981–84, retail sales growth fell to 2.8 percent per annum, while inventory growth averaged 8.7 percent per annum. *Narkhoz* 1984, pp. 473, 488.

54. "Tekst vystupleniia General'nogo sekretaria TsK KPSS tovarishcha Iu. V. Andropova" (Text of the address of the general secretary of the Central Committee of the CPSU, Comrade Iu. V. Andropov), *Kommunist*, no. 1 (January 1984), p. 9.

Nikolai Ryzhkov noted in his speech to the Twenty-seventh Party Congress, "This is not just an economic problem but also a political problem. . . . The economy is at such a point that without a dramatic improvement in the quality dimension we cannot resolve a single one of our major productive and social tasks."⁵⁵

The "quality problem" in the Soviet Union has three dimensions. The economy produces an abundance of low-quality goods that consumers (private and enterprise) must nevertheless accept because in many cases no alternatives are available. Second, many goods, whatever their quality, are one or more "generations" behind the latest versions available in large quantities elsewhere in the developing world. Third, the services available to consumers and enterprises are generally of low quality. Each of these factors has consequences for the economy and, as Nikolai Ryzhkov noted, an increasing resonance within the population.

A discussion of these factors should begin, however, with a word of caution about making generalizations. The problem here is not that all Soviet-produced goods are of poor quality or that all the services embody outdated technology. Soviet defense industries and even enterprises in the civilian sector have invented and developed technologies and products competitive with the best available in the world.⁵⁶ Rather, the problem is that these products tend to be the exception, not the rule. Many are prototypes, not yet in serial production.⁵⁷ Others are produced in small quantities, which are saved for special stores accessible only to the elite and to foreign tourists.

55. "Ob osnovnykh napravleniakh ekonomicheskogo i sotsial'nogo razvitiia SSSR na 1986–90 gody i na period do 2000 goda. Doklad Predsedatelia Soveta Ministrov SSSR tovarishcha Ryzhkova N.I. 3 Marta 1986 goda" (On the basic guidelines for the economic and social development of the USSR for 1986–1990 and the period through the year 2000. Report by the chairman of the Council of Ministers Comrade N.I. Ryzhkov, March 3, 1986), *Pravda*, March 4, 1986.

56. John W. Kiser III, "Tapping Eastern Bloc Technology," *Harvard Business Review*, vol. 60 (March–April 1982), pp. 85–94.

57. The general director of the ZIL Auto Factory registers a typical complaint when he tells of visiting an industrial exhibit: "The entire scientific-technical revolution stands there in prototypes. . . . Are they good? Sure. And can you take delivery of 100 units? It would seem not; those are prototypes. Who produces them? No one knows." "Zil: vozmozhnosti, zaboty, sversheniia. Beseda korrespondenta EKO s general'nym direktorom proizvodstvennogo ob'edineniia ZIL E.A. Brakovym" (Zil: possibilities, concerns, accomplishments. A conversation by EKO's correspondent with E. A. Brakov, the general director of the ZIL production association), *EKO*, no. 10 (October 1986), p. 10.

Products in the same category that are much more readily available are of lower quality or embody technologies considered obsolete in the West. For example, Soviet enterprises find it difficult to obtain the few fourth- and fifth-generation computers now produced in the Soviet Union, but far less difficult to obtain second- and third-generation machines that are still produced today, even though they embody twenty-year-old technology and are generally no longer produced in the West.

This coexistence of the many obsolete products with a few embodying the latest technologies, of many low-quality products with a few high-quality products, considerably complicates any attempt to generalize about the problem of quality in the Soviet Union. In fact the problem is not one of quality in an absolute sense. The real problem is one of the *mix* of goods available. There are too many low-quality or obsolete goods and an insufficient supply of high-quality or up-to-date goods.

LOW QUALITY AND OBSOLESCENCE. The general impression in the West, and apparently among Soviet leaders, that Soviet manufactured goods are generally of low quality seems to touch on two dimensions of the quality problem. Many Soviet-manufactured goods are clearly unreliable and incapable of operating at designed capacity. At the same time, some goods are reliable enough, but embody obsolete technologies. On the one hand, the Soviet-produced Zhiguli, a car with rear-wheel drive, has a 1960s-technology engine and drive train, but it provides adequate transportation for the users; on the other hand, it lags far behind what can be obtained in any developed Western country. The Soviet turbines and compressors installed in gas pipelines work well enough, but the technology embodied in their design and the quality of materials are such that the equipment is far more expensive to operate and maintain than its Western counterparts.

Although it is natural to intermingle quality considerations with the issue of obsolescence, the two should be kept separate for purposes of analysis. To the extent that the problem with Soviet products is not quality, but obsolescence, Soviet enterprises appear to be capable of producing high-quality products faithful to the original designs, but do not seem motivated to search for, develop, and introduce new designs. If this is the crux of the problem, then the solution would focus on design bureaus and the innovative behavior of Soviet enterprises. To the extent that the problem is low quality because of carelessness in the production process, the solution would focus much more on the productive process within the enterprise.

Without trying to come up with an all-encompassing definition of what constitutes a low-quality product, one can identify several characteristics that would clearly fit into any definition. Unreliable products in need of frequent repair are of low quality. Products that easily break and that cannot be repaired also belong in this category. Finally, products that cannot perform up to purportedly designed capacities seem to be candidates for low-quality status.

Anecdotal evidence suggests that many such products are produced and sold in the Soviet economy, and that in the consumer goods sector in particular they are a quite widespread and persistent phenomenon. The problem is serious enough now for the leadership to talk openly about it. In his December 1983 speech to the Central Committee Plenum, Iurii Andropov lamented that the quality of many consumer goods—including TVs, radios, cameras, and watches—was so low that they simply could not be sold and instead sat in warehouses.⁵⁸ Even when consumers do purchase products, it may be owing not to satisfactory quality, but to the lack of other options. One survey of the Soviet ready-to-wear industry indicated that one-sixth to one-third of the knitted outerwear, clothing, and footwear purchased by the population were the subject of quality complaints.⁵⁹

Countless anecdotes in the press embellish this story, but of course they cannot establish the relative importance of such products in the system. There are no aggregate data available, nor is it clear how one would design aggregate statistics that would test for the proposition that the USSR produces a large proportion of low-quality products. At best, all one can say is that the general impression of outsiders, and of the Soviet population, is that the quality of consumer goods is low, and that the quality of manufactured goods traded among enterprises in the civilian sectors is similarly low.

If one defines obsolete products as those still under production in the Soviet Union but superseded by a new technological generation in the West, then the examples of such products in the USSR are legion. The

58. Andropov listed 500,000 TVs, which were in stock because consumers would not buy them; 115,000 radios; 250,000 cameras; 1.5 million watches, and 160,000 refrigerators. On the basis of the reported production of these goods in 1983, these figures accounted for 1.2 to 8.4 percent of annual output of these various commodities. The Andropov figures are from "Tekst vystupleniia General'nogo sekretaria," p. 9. The ratios to output were calculated by the author using 1983 plan fulfillment figures.

59. O. Latsis, "Kak shagaet uskorenie?" (How goes the acceleration?), *Kommunist*, no. 4 (March 1987), p. 58.

Soviet Union is still producing computers embodying 1960s technologies whereas their counterparts in the West are either no longer produced or in general use.⁶⁰ Soviet communications satellites, although generally reliable, are designed with far fewer capabilities than their Western counterparts.⁶¹ Many Soviet products have not made the transition from vacuum tube to transistor technology, let alone the transition to micro-processors.

These and countless other cases illustrate the point that the Soviet economy produces many goods of decent, if not high, quality that would, however, be difficult to market in the West at any but a very low price because they are obsolete. From the point of view of the Soviet economy, they are serviceable, albeit probably more expensive than their Western counterparts.

To go beyond these anecdotes is difficult; yet not to go further than they allow is frustrating. The extent of our ignorance here can be demonstrated by means of a two-dimensional graph. Along the horizontal axis is a measure of quality: zero is average quality; to the right of zero, above average; to the left of zero, below average. The vertical axis measures obsolescence; zero might represent products using technologies primarily introduced in quantity in at least one country in the early 1980s; above zero is for newer technologies; below zero for older technologies. It would be extraordinarily difficult to develop empirical versions of either of these measures, but as conceptual devices they are useful. Products in the northeast quadrant embody the latest technologies and are of high quality. Those in the southwest quadrant embody relatively old technologies and are of low quality. The northwest quadrant includes advanced, but low-quality products; the southeast quadrant, older, but high-quality products.

Now if it were possible to grade every product in the leading industrialized countries according to quality and obsolescence and to record them as a dot on the graph, presumably they would cluster in the northeast quadrant, although there would be products in all quadrants. Examples of advanced, but low-quality, products (the northwest quad-

60. See, for example, S. E. Goodman and W. K. McHenry, "Computing in the USSR: Recent Progress and Policies," *Soviet Economy*, vol. 2 (October–December 1986), pp. 327–54; and Richard W. Judy, "Computing in the USSR: A Comment," *ibid.*, pp. 355–67.

61. Robert W. Campbell, "Satellite Communications in the USSR," *Soviet Economy*, vol. 1 (October–December 1985), pp. 313–39.

rant) can be found in all industrialized societies; indeed, products embodying frontier technologies frequently suffer from quality problems. Examples of obsolete, but high-quality products are also easy to find, either because of lags in various firms' reactions to recent developments, or because the obsolete products still can find a productive use in society.⁶²

If a similar grading exercise was applied to Soviet products, the preponderance would fall in the southwest and southeast quadrants. Where the two quadrants divide is what anecdotes cannot tell. My admittedly subjective guess is that Soviet products probably cluster around the vertical axis, being of average quality by world standards. To be sure, many are well into the southwest quadrant, and some well into the southeast quadrant. In addition, there is apparently a separate cluster of primarily military hardware of higher quality than the bulk of goods produced, but still of varying degrees of obsolescence (thus it straddles the horizontal line between the northeast and southeast quadrants).

It will probably never be possible to improve on this admittedly fuzzy understanding of the situation. The measurement problems are too difficult, and in any event the Soviet Central Statistical Administration seems uninclined to take them on. It is important, nevertheless, to constantly keep in mind that these two dimensions of the quality problem are separable and have different implications for the potential solutions.

THE QUALITY OF SERVICES. The third dimension of the quality problem is the quality of services, which can be divided into two parts: the quality of services available to consumers and the quality of services available to enterprises. Both show gross deficiencies with implications for the operation of the economy.

In Marxist ideology, and in its current interpretation in the Soviet Union, services are not "productive" unless they directly contribute to the production of material goods. If a train in the USSR is carrying freight from one enterprise to another, the service is considered productive and is counted in the national income accounts; if it is carrying passengers, the service is nonproductive and is not counted as part of national income. This attitude also accounts for the general neglect of services, which has been responsible for the low quantity of services available to the population as a whole.

62. The microwave oven is an advance over the traditional stove, but has not replaced it for the perfectly good reason that the stove does some things better.

However, quantity and quality are more difficult to separate for services than they are for manufactured goods. The USSR averages 170 square meters of floor space for retail trade per 1,000 members of the population, whereas the other socialist countries average approximately two times that amount of space, and Western countries average more than four times as much.⁶³ Employees in the retail trade sector in the USSR are well under half the number serving the smaller U.S. population.⁶⁴ Repair services are extremely scarce throughout the Soviet Union, both for consumers and for enterprises, a problem compounded by the general shortage of spare parts. Taxicabs are frequently difficult to locate, and buses are frequently jammed beyond the rated capacities. These and other examples indicate that a significant component of the service aspect of the quality problem in the Soviet Union is simply a shortage of services in demand. Again, the only evidence is anecdotal, but it is also quite convincing in its magnitude.

In addition, there are obvious quality problems in those services. In most Soviet shops it still takes three stops to make a purchase: one to make the selection and get the price; a second to pay for the product; and a third to pick up the wrapped package in return for the proof of payment. Medical services are generally regarded as being of low, or at least variable, quality. Housing services are scarce throughout the Soviet Union, and the quality of Soviet housing construction is poor. Both have been the case for most of Soviet economic history, and this has led Soviet leaders in recent years to talk of a housing "problem" that must be resolved.⁶⁵

The overall quality of services is probably worse in the countryside than in large cities, and probably worse in Siberia than in the European

63. Interview with Deputy Minister of Trade S. E. Sarukhanov, "Chto poluchit pokupatel'?" (What does the buyer receive?), *Izvestiia*, January 1, 1987.

64. In 1984 employees in all aspects of trade in the USSR numbered 7.7 million. *Narkhoz 1984*, p. 411. In 1983 the United States employed almost three times as many people—22.5 million—in retail trade alone to provide goods and services to a population 85 percent the size of the Soviet population. U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, 1985, p. 405.

65. See, for example, "Politicheskii doklad tsentral'nogo komiteta KPSS XXVII S"ezdu Kommunisticheskoi partii Sovetskogo Soiuza. Doklad General'nogo sekretaria TsK KPSS tovarishcha M. S. Gorbacheva 25 Febralia 1986 goda" (The political report to the Central Committee of the CPSU at the 27th Congress of the Communist Party of the Soviet Union. The report of General Secretary M. S. Gorbachev, 25 February 1986), *Materialy XXVII S"ezda kommunisticheskoi partii Sovetskogo Soiuza* (Moscow: Politizdat, 1986), pp. 3–97.

USSR. There is very little information to confirm that generalization, but it is probably one that most Soviet citizens would not consider to be amiss. There is a good deal of information about Siberia, where the construction of social infrastructure, and the supply of services resulting from that, lag far behind the development of the productive sector itself. The problem there is so serious that it has apparently dampened the enthusiasm of new workers for living in the area and has therefore led to an explicit effort by Gorbachev to improve services.

The impact of low-quality services on consumer welfare is of course, difficult to measure, but nevertheless is surely there. It also must affect industrial performance. Difficulty in purchasing repair services and spare parts causes many enterprises to expend their own resources on those activities, or, in some cases, the services are not performed. One visible example of such a problem is the evidence that a failure to repair oil wells in due time contributed significantly to the 1984–85 decline in oil output. This is but the most visible of a large number of instances in which the shortage of repair services and spare parts has materially affected economic performance in the Soviet Union.

ECONOMIC AND POLITICAL CONSEQUENCES OF THE QUALITY PROBLEM. Soviet leaders are increasingly concerned with both the political and economic implications of the quality problem. Less clear is just how serious the implications are, or how improvements in the qualitative side of economic performance would affect political sentiments about the economy, or the performance of the system.

It would appear that the population's considerable patience with the chronic low quality of Soviet goods and services is eroding. In large measure, this is simply an indicator of the success of the system in raising living standards. In 1960 almost one out of every two Soviet families owned a radio, about one out of ten a TV, one out of three a sewing machine, and one out of twenty-five a refrigerator. In 1984 there was one radio and one TV for every Soviet family, two sewing machines for every three, and one refrigerator for every family.⁶⁶ These few figures illustrate the important general point that Soviet consumers are now much closer than they were a quarter century ago to having their basic needs satisfied with regard to food, clothing, shelter, and some basic comforts. Of increasing importance to them is not the fact that a refrigerator, or stereo phonograph, or TV, or shoes are for sale, but

66. Figures are from TsSU SSSR, *Narodnoe khoziaistvo SSSR, 1922–1972 gg.* (Moscow: Statistika, 1972), p. 373; and *Narkhoz 1984*, p. 461.

whether the quality of those products is higher than what they have. It is precisely here that Soviet industry's weakness grows increasingly apparent and important to popular perceptions of the contribution of the economy to consumer welfare. The Soviet leadership must, if only for political reasons, show a concern about the problem and have an approach for dealing with it—hence, the statements of concern at the Twenty-seventh Party Congress, and hence, also, the consumer goods program.

However, the concern about the consequences of chronic problems in the quality of consumer goods is not limited to the political side of the equation. Of equal, if not greater, significance is the leadership's conviction that the low quality of Soviet goods and services now constitutes a significant brake on the growth of labor productivity. The elaborate incentive schemes under constant debate in the USSR, particularly the recently proposed schemes designed to closely link wages to individual worker productivity, will mean very little if the rubles earned cannot be used to buy higher-quality goods and services. Soviet leaders understand this, and in later chapters I discuss how they propose to deal with it.

The other important economic consequence of the quality problem pertains to industry itself. The low quality of many manufactured goods affects the reliability of industries, forces enterprises to devote large resources to repair and maintenance, and reduces labor productivity. The obsolete character of many industrial products implies labor productivity considerably below what it could be if more advanced, labor-saving, technologies were used. In the Soviet case this seems to be a particularly important consideration in materials handling, loading, and unloading, where the USSR lags far behind the industrialized West. The low quality of services has similar effects.

There is no way to quantify these effects. But a measure of the importance the leadership attaches to them is the fact that Gorbachev has made a modernization program the centerpiece of his plans for the remainder of this century. Clearly Gorbachev understands that all of his goals ride on his resolution of the quality problem in industry.

Imbalances in the System

Supply-demand imbalances in the system constitute the third problem to attract high-level, and sustained, concern in the Soviet Union. The

imbalances per se are not a weakness of the system; all countries at all times experience imbalances in the supply of and demand for some products. What is special about the Soviet case is the *persistence* of the imbalances. Either there are no feedback mechanisms to inform the system of the need to respond to an existing supply-demand imbalance, or the feedback is ignored. Whatever the case, the result is that the Soviet economy, unlike economies that rely more heavily on markets, may tolerate some supply-demand imbalances for decades. This may occur in a wide range of products and even sectors.

The primary concern here is an excess demand for consumer goods as a whole, meaning that in general disposable income exceeds the supply of goods available for purchase. This is related to, but separate from, the issue just discussed of a shortage of high-quality goods and a surplus of low-quality goods. A second concern relates to the high demand for investment goods, which translates into long gestation periods for investment projects as the economy's considerable construction capacity is spread among a formidable number of ongoing projects. Imbalances in specific sectors are still another concern as they provide inputs to much of the economy and therefore can contribute to a general shortfall in the utilization of the productive capacity of the system.

IMBALANCES IN CONSUMER GOODS. There is no direct way to test the proposition that consumer goods and services as a whole are in excess demand in the USSR. No data exist on the supply of consumer goods. Nor can the demand for consumer goods be easily quantified since that requires information on total wages, total savings, and consumer desires to spend the combination of their savings and income in any particular year. All that can be done with the existing data is to make a few observations on total consumption and savings in banks, which tell only part of the story.

Nevertheless, Soviet leaders, and many Soviet economists, take it for granted that there is an excess demand for consumer goods in the Soviet economy, and that an imbalance in this sector is not in the political and economic interests of the party. As Nikolai Ryzhkov observed at the Twenty-seventh Party Congress, "A more complete satisfaction of the purchasing power of the population is of principal significance in the social policy of the party." Resolving that problem is for him one of the highest priorities, for it is "inextricably intertwined with . . . the strengthening of material incentivensess to work, the rational utilization of

nonworking time, the mood of the Soviet people, and the overcoming of negative phenomena engendered by shortages."⁶⁷

The evidence on which Soviet economists and their leaders rely to support this proposition must, in part, be qualitative in the form of feedback from local authorities. In addition, on any given day one can easily find articles or letters to the editor in one of the major national newspapers complaining about shortages of consumer goods that sound so widespread they seem to add up to a more general shortage. Second, there is the general belief that wages paid in industry are now so loosely tied to productivity that the entire wage system has become a source of inflationary pressures.⁶⁸ Other evidence is somewhat "harder," albeit not without its own problems. Savings deposits, for example, grew at an average rate of 9.3 percent during 1975–85, whereas consumption over the same period grew at only 4.6 percent.⁶⁹ Wage growth has exceeded the growth of retail sales.⁷⁰ This, combined with the qualitative evidence, has led Soviet leaders to conclude that there is a pent-up demand for consumer goods.

Some economists in the West have been skeptical about the interpretation of the supporting data, arguing, for example, that the savings rate is not dramatically out of line with that observed in other countries at the Soviet level of development.⁷¹ Another possibility, if the disequilibrium econometrics Portes and others have used to analyze similar issues for Eastern Europe is applied to the Soviet case, is that the results would show—as they have for Eastern Europe—no persistent pattern of disequilibria in the markets for consumer goods.⁷² Indeed it must be

67. Ryzhkov, "Ob osnovnykh napravleniiakh."

68. Rusanov, "Proizvoditel'nost' truda i zarplata," provides an example of this form of argumentation. He argues that whereas in the early 1950s wages in material production grew only 23 percent as rapidly as productivity, by 1976–83 the ratio was 90 percent, and in 1982 wage growth exceeded that for productivity.

69. Consumer incomes are a more meaningful measure for the latter figure, but are not available. The data are from *Narkhoz* 1985, pp. 411, 448.

70. Rusanov, "Proizvoditel'nost', truda i zarplata" notes that during 1970–83 retail sales grew 81 percent while wages grew 90 percent.

71. Joyce Pickersgill, "Soviet Household Saving Behavior," *Review of Economics and Statistics*, vol. 58 (February 1976), pp. 139–47; and Pickersgill, "Recent Evidence on Soviet Households' Saving Behavior," *Review of Economics and Statistics*, vol. 62 (November 1980), pp. 628–33.

72. For a review of Portes's work, see Richard Portes, "The Theory and Measurement of Macroeconomic Disequilibrium in Centrally Planned Economies," paper prepared

true that some of whatever excess demand exists for Soviet consumer goods and services as a whole is there because of the mix problem alluded to earlier. If the right mix of goods was produced, presumably retail inventories would be lower and consumers would have, to use Ryzhkov's phrase, their "purchasing power" more completely fulfilled.

In any event, the most important political point is that the leadership, Soviet economists, and the population are convinced there is a problem here, which they intend to do something about. Furthermore, they clearly intend to try to make progress on both the mix and the total demand for consumer goods.

IMBALANCES IN INVESTMENT GOODS. Several indicators point to the existence of persistent excess demand for investment goods in the Soviet Union, which may have grown much more pronounced in the past ten years as planners have sought unsuccessfully to dampen demand to make room for higher consumption growth rates. The anecdotal evidence certainly supports the notion that enterprises, and ministries, have an almost unquenchable thirst for large new projects, a natural outcome of a system that chooses bureaucratically among investment proposals and issues nonrepayable investment grants to the winners. To cite just one case in which information is available, two Gosplan officials responsible for investment planning report that, in the negotiations for the 1982 plan, ministries and their departments proposed to Gosplan 2,000 investment projects, each with a budgeted value of at least 3 million rubles, and most were presumably for much more. Gosplan's departments had to cut those down to 600 projects in the first pass, and then finally to 385 projects in a second pass.⁷³

This excess demand shows up in part in the growth rates for investment that exceed five-year plans, but it also can be seen in several other ways. Most notable are the long, and apparently growing, time periods required to complete investment projects in the Soviet Union. In the 1960s the average length of time from initial design to full-capacity operation for a Soviet investment project was seven to eight years, which was two to

for conference on the Soviet Union and Eastern Europe in the World Economy, Kennan Institute, Washington, D.C., October 1984.

73. N. Baryshnikov and G. Galakhov, "Kapital'noe stroitel'stvo—reshaiushchii uchastok sotsialisticheskogo vosproizvodstva" (Capital construction: a decisive part of socialist reproduction), *Planovoe khoziaistvo*, no. 3 (March 1982), p. 26. (Hereafter cited as *Plan. khoz.*)

two and a half times the normal time for investment projects in industrialized countries of the West. In the 1970s that may have stretched out to eight to ten years.⁷⁴ In his speech to the Twenty-seventh Party Congress, Nikolai Ryzhkov cited figures concerning projects approved by several ministries (nonferrous metallurgy and autos) for inclusion in the Eleventh FYP in which the *average* length of time between initial design work and final completion *exceeded twenty years*.⁷⁵

The excess demands also show up in cost overruns, as enterprises purposely underestimate project costs to enhance the chances that their project will be accepted and then later on reveal the full costs. A survey of 1,600 enterprises regarding investment projects during 1971–78, which covered 20 percent of the value of all investment projects undertaken in those enterprises during that time period, showed that the actual productive capacity of the finished projects was within 3 percent of the capacity projected in original plans, but the project costs averaged one-third higher than originally planned.⁷⁶

The evidence available hardly constitutes an unambiguous case in favor of the hypothesis that there is a growing gap between the demand for investment goods and the supply. It would be useful to have time-series data for the last several decades documenting the number and value of investment requests from the ministries to Gosplan, the number and value of investment projects approved, and the time schedule and final value of the completed projects. Presumably such data exist, but, aside from bits and pieces, they are not made public.

OTHER IMBALANCES. There are many individual imbalances in factor and intermediate product markets that can be documented only through anecdotes. The conventional wisdom, probably fully justified, is that they exert downward pressure on the general level of industrial output and at times disrupt it.

The most important and all-pervasive shortage is in labor itself. The consequent excess demand for labor, at least in the European USSR, is one of the sources of the economic security enjoyed by the labor force; at the same time, it can be a source of underutilization of capacity in the

74. David Dyker. *The Process of Investment in the Soviet Union* (New York: Cambridge University Press, 1983), p. 36.

75. Ryzhkov, "Ob osnovnykh napravleniakh."

76. V. Kirichenko, "O nekotorykh voprosakh dal'neishego sovershenstvovaniia planirovaniia i upravleniia khoziaistvom" (Several issues concerning the improvement of the planning and management of the economy), *Plan. khoz.*, no. 9 (September 1982), pp. 63–64.

remainder of the system. The major unemployment problem in the USSR is not with people, but with machines.

Also significant, and apparently pervasive, are shortages of intermediate products, which in turn can suppress, or at least disrupt, production. From a survey of 5,000 enterprises in 52 ministries a Gosplan economist estimated that capacity utilization averaged 80.8 percent. But the variance in that figure among branches was enormous, from 104.4 percent in ferrous metallurgy to 61.9 percent in food; these differences have been attributed to access to material resources.⁷⁷ A myriad of anecdotes could be cited in support of the proposition that imbalances affect the level of economic performance, but they would do little to determine the actual significance of the phenomenon for performance. The most important fact is that the leadership considers this to be a serious economic problem.

The imbalances in supply and demand for labor and other inputs are linked to the general concern over the efficiency of the system. Thus the fact that the USSR experiences shortages in steel, but produces more steel than any other country in the world, suggests that at least part of the problem is the excess demand for steel. Likewise, the debates now developing over Gorbachev's reforms suggest a growing consensus that the shortage of labor is the artificial consequence of an excess demand for labor.

In addition to these pure supply-demand imbalances, the system is prone to generate disproportions within industry and between industry and other sectors, both of which have an impact on performance and consumer welfare.

In large investment projects there is a chronic tendency for the expenditures on the productive investment itself to outpace the investment on social infrastructure—schools, medical facilities, retail establishments, apartments, and so on. This is a major problem in the new areas of settlement, most notably Siberia, which is regarded as an important contributing factor to labor supply difficulties in those areas.

Within industry, investments tend to focus on the production line itself, while materials handling for inputs and the handling of final output are still done primarily through hand labor. In the early 1980s, hand labor accounted for 40 percent of all industrial labor, 70 percent of agricultural labor, and 60 percent of labor in construction.⁷⁸ The trans-

77. S. Zhuravlev, "Novoe kachestvo ekonomicheskogo rosta" (A new quality of economic growth), *Ekon. gaz.*, no. 24 (June 1986).

78. K. K. Val'tukh, "Investitsionnyi kompleks i intensifikatsiia proizvodstva" (The

portation sector, a key link in the Soviet economy, has historically been accorded a relatively low investment priority. This has led to transport bottlenecks, which, at times, may have depressed national output.⁷⁹ Finally, there is the major imbalance Gorbachev has singled out for the Twelfth FYP: the historically low priority for the producers of machinery, which has contributed to the sluggishness of technical change in the core of the investment system.

CAUSAL FACTORS. The causal factors underlying these various imbalances are multiple and complex. Obviously the system plays a large role. The excess demand for labor and capital, and the low quality of consumer goods, are both primarily a direct result of the incentives built into the system itself.

However, it is important to note that the system is not solely to blame; planners' priorities play a role. The shortage of housing in the USSR is a result of conscious decisions by Soviet leaders to shortchange that sector. The inadequacies in the transport and social infrastructures similarly reflect conscious, if unannounced, decisions. Even the persistent quality problems in consumer goods and services may, in part, reflect the indirect consequences of the defense sector's high priority for the acquisition of labor, capital, and intermediate inputs.

As Soviet leaders move ahead with their reform agenda, these imbalances will be important indicators of the success or failure of the reform. But to address the imbalances adequately will require not only economic reforms, but also new investment priorities favoring hitherto neglected sectors in the system.

The Economic Reform Problem

The weaknesses of the Soviet economy are the driving force in the debates about economic reform. The Soviet leader, whoever he may be, must somehow be seen to be dealing with these weaknesses through changes in policy or in the system itself. If the decline in growth continues—which is the direction the exogenous forces are pushing—

and if the quality and imbalance problems persist, then the pressure for ameliorative action from the party and the population grows.

In responding to that pressure it is also natural for any Soviet leader to try to preserve the strengths of the system. The economic security of the system is surely one of the most visible characteristics of a socialist society, distinguishing it from Western industrial countries and in effect justifying the rule of the party. Therefore the search for economic reforms can be expected to begin under the constraint of preserving economic security and the egalitarian bias, while holding on to the bias in favor of high growth rates.

The likelihood that the search will be successful hinges on the nature of the links between the strengths of the system and its weaknesses. To what extent does the considerable economic security afforded workers account for the low-quality output, falling productivity, and the excess demand for investment goods? Is it possible to sustain full employment, yet deal effectively with those problems? Is it possible to sustain price stability, yet enjoy the benefits of a flexible price system that facilitates rapid adjustment to changing supply-demand conditions?

Any reform program introduced by Soviet leaders must somehow identify and address these links between the strengths and the weaknesses. Effective reform programs will probably involve compromises. In order to understand the links and to evaluate the possible compromises, one must know how the system as it is now constituted works to allocate resources.

investment complex and the intensification of production), *EKO*, no. 3 (March 1982), p. 8.

79. See Holland Hunter, Peggy Dunn, Vladimir Kontorovich, and Janusz Szyrmer, "Soviet Transport Trends, 1950–1990," *Soviet Economy*, vol. 1 (July–September 1985), pp. 195–227.

The Soviet Economic System As It Is Designed to Operate

THE ECONOMY pictured in the preceding chapter provides its citizens with a high degree of economic security, a fairly equitable distribution of income, and respectable growth rates for national income and consumption. Yet it has always been plagued by imbalances and gross inefficiencies, and innovative activity has been little more than modest. Moreover, the possibility for rapid growth is now declining as the growth of inputs has fallen off and efficiencies are not rising to compensate.

Any effort to explain this performance must take into account Soviet economic policy, exogenous elements, and the economic system itself. Although the economic system is the most important factor, the other two sets of factors cannot be dismissed, nor should they be confused with the economic system. Consider, for example, the fact that successive Soviet governments have accorded low priority to investment in housing and light industry and that goods and services from both of those industries have therefore been in short supply. Note, too, that the bias in the incentive system favors high output growth rates and thus explains in part the relative lack of concern among Soviet enterprises for the quality of their output. Furthermore, the high priority accorded the military draws resources away from research and development and contributes to the poor innovative performance of Soviet civilian industry. These are but a few examples to illustrate the simple, but quite important, point that government policies significantly affect the performance of an economic system. The system itself may reinforce these tendencies, but it is not the sole cause of them.

Exogenous factors such as the weather, raw material and energy

reserves, and accumulated capital stock (both human and physical) also influence the performance of the system, whatever its configuration. Variations in Soviet climatic conditions, which can be large, not only cause agricultural output to fluctuate, but also create disruptions in transport, which in turn add to bottlenecks in the economy. The USSR's relatively strong balance of payments record since the end of World War II is explained not so much by the nature of its economic system as by the abundance of its energy resources and raw materials, which are highly valued on world markets. Economic growth has deteriorated in recent years in part because the population, and therefore the labor force, has experienced falling growth rates.

Nevertheless, it is the system that lies at the core of any explanation of economic performance. The economic system is the mechanism by which society makes the best of the environment, whatever it may be, and implements policies, whatever they may be. Soviet agriculture works under weather conditions far less favorable than those in many other parts of the globe. However, that is a well-known fact of life, and the system must compensate for this as best it can.¹ Similarly, the system must be able to minimize bottlenecks arising from decisions that favor some sectors over others.

That the economic system is of central importance is also clear from the fact that many of the policy and exogenous variables themselves emanate from the system. For example, although the existing capital stock is a "given," an exogenous variable, for the economic system functioning today, it is also a legacy of the system in the past. Inefficient factories contributing to poor performance are the products of a similar system that existed in the past. Another given is the decline in population growth, which is contributing to the slowdown in Soviet growth. However, the decline in birth rates can in part be traced to leadership policies that accorded low priority to housing in the postwar period. Moreover, although it is true that the Soviet policy has favored high growth rates over quality, it is also true that the system is better suited to focus on quantitative indicators than to implement a more sophisticated policy encouraging the production of fewer high-quality products.

1. General Secretary Gorbachev has made the point himself in a critical discussion of the inadequate response of local authorities to the severe winter of 1984-85, in which he exclaimed, "After all, a severe winter is hardly unexpected in our country." See "Kursom edinstva i splochnosti" (The course of unity and firmness), *Pravda*, February 21, 1985.

Thus it is not surprising that Soviet leaders have concentrated on the economic system in their efforts to improve, or at least retard, the deterioration in economic performance. Nor is it surprising that Western analysts of the Soviet economy have focused on the system in their efforts to explain the current pattern of economic performance. As a result, the primary concern of this volume is the economic system itself, and its reform.

This chapter and the next explain how the economic system in the USSR operates in order to set the stage for a discussion of efforts to reform it. The brush strokes are, of necessity, rather broad; much more detail is provided about some matters than about others. The goal is twofold: (1) to provide a sense of the logic of the system by identifying its major parts and their interrelations, and (2) to identify the most fundamental characteristics of the system that contribute to the particular weaknesses in economic performance discussed in chapter 2.

Both this chapter and the next analyze the system as it existed on the eve of Gorbachev's accession to the office of general secretary. These chapters provide the benchmark against which to compare the reforms emerging under Gorbachev since 1986, which is the subject of later chapters. In fact, because most of the changes actually implemented to date under Gorbachev affect the details, but not the fundamentals, this benchmark is also still an expression of the reality of the economic system that Gorbachev is trying to change.

Formal versus De Facto Systems, and the Logic of Both

I use the term "logic" here in the spirit of Marx's analysis of the capitalist system through the prism of the dialectic; that is to say, an economic system may have many parts that serve different functions, but these parts must also work more or less harmoniously with—not against—each other.² Any viable system has this sort of internal logic, and the Soviet system is no exception. The existence of this logic has nothing to do with whether the performance of the system as a whole is efficient or equitable. On the contrary it is quite possible to have a system

2. For an excellent interpretation of Marx along these lines, see Bertell Ollman, *Alienation: Marx's Conception of Man in Capitalist Society* (Cambridge University Press, 1971), pt. 1.

in which the parts work together superbly, but the total result is poor performance.

That logic must be kept in mind whether one is a critic or a designer of systemic reforms. The rigid Soviet price system, which leaves many important prices fixed for over a decade, and the financial system, which acts passively to distribute funds to enterprises that need them, both fit extremely well with the hierarchically organized planning system, which seeks to exert total control over resource flows. In fact, all of the major components of the system fit together rather well, and have for years. That point must be fully understood before one can simultaneously explain why the system works as well as it does and why it is so difficult to change.

Inattention to the logic of the system is apparently what has contributed to the failure of so many past efforts at reform in the Soviet Union, as well as in Eastern Europe. Soviet leaders are no different from political leaders elsewhere; they can be easily drawn to solutions that address symptoms, not the root causes. Their memories are conveniently short; their capacity for wishful thinking, seemingly boundless. Gorbachev's effort in 1985–86 to curb the ministries' power over enterprises is a good illustration. Ministries do intervene continuously, and excessively, in the affairs of "their" enterprises, but to some extent that simply reflects the pressure they are under from the center to ensure improved results for a number of indicators in all of their enterprises. According to the logic of the system, to reduce ministerial interference in enterprise affairs it is necessary not only to dilute the ministerial powers over enterprises, but also to reduce ministerial responsibilities for enterprise performance. The fate of the Kosygin reforms is ample testimony to the costs of ignoring such considerations.

It is equally important to be as clear as possible about the ultimate causes of poor performance in the system. Take, for example, the lackluster innovative performance of enterprises in the civilian economy. Enterprises do not innovate because there are other, easier alternatives open to them as a result of a lack of domestic or foreign competition and the understanding stance taken by their ministries when they fail. There is an infinite supply of reforms that will deal with the many symptoms of this basic problem without addressing the problem itself, and Soviet leaders are constantly trying them: new incentive systems, new plan indicators controlling innovation, price bonuses for new products, and so on. If an outsider is to analyze a priori the likelihood that a particular

reform will have an effect on the performance problem it is addressing, he can only do so if he understands the basic causes of the problem. Only then will it be possible to ascertain which reforms, if any, are appropriate.

Such considerations suggest that the Soviet leaders' analysis of the country's economic problems should be treated with considerable skepticism. Their record in this regard is hardly one that inspires confidence. Their diagnosis of a problem should be regarded as no more than one of possibly many plausible hypotheses, the significant point being not that their version of the situation is right, but that they think it is.

The Logic of the System

Economic systems can be defined and distinguished from each other by the form of their three basic components: (1) the decisionmaking hierarchy that allocates responsibility for and power over resource allocation; (2) the information system that provides decisionmakers with the information needed to support their decisions; and (3) the incentive system with which decisionmakers use the information at hand to decide on resource allocation.

a The decisionmaking hierarchy consists of the actors in the system and their interconnections defined by a distribution of responsibilities, authority, and power. Government bodies, business enterprises, individuals or workers and consumers, banks, and the many other economic institutions are all part of the mosaic that makes up the decisionmaking hierarchy. The rights and responsibilities of the various actors—for example, the limits on private activity or the rights and duties of ministries—are the other distinguishing features of this dimension of an economic system.

b The information system links the actors in the decisionmaking hierarchy. It is composed of the price and various nonprice signals that move around the system providing the various actors with feedback on their actions and affording them the opportunity to adjust their decisions in the light of their goals, whether self-determined or dictated from a point higher up in the hierarchy. The quality of the information determines whether the system will function smoothly, since those who receive false or inadequate information must depend on luck to make the right decisions.

c The incentive system is the sum of the incentives that induce deci-

sionmakers to use the information at their disposal to make the millions of decisions that underlie the economic activity of any system. These may include moral incentives ("Work for the good of the party"), material incentives ("Work to improve your own living standard"), and coercion ("Work or else") and probably consist of some combination of the three.³

This framework is a useful device for organizing a discussion of the nature of the economic system because it enables the analyst to draw out of a highly complex reality the answers to three important questions: Who has the power to decide over resource allocation? What information do they have at their disposal? And what incentives motivate them to act on that information? This device also makes it possible to illuminate on a highly aggregated level the basic logic of the system. A multilevel hierarchy in which power is focused at the top will need an information system that can accommodate large amounts of nonprice information (plan targets, plan fulfillment, and data on inventories, to cite just three examples) and an incentive system that encourages units at the bottom of the hierarchy to send up accurate information and to respond to plans sent down the system as the center wishes. A program of reforms seeking to decentralize decisionmaking power must also alter the design of the information and incentive systems if the reformed system is to have a logic that will make it viable.

Formal versus De Facto Systems

In the Soviet Union, as in most countries, there are in fact two economic systems: the system described in laws and decrees, which represents the way that Soviet leaders would have the economic system operate (the formal system), and the system as it actually operates, sometimes at complete variance with the existing laws and decrees (the de facto system). It is far easier to obtain information about the formal system than about the de facto system; and the formal system is generally much neater, and less contradictory, than the actual system. Because of those attributes, an uncritical observer may be inclined to accept the

3. For an elaboration of these concepts, see John Michael Montias, *The Structure of Economic Systems* (Yale University Press, 1976). See also the discussion of Montias's framework and how it may be applied to the study of economic systems in Egon Neuberger and William J. Duffy, *Comparative Economic Systems: A Decision-Making Approach* (Boston: Allyn and Bacon, 1976), pts. 1, 2.

formal system as an accurate description of reality, whereas a more skeptical analyst might automatically dismiss it as a facade. The actual situation in the Soviet Union, not surprisingly, lies somewhere between those two extremes. The formal system represents things as they are in some cases, but not in others. The system was designed, in part, to give Soviet leaders virtually unchallenged control over the level and structure of investment, and reality is reasonably close to that. At the same time, the formal system stipulates that prices should be determined at the center, whereas in fact the center seems to have great and increasing difficulty in controlling prices.

In general, the reason that formal and de facto systems diverge is that the formal system, although feasible in the abstract, is infeasible in reality. Typically, the problem is that the formal system cannot operate as designed unless an enormous amount of information flows to the decisionmakers. In the real world, however, the information system fails to supply the requisite information and therefore central decisionmakers are too ill-informed to fulfill their responsibilities. In some cases that leads to poor decisions; in others, to a de facto shift of power from those who are responsible, but ill-informed, to those who are not responsible, but who have the requisite information. This is certainly true in the Soviet Union, where many decisionmakers with formal responsibility in a given area find it impossible to obtain sufficient information to make the decisions they are charged to make. Thus, a significant number of the decisions are made at lower levels, where the information lies.

Because the formal system so often fails in the real world, it cannot be used to represent the system as it actually works. More important, reforms to this system will have little effect unless they interact with the de facto system.

However, the formal system does function effectively where this is feasible, and there are such places in the Soviet economy. Also, it does constrain the de facto system in many respects. Enterprises may, and do, search for ways to obtain an easy plan and then minimize the pain of appearing to fulfill the main indicators, but they cannot ignore the plan. The plan sets the agenda for them more than they set the agenda for the plan. Thus, an analysis of how the Soviet economic system actually operates cannot ignore the formal system; on the contrary, it should start with the formal system and use it as a touchstone to understanding the de facto system.

The Formal System

The guiding principle behind the design of the Soviet economic system is that the Communist party should have institutionalized control over all major aspects of economic activity in the USSR. This goal clearly dominates other possible considerations, most notably economic efficiency, although the formal system is said to be the most efficient way to meet the full range of social, economic, and political requirements of the Soviet people.

All subsystems in the formal system are designed to do their part in helping the party exercise control over the economy. Every proposal for economic reform in the Soviet Union has been, and will be, couched in terms that refer to enhancing the party's control over the economy. That basic interest is always visible, whatever part of the economy is being considered—whether it is the legal system, the price system, or the financial system. Thus, in seeking to understand why a particular reform proposal or possibility is or is not viewed with favor by the leaders, the critical factor to note is how they think that reform proposal will affect the party's control over the system.

However, "party control over the economy" is a complex concept that is open to many interpretations and that can be worked out in many ways in the formal system. Furthermore, the fact that "the party" has over 19 million members leads one to ask how control over the economy will be distributed among them. Clearly the party leadership will want to maintain control over the most important variables, but which ones will fall into this category? Some members of the leadership might only want the party to control major macro indicators, whereas others would include the output of key products, as well as many indicators of economic activity at the enterprise level (such as investment, the introduction of new products, and wage funds).

Complicating matters further is the question of how to define control. Many party members may take control to mean directly dictating, and possibly even participating in, decisions that are made at all levels of the hierarchy and that pertain to economic activity involving all of the important variables. Others will be content to manipulate incentives in an effort to induce the "right" decisions regarding key variables—that is, the decisions the party would like to see—without resorting to direct intervention.

The formal system as it exists today, with its clear Stalinist foundations, leans heavily in the direction of defining precisely all the important variables that should be controlled by central party leaders, utilizing techniques that emphasize direct intervention, and using incentives only where direct intervention is clearly unable to provide satisfactory results. I turn now to an overview of the formal system. It is organized around the three central components identified earlier: the decisionmaking hierarchy, the information system, and the incentive system.

The Decisionmaking Hierarchy

Two hierarchies work together to control resource allocation in the USSR: the party and the government. They constitute what Thane Gustafson has characterized as a "dual government by party and state," each of which counterbalances, or supplements, the operation of the other.⁴ The party has clear authority over and responsibility for the most fundamental decisions affecting the economy—those that pertain to the division of national product among consumers, investors, and defense; the general thrust of investment policy; key foreign economic variables (foreign debt, for example); and policies on large projects (such as Baikal-Amur mainline). The primary responsibility of the government hierarchy is to run the economy in a way that optimally contributes to meeting the goals set by the party. One of its important functions is to provide party leaders with information on the economic system to help them reach decisions on strategic issues. Both hierarchies have a hand in operating the formal (and, for that matter, the de facto) system, but depending on the type of economic decision, one hierarchy or the other will bear primary responsibility. For example, the party decides on the general policy regarding the development of nuclear power in the USSR; whereas the government, having provided much of the supporting technical and economic information, must implement the decision and deal with the practical task of mixing nuclear with other sources of energy in order to meet the economy's energy needs.

THE PARTY HIERARCHY. The ultimate source of all authority within the party is the congress, which in recent years has been convened at five-

4. Thane Gustafson, *Reform in Soviet Politics: Lessons of Recent Policies on Land and Water* (Cambridge University Press, 1981), p. 2.

year intervals.⁵ The Party Congress elects a Central Committee (CC) to handle all party affairs between Party Congresses. The Central Committee must, according to party rules, meet at least twice a year. The most recent Party Congress, the twenty-seventh, held between February 25 and March 6, 1986, elected a Central Committee of 307 voting members and 170 nonvoting members.⁶ The Central Committee includes in its membership nationally or regionally prominent political and economic leaders, as well as a sprinkling of prominent scientists, writers, trade union officials, workers, and peasants.⁷

The Central Committee elects from its membership a Politburo, which is empowered to handle the affairs of the party between meetings of the Central Committee. As of June 1987, the Politburo consists of fourteen voting members and six candidate (nonvoting) members (table 3-1). In addition, the Central Committee elects secretaries to manage the administrative apparatus of the party. First among the secretaries is the general secretary (currently Mikhail Gorbachev), who is head of both the party and its bureaucracy.

At present eleven additional secretaries serve with Gorbachev. The Politburo is what Jerry Hough aptly characterizes as "the real cabinet of the Soviet system,"⁸ the Secretariat providing the administrative support that drafts resolutions under guidance of the secretaries—some, but not all of whom, are Politburo members—and sees that they are carried out after approval.

The general secretary and the eleven secretaries who work with him supervise the work of the Central Committee staff, which is divided into twenty-one departments that together monitor and supervise the approximately eighty national-level ministries and state committees overseeing the economy, as well as all other national-level political-economic organizations. Of those twenty-one departments, ten share the bulk of responsibility for the economy.⁹ These ten departments are the means

5. Unless otherwise indicated, this section relies on Jerry F. Hough and Merle Fainsod, *How the Soviet Union Is Governed* (Harvard University Press, 1979), chaps. 11–12; and Jerry F. Hough, *The Soviet Prefects: The Local Party Organs in Industrial Decision-making* (Harvard University Press, 1969).

6. *Pravda*, March 7, 1986, provides a full list.

7. Hough and Fainsod, *How the Soviet Union Is Governed*, p. 457, analyze the composition of the Central Committee in the 1960s and 1970s.

8. *Ibid.*, p. 466.

9. The ten departments directly responsible for the economy—or, more accurately, for supervising the organs that administer the economy—are (department chief in

CC
307
new for
170 nonvoting
170 in
voting
Politburo
14 vot.
6 cand
(11 vot)

Table 3-1. *Politburo of the Central Committee (CC) of the Soviet Communist Party (CPSU) and Party Secretaries, June 1987*

Politburo membership^a

Voting members

Mikhail S. Gorbachev (general secretary, CC, CPSU)
 Geidar A. Aliev (first deputy chairman, USSR Council of Ministers)
 Viktor M. Chebrikov (chairman, USSR Committee for State Security [KGB])
 Andrei A. Gromyko (chairman, Presidium of the USSR Supreme Soviet)
 Egor K. Ligachev (secretary, CC, CPSU)
 Viktor P. Nikonov (secretary, CC, CPSU)
 Nikolai I. Ryzhkov (chairman, USSR Council of Ministers)
 Vladimir V. Shcherbitsky (first secretary, CP of the Ukraine)
 Eduard A. Shevardnadze (USSR minister of foreign affairs)
 Nikolai N. Slyun'kov (first secretary, CP of Belorussia)
 Mikhail S. Solomentsev (chairman, Party Control Commission)
 Vitalii I. Vorotnikov (chairman, RSFSR Council of Ministers)
 Aleksandr N. Yakovlev (secretary, CC, CPSU)
 Lev N. Zaikov (secretary, CC, CPSU)

Candidate (nonvoting) members

Petr N. Demichev (first deputy chairman, USSR Supreme Soviet)
 Vladimir I. Dolgikh (secretary, CC, CPSU)
 Boris N. Yeltsin (first secretary, Moscow *gorkom*)
 Iurii F. Solov'ev (first secretary, Leningrad *obkom*)
 Nikolai V. Talyzin (first deputy chairman, USSR Council of Ministers; chairman, Gosplan)
 Dimitrii T. Yazov (USSR Minister of Defense)

Party secretaries^b

Mikhail S. Gorbachev (general supervision)
 Aleksandra P. Biryukova (consumer goods, food and light industry)
 Anatolii F. Dobrynin (foreign policy, relations with nonruling communist parties and socialist parties)
 Vladimir I. Dolgikh (heavy industry, energy, power, transport)
 Egor K. Ligachev (cadres and ideology)
 Anatolii I. Luk'ianov (administration and Politburo staff work)
 Vadim A. Medvedev (relations among socialist countries and CMEA)
 Viktor P. Nikonov (agriculture and forestry)
 Georgii P. Razumovsky (cadres affairs)
 Nikolai N. Slyun'kov (economic administration)
 Aleksandr N. Yakovlev (domestic ideological affairs and culture)
 Lev N. Zaikov (economic administration and military-industrial complex)

Source: Alexander Rahr, "The Composition of the Politburo and the Secretariat of the Central Committee of the CPSU," *Radio Liberty Research Bulletin*, RL 236/87, June 26, 1987.

a. Other duties in parentheses.

b. Duties in parentheses.

by which the party controls the system in that the Politburo draws from them the staff support it needs to prepare all decrees, monitor their implementation, and supervise the overall work of the ministries as well as party organizations throughout the system.

Republican and local levels replicate in all important ways the party organization at the national level. Each of the fifteen republics has a party organization that holds quinquennial congresses, which elect a Central Committee, which in turn elects a Politburo and a set of secretaries to supervise the work of the republican secretariat. In addition, the party organization in each republic has other components whose authority conforms to governmental boundaries, the most important being the *oblast* party committee, or *obkom*, which may cover areas as large as a typical state in the United States; the *raion* party committee, or *raikom*, which falls under the *oblast*' party committee; and the city committee, or *gorkom*, which is formed for all large cities.¹⁰ The first secretary of an *obkom* or *gorkom* is generally as powerful in his region as the general secretary is on the national level, and his formal powers far exceed those of a mayor or governor in the United States.

The party hierarchy influences the operation of the economic system in many ways. Probably the most important and all-pervasive avenue of influence is the choice of personnel. The USSR Central Committee Secretariat has the exclusive right to appoint individuals to leadership positions in important social, political, economic, and cultural institutions in the entire nation. This *nomenklatura* list includes, for example, all ministerial-level positions at the national level, important department heads within those institutions, managerial positions in important factories (the director and his first deputies), and the leading posts in important institutions (research institutes, editorial positions at all national newspapers and journals, and other important positions). Other

parentheses) Agriculture and Food Industry (Ivan I. Skiba), Chemical Industry (Veniamin G. Afonin), Construction (Aleksandr G. Mel'nikov), Defense Industry (Oleg S. Beliakov), Economic (Nikolai N. Slyun'kov), Heavy Industry and Power Engineering (Ivan P. Yastrebov), Light Industry and Consumer Goods (Leonid F. Bobykin), Machinebuilding (Arkadii I. Vol'sky), Trade and Consumer Services (Nikolai A. Stashenkov), and Transport and Communications (Viktor S. Pasternak). The source for this listing is Alexander Rahr, "The Apparatus of the Central Committee of the CPSU," *Radio Liberty Research Bulletin*, RL #136/87, April 10, 1987. For more details on the operation of the CC apparatus, see Hough and Fainsod, *How the Soviet Union Is Governed*, pp. 411-22.

10. The hierarchy of committees is much more complicated than indicated here. See Hough, *Soviet Prefects*, pp. 8-34, for a discussion.

levels of the hierarchy have their own, even more numerous, *nomenklatura* lists that cover leading positions for all important institutions within the region over which they have authority.

This right of appointment provides the party with substantial and sustained influence over decisionmaking throughout the economic system. The fact that each individual serves at the pleasure of the party provides a strong incentive, although far from a requirement, to set policies in conformance with the party's preferences. This works at every level of the economy, from the national-level ministries monitored by the departments of the Central Committee to the entire range of enterprises monitored by local party officials.

The second major source of party influence lies in the control it exercises over the agenda at the national level through the Politburo, with the support of the CC staff. The Politburo sets the main goals for the economy—growth rate targets, the distribution of national income among final uses (defense, consumption, investment), targets for foreign economic relations, and targets for critical products, to name just four important areas—and it decides on the most important policy directions. Put more generally, the Politburo makes all the strategic decisions that drive the entire planning process—the long-term, five-year, and annual plans. The government acts as a source of information and an executor of policy. Ideally (that is, in the formal system), the Politburo and the CC staff will not involve themselves in the detailed operation of the system; that is the government's job. The Politburo has decided, for example, to permit joint ventures with Western firms on Soviet soil and has approved a general resolution to that effect, but the government carries primary responsibility for issuing detailed regulations, approving joint venture applications, and supervising the operation of joint ventures in the USSR.

The third channel through which the party influences the economy is the party officials, whose duty at all levels is to see that party policies are carried out. At the national level, party officials in the CC secretariat and in the party committees in each ministry constantly monitor the actions of the government, making sure that they are consistent with official policy. When they are not, it is the duty of party officials to try to change the situation without interfering in operational decisions of the agency involved. An example that illustrates this point is Gorbachev's current modernization campaign in which the party committees in each

of the eleven civilian machinebuilding ministries are charged with doing their utmost to ensure that ministry officials do all in their power to contribute to modernization goals.

Local party organs have identical duties in their areas of competence. It is the duty of the first party secretary of the *obkom* (or *raikom* or *gorkom*) to see that all organizations in his area perform in ways consistent with central policy, in particular that they fulfill key indicators in the plan. The expectations here are quite detailed and demanding and add up to general responsibility for the economic performance of the area covered by the first secretary's committee. Again, he must not interfere in the operational decisions of enterprise directors in his area, but must keep the pressure on so that the operational decisions they do make add up to a performance record as close as possible to targets set from above.

These rather extensive, and generally visible, links between the party and government hierarchies are supplemented throughout the society by what in a Western country would be called "interlocking directorates." At the apex of the system is the Politburo, which includes in its membership the most important leaders in the government hierarchy (indeed, it specifies who the most important members are). Currently, the Politburo membership includes the chairman of the Council of Ministers (Ryzhkov), two of his deputies (Aliev and Talyzin), the chairman of the Presidium of the Supreme Soviet (Gromyko), the chairmen of the councils of ministers of two republics (Vorotnikov of the RSFSR and Shcherbitsky of the Ukraine), two USSR ministers (Chebrikov, KGB; Shevardnadze, Foreign Affairs), and the first secretary of the Moscow *gorkom* (Yeltsin). Consequently the majority of those who participate in the deliberations of the Politburo are members of the government and thus are able to facilitate the transmission of Politburo policy directions into the government hierarchy.

This pattern of interlocking directorates is repeated throughout the system at all levels. The party Central Committee includes in its membership virtually all national ministers, the chairmen of all republican councils of ministers, and a few important enterprise directors. Republican and local-level party organizations show similar interlocking patterns.

THE GOVERNMENT HIERARCHY. In many ways the government hierarchy of the USSR replicates the party hierarchy, although not in all ways; it

is an administrative organization, and as such has a much more detailed bureaucracy with which to operate the system.¹¹ The bicameral Supreme Soviet convenes twice a year for brief meetings devoted to major pieces of legislation. From the point of view of the economy, the most important issues considered are the annual plan drafts and the five-year plan drafts, all of which are debated and then passed as a law.

The Supreme Soviet elects a Presidium of approximately forty members, which meets every two months and is empowered to issue decrees or take other actions consistent with the constitution, subject to subsequent approval at the next session of the Soviet. The chairman of the Supreme Soviet, currently Andrei Gromyko, is the formal head of state. To judge from the infrequency of the meetings of the Presidium, its role in the system would appear to be modest.

The Council of Ministers, also elected by the Supreme Soviet, represents the apex of the administrative system guiding the economy. This body is composed of over 100 members, including its chairman (currently N. Ryzhkov), four first deputies and eleven deputy chairmen, ministers, heads of state committees, and national administrators. This rather unwieldy body meets approximately four times a year and is not involved in detailed decisions regarding the economy.

Those matters are apparently handled by a presidium of the Council of Ministers that is composed of the chairman and his deputies. This much more manageable group, approximately the size of the Politburo (and with three Politburo members), oversees the operation of the government hierarchy.

Of the 100 or more ministries and committees whose heads sit on the Council of Ministers, approximately 70 play a role in the administration of the economic system (table 3-2). Enterprises, state farms, and collective farms of national importance are directly supervised by fifty ministries. Some of these are all-union (AU) ministries, which exist only at the national level, and others are union-republic (UR) ministries, which have republican counterparts that are directly responsible to the union-level ministry. Each of these ministries oversees enterprises whose primary activity is related to the branch, and they are held responsible for the performance of those enterprises.

Twenty ministries supervise the machinebuilding and metalworking industries, the core of the manufacturing system. Of those twenty, nine

11. Unless otherwise indicated, this section relies on Hough and Fainsod, *How the Soviet Union Is Governed*, chap. 10.

supervise enterprises devoted primarily to the production of defense goods. The remaining eleven ministries supervise enterprises devoted primarily to the production of machinery and equipment for civilian use. The division here is far from simple. The enterprises supervised by the nine defense ministries also produce some civilian goods (for example, computers, refrigerators, motor bikes, and passenger ships); and enterprises supervised by the civilian ministries also produce some defense goods (for example, military trucks and some electronic equipment). Nonetheless, the distinction is a real one, as is obvious from the lack of systematic published data on the nine defense ministries in contrast to a fair amount of data on the civilian ministries. For example, plan fulfillment can be tracked on a monthly basis in the civilian ministries, whereas no mention is made of the military ministries in this regard.

Enterprises that produce fuels, raw materials, and chemicals are supervised by nine ministries. Each primary fuel source has its own ministry, as does electric power (Minenergo). Construction activities are divided up among one general ministry and six ministries specializing in particular branches of construction or regions; and the production of construction materials is supervised by a separate ministry.

Overall supervision of the agricultural and food industries now resides in the State Agro-Industrial Committee created in 1986 (Gosagroprom), which absorbed the duties, but only some of the staffs, of five former ministries and one state committee (the ministries of Agriculture, Meat, Fish, Fruit and Vegetables, and Rural Construction, as well as the State Committee for the Supply of Production Equipment for Agriculture [Sel'khoztekhnika]). In addition, five other ministries supervise other aspects of the agricultural-food complex.

The basic design of this system was conceived in the late 1930s when, on the eve of World War II, Stalin began dividing the relatively few ministries (then called commissariats) supervising the economy into more specialized bodies overseeing branches. The proliferation continued after the war, was reversed temporarily by Khrushchev in the sovnarkhoz reforms, and then resumed under Brezhnev and Kosygin. At present almost fifty highly specialized ministries control production units in what is by far the most complex administrative hierarchy the Soviet system has ever had, and is certainly a far more complex system than has been, or is being, used in any other socialist country.

The philosophy behind the design is clear: the center controls economic activity on the supply side, on a branch-by-branch basis. This, it

Table 3-2. *All-Union and Union-Republic Ministries and State Committees, June 1987*

<i>Branch ministries^a</i>	
<i>Defense machinebuilding industries</i>	Minenergo (electric power)
Minaviaprom (aviation)	Minatomenergo (atomic power)
Minoboronprom (defense)	Mingeo (geology)
Minelektronprom (electronics)	Minchermet (ferrous metallurgy)
Minobshchemash (general machinebuilding)	Mintsvetmet (nonferrous metallurgy)
Minmash (machinebuilding)	Minkhimprom (chemicals)
Minsredmash (medium machinebuilding)	<i>Construction and construction materials</i>
Minradioprom (radio)	Gosstroï (construction)
Minsudprom (shipbuilding)	Minsevizapstroï (north and west construction)
Minpromsviazi (communications equipment industry)	Miniugstroï (southern construction)
<i>Civilian machinebuilding industries</i>	Minuralsibstroï (Urals and west Siberia construction)
Minavtoprom (automobiles)	Minvostokstroï (Far East and Transbaikalia construction)
Minenergomash (power machinebuilding)	Minstroimaterialov (construction materials)
Minneftekhimmash (chemical and petroleum machinebuilding)	Mintransstroï (transport construction)
Minstroïdormash (construction, road, and municipal machinebuilding)	Minmontazhspeitsstroï (installation and special construction)
Minelektrotekhprom (electrical equipment)	Minneftegazstroï (petroleum and gas industry construction)
Mintiazhmas (heavy and transport machinebuilding)	<i>Agriculture and food</i>
Minpribor (precision instrument-making, automation equipment, and control systems)	Gosagroprom (agro-industrial committee)
Minzhivmash (machinebuilding for animal husbandry and fodder production)	Minkhleboproduktov (grain products)
Minlegpishchemash (light and food industry and household appliances machinebuilding)	Minrybkhoz (fishing)
Minstankoprom (machine tool and tool building industry)	Minudobrenii (fertilizer)
Minsel'khozmas (tractor and agricultural machinebuilding)	Minvodkhoz (land reclamation and water)
<i>Fuels, raw materials, and chemicals</i>	Minlesbumprom (timber, pulp, paper, and wood processing)
Minugleprom (coal)	<i>Transport and communication</i>
Minnefteprom (petroleum)	Minsviazi (communications)
Mingazprom (gas)	Minmorflot (maritime fleet)
Minneftekhimprom (petroleum refining and petrochemical industry)	MPS (railroads)
	<i>Other industry</i>
	Minlegprom (light industry)
	Minmedprom (medical and microbiological)
<i>Functional ministries related to the economy</i>	
Minfin (finance)	Minvneshtorg (foreign trade)
MO (defense)	MID (foreign affairs)
Minpros (education)	Minzdrav (health)
MVD (internal affairs)	Mintorg (trade)

Table 3-2 (continued)

<i>Ministerial-level state committees related to the economy</i>	
Gosplan (planning)	Goskomgidromet (hydrometeorology and environmental control)
Goskomtsen (prices)	Gossnab (material-technical supply)
GKVTI (computer technology and information science)	Goskomtrud (labor and social questions)
Gosstandart (state standards)	GKNT (science and technology)
Goskomnefteprodukt (supply of petroleum products)	Goskomizobretenii (inventions and discoveries)
Gosbank (state bank)	TsSU (statistics)
	Gosleskhoz (forestry)
<i>Nonministerial-level state committees related to the economy</i>	
Gosarbitrazh (arbitration)	Stroibank (bank for financing capital investment)

Sources: Herwig Kraus and Alexander Rahr, "The Government of the USSR," *Radio Liberty Research Bulletin*, RL Supplement 3/87, May 5, 1987. The classification by category was done by the author.

a. Two state committees, Gosagroprom and Gosstroï, are listed with the ministries because they perform all of the duties of a ministry. The grouping here is mine, although it resembles the "complexes" emerging in Gorbachev's reforms of economic administration.

seems, is a logical extension of the philosophy within the party, which advocates direct control of a broad range of performance indicators. Also clear is the conservative design of the system, implicit in the assumption that the definition of a "branch" will remain valid for a long period of time. Furthermore, the system is imbued with optimism, for it is also based on the assumption that enterprises in different branches, supervised by different hierarchies, will somehow coordinate their activities to meet the goals set by the Council of Ministers and ultimately by the Politburo. A system that utilizes separate hierarchies to supervise oil, gas, coal, and electric power production, for example, relies on some higher authority to choose among their competing claims for resources in order to meet the energy needs of the nation.

The state committees perform that function. Among those that relate to the economy (see table 3-2), the most important are Gosplan (State Planning Committee), Gossnab (State Committee for Material-Technical Supply), Goskomtsen (State Price Committee), and Goskomtrud (State Committee for Labor and Social Questions).

Gosplan is the Council of Minister's planning agency and is charged with coordinating the construction of plans, supervising their distribution, and monitoring their fulfillment. Gosplan sets the agenda for the planning process, drives it, and is held responsible for it. It is also formally in charge of the reform process; currently, for example, N. V. Talyzin chairs, and Gosplan staffs, a Commission on Improving Man-

agement, Planning, and the Economic Mechanism.¹² Gosplan holds considerable authority over all other ministries and committees directly involved in economic affairs through its control over all major investment decisions and the allocation of commodities critical to the operation of the economy. Under Gorbachev, that authority has been recognized formally by elevating Talyzin to the position of first deputy chairman of the Council of Ministers, as well as a candidate member of the Politburo.

Gosplan is divided internally into a series of departments that reflect its function and the organization of the economy. Branch departments closely follow—in number and title—branch ministries. So-called summary departments manage the planning process itself, key problems that cut across branches (for example, foreign trade, finance, and capital construction), and the particular problems involved in attaining balance in the system, particularly for commodities managed by Gosplan.¹³

Gosplan is a union-republic committee. That is, each republic also has a Gosplan to take up planning tasks for products of republican significance. Planning committees also exist at the local level. These are charged with planning for the production of goods of local significance. The farther down the line one goes from USSR Gosplan, the more the object of the organization is consumer goods and services, which historically have had relatively low priority in the system.

Gossnab's main job is to distribute materials according to priorities set out in the plan. For the approximately 2,000 products planned by Gosplan, Gossnab will be empowered in some cases to manage their distribution among competing claimants. For another 14,000–25,000 products, Gossnab, itself, via its various departments, decides among competing claimants and thus both plans and distributes the products in these cases.

Gossnab manages this extraordinarily complex process through three levels of organization. Twenty all-union supply administrations (souiz-

12. This is probably the continuation of a commission chaired by Nikolai Baibakov during the last years of the Brezhnev period and into the Andropov and Chernenko periods; however, it is only under Gorbachev that it has become quite active. For reports on the work of the commission, see, for example, "V komissii po sovershenstvovaniyu upravleniia planirovaniia i khoziaistvennogo mekhanizma" (In the commission on the improvement of administration, planning and the economic mechanism), *Ekonomicheskaiia gazeta*, no. 11 (March 1986); no. 18 (April 1986); no. 32 (August 1986); and no. 36 (September 1986). (Hereafter *Ekon. gaz.*)

13. For details, see Fyodor I. Kushnirsky, *Soviet Economic Planning, 1965–1980* (Boulder: Westview, 1982), pp. 57–65.

glavsnabsbyty) control commodities distributed, or planned and distributed, nationwide by Gossnab. Fifty-six territorial supply administrations actually deal with documents and handle product distribution through 1,500 local supply offices, depots, warehouses, and stores. Finally, eleven all-union administrations manage the supply of materials and equipment to construction projects.¹⁴

Goskomtsen (State Price Committee) either sets or supervises the setting of prices in the system. There are three basic vehicles for setting prices. At infrequent intervals Goskomtsen undertakes an enormously complex price reform that rearranges virtually all prices in the system; the two most recent price reforms were in 1967 and 1982. Second, Goskomtsen will, from time to time, revise prices in certain sectors, as it did with agricultural procurement prices in 1981 and 1983. In the intervals between price reforms, Goskomtsen promulgates and administers an elaborate set of procedures for pricing new products.

Because the Soviet economy puts out roughly 20–30 million products, obviously Goskomtsen cannot possibly establish prices for each one. In general, Goskomtsen directly sets the prices of fairly homogenous products (such as fuels, energy, and raw materials) that serve as inputs over a wide range of sectors. In the case of intermediate and finished products, Goskomtsen sets the rules for how those will be priced (during a price reform, or when new products are introduced in the interval), and it directly considers prices proposed by enterprises and ministries—which are calculated according to those rules—for goods judged to be of the greatest importance to the system as a whole. For goods of regional significance or of relatively low priority, republican price committees, committees at a lower level, or ministries will make final decisions on the prices. The price of computers, or grain, or oil, is very much a Goskomtsen USSR concern, whereas the price of television repair services in Tashkent is a local matter.

Goskomtrud's most important role in the economy is probably to oversee wage scales for state enterprises. It administers a complicated system of wage scales, which are differentiated by the type of work, its difficulty, and by branch. In effect, it sets the average wage for the system. This arrangement has important macroeconomic consequences for total consumer demand and important microeconomic consequences

14. This material is based on the discussion in Joseph S. Berliner, *The Innovation Decision in Soviet Industry* (MIT Press, 1976), pp. 66–69.

for the cost of production in individual enterprises. For that reason, Goskomtrud must work very closely with Gosplan and Goskomsen.

Gosstandart is the state committee in charge of formulating and enforcing quality standards throughout the economy, although some of its enforcement power has naturally been shared with the ministries. It is one of the committees on which Gorbachev has focused his efforts to modernize the output of the system.

Functional ministries manage other matters that cut across the responsibilities of the branch ministries. The Ministry of Foreign Trade (Minvneshtorg) manages foreign economic relations through a network of foreign trade organizations (FTOs), each of which controls virtually all exports and imports for a select group of products.¹⁵ Enterprises generally have no rights to export or import on their own account. They apply to their ministries for the right to import, and are ordered to export; and in both cases the FTOs manage all details of the required transactions, so that enterprises have no direct contacts with customers or suppliers. This part of the system has begun to change under Gorbachev, but I postpone discussion of these changes to chapter 7.

The Ministry of Finance manages the state budget and the banking system, the most important components of the latter being the State Bank (Gosbank), the State Construction Bank (Stroibank), and the Foreign Trade Bank (Vneshtorgbank). These banks have a monopoly in the issuance of credit, and their activities add up to total formal control over the money supply. Gosbank is the most important of these institutions, and its chairman is a member of the Council of Ministers.

The Ministry of Trade (Mintorg) is primarily engaged in managing retail trade through 704,000 retail outlets and 326,000 restaurants, canteens, and other eating establishments.¹⁶ (Much of what in the West is classified as wholesale trade is controlled by Gosplan in the Soviet Union.) The Ministry of Trade is not directly involved in setting outputs for products or deciding on their distribution. Rather, its main function is to manage the sale of the products that eventually emerge from factories operating under the Soviet planning system. This illustrates

15. For a more detailed discussion of the role of the Ministry of Foreign Trade, see Ed A. Hewett, "Foreign Economic Relations," in Abram Bergson and Herbert S. Levine, eds., *The Soviet Economy: Toward the Year 2000* (Boston: Allen and Unwin, 1983), pp. 291-95.

16. The figures are for 1984 and come from Tsentral'noe statisticheskoe upravlenie SSSR, *Narodnoe khoziaistvo SSSR v 1984 g: Statisticheskii ezhegodnik* (Moscow, "Finansy i statistika"), p. 473. (Hereafter cited as *Narkhoz*.)

the important point to be discussed in more detail below, namely, that the consumer has a weak voice in the formal system, far weaker than does the supplier through Gosplan and Gosplan.

On the industrial side of the economy, the basic economic unit in the system is the enterprise, or, in some cases, production associations, which are groups of enterprises.¹⁷ Far more economic power is concentrated in the industrial system than is typical of industrialized Western countries. In 1983 there were only 45,539 enterprises and associations in Soviet industry. Of those, approximately 1,400, each with receipts in excess of 100 million rubles a year, controlled half of the capital stock, employed one-third of the industrial labor force, and accounted for 47 percent of industrial output.¹⁸ This concentration of economic power gives enormous leverage to the central planners, who, through the ministries, can control a substantial share of economic activity by communicating with a relatively small number of enterprises. Planners obviously value that power, and it appears to have increased over time, and Soviet leaders clearly hope to continue that trend.¹⁹

In the formal system these individual economic units in industry, agriculture, and other branches of the economy are charged with providing the center with the information it needs to monitor the

17. The production association (*proizvodstvennoe ob'edinenie*) is a form primarily arising out of the implementation of a 1973 decree ordering ministries to create associations of enterprises under one common management. In some cases the leadership of the production association is as powerful as the management of an enterprise, and the constituent enterprises are in those cases more like plants. In other cases the association is much looser and the enterprises retain a good deal of their autonomy.

18. *Narkhoz* 1984, pp. 128, 158.

19. It is difficult to trace this easily, given the data in *Narkhoz*, which do not make it possible to follow the relevant shares backward for these 1,400 enterprises. One crude indication of the increased concentration is the fact that although the value of industrial production rose by 33 percent between 1975 and 1983 (*Narkhoz* 1983, p. 407), the number of enterprises in industry fell by 1,419 (*Narkhoz* 1975, p. 189; *Narkhoz* 1983, p. 118), whereas the number of enterprises with sales of at least 100 million rubles rose by 522, and the share of enterprises with sales exceeding 100 million rubles in total industrial output rose from 37 percent to 47 percent. On the agricultural side the basic unit is either the state farm (*sovkhoz*, which is directly supervised by the Gosagroprom) or the cooperative farm (*kolkhoz*, formally a collective, but still controlled closely by the Gosagroprom). In 1985 there were 26,200 *kolkhozy* and 22,700 *sovkhozy* and 10,400 other enterprises employing a total of 24.7 million people, or 21 percent of the total labor force. Although the concentration of economic power is lower than in industry, the size of individual economic units is large by international standards. In 1985 the average *kolkhoz* employed 484 people, the average *sovkhoz*, 529. *Narkhoz* 1985, pp. 277, 286, 390-91.

operation of the economy and plan for its future operation, and with fulfilling the plans coming from above. These units are instruments of the state in that they represent the interests of the owners, namely, society at large. Local units have no rights save those granted by the state, and cannot make decisions unless authorized by the state. The state begins new enterprises and can close or reorganize existing enterprises. It appoints top management (subject to party approval), determines its bonuses, and can move management to another position. In sum, in the formal system, enterprises exist at the state's pleasure to serve its purposes.

Between the ministries and the individual economic units there are sets of intermediate authorities. In the industrial ministries, almost all of these are classified as all-union industrial associations (*vsesoiuznye promyshlennyye ob'edineniye*, or VPOs), and each one controls a subset of enterprises within a ministry. Historically these intermediate authorities have been the workhorse of the administrative process, keeping close tabs on enterprises and acting as their immediate superior in all relations with the governmental hierarchy. As a result of that close relationship, they have gained a reputation for meddling in enterprise affairs, which has prompted Gorbachev to move for their elimination.

Up to now this discussion has focused on enterprises supervised by national-level ministries, but it also should be noted that a substantial number of enterprises, particularly in consumer goods and services, are supervised by other government bodies, ranging from the councils of ministers of the fifteen republics to the *gorispolkomy*, the government bodies presiding over cities.

Frequently analyses of the Soviet economy will refer to "the" planners and the decisions they make within the system. Although different people may include somewhat different bodies in the category of planners, in general the term refers to the state committees and functional ministries and excludes administrative bodies from the branch ministries on down, as well as the Politburo and the Presidium of the Council of Ministers. The latter two groups are what is generally meant by the term "the leadership"; the branch ministries and all the administrative units below them constitute the objects of the planning process.

INSTITUTIONS OUTSIDE THE GOVERNMENT AND STATE HIERARCHIES. Although this system is designed to control virtually all economic activity through state institutions, there are certain limited areas in which individuals may legally produce goods, sell them, and provide services

without having any direct contact with the planning system. In general all artisan or individual activity is legal unless proscribed by law; but the proscriptive provisions of the law are quite broad, so that in effect legal private activity is limited to some services and to food production and processing linked to private plots. The use of hired labor is strictly prohibited.²⁰

Among the legal private activities, most are connected with the production and sale of agricultural products on private plots. Families belonging to *kolkhozy* (cooperative farm) are each entitled to private plots up to 1.25 acres in size. Employees of *sovkhozy* (state farm) can work a private plot up to 0.75 acres in size. Employees in urban areas are entitled to private plots of 0.15–0.3 acres, depending on whether the plot is inside or outside the city (the smaller plots being inside the city).²¹ In 1985 land held by all these individuals totaled 7.99 million hectares, or 1.4 percent of cultivatable land in the USSR.²² Aside from being consumed by the families working the private plots, the output is important for supplies (primarily through state-sponsored *kolkhoz* markets) of some of the basic staples of the Soviet diet. Approximately one-third of the total USSR production of meat and milk and two-thirds of eggs come from private plots.²³

The few legal private activities aside from those associated with private plots require a license, and the resulting income is subject to a highly progressive tax.²⁴

The Information System

Economic systems are composed of institutions whose basic purpose is to collect, absorb, and generate information that guides a society in

20. The relevant excerpts from the law can be found in Gregory Grossman, "Notes on the Illegal Private Economy and Corruption," in U.S. Congress, Joint Economic Committee, *Soviet Economy in a Time of Change*, 96 Cong. 1 sess. (Government Printing Office, 1979), vol. 1, pp. 854–55.

21. Paul R. Gregory and Robert C. Stuart, *Soviet Economic Structure and Performance*, 3d ed. (Harper and Row, 1986), p. 272.

22. *Narkhoz* 1985, p. 202.

23. *Ibid.*, pp. 240–41.

24. The tax law has been changed by Gorbachev, who also legalized a wide range of individual economic activities in May 1987. The rates up until then began with a marginal tax rate of 50 percent on incomes of 1,800–3,000 rubles a year, then 60 percent for 3,000–5,000 rubles and 65 percent on all incomes above 5,000 rubles. See Grossman, "Notes on the Illegal Private Economy," note 3, p. 835. The new rates and other aspects of income taxation are discussed in chapter 7.

the efficient utilization of existing resources so as to ensure maximum social welfare. Two basic types of information are of interest.

—Production possibilities, that is, the various possible combinations of goods and services that the system could produce using available capital stock, labor, and other inputs; and the trade-offs among those combinations (the opportunity cost of producing one bundle instead of another).

—Social preferences concerning the use of those production possibilities, which pertain to the trade-offs to consumers of having any particular combination of goods and services in lieu of other possible combinations. Information on preferences covers preferences for consuming today or for forgoing consumption today in order to invest in the expansion of production possibilities. For that portion of national output to be devoted to investment, the information should indicate in what directions production possibilities are to be expanded.

The economic system must somehow bring together the information on what is possible and what society desires and simultaneously decide whose preferences are to prevail, since "society" is made up of individuals whose aggregate wants far exceed society's production possibilities. In large societies with well-developed productive capacity and complex social needs, collecting, absorbing, and generating information is an enormous problem, which grows worse as the society develops.

In the formal version of a market economy, the price system is the core of the information system, automatically generating the information needed to deal with these issues. Because markets operate on the principle of competition among existing producers and the possibility of free entry for others, the ensuing prices provide producers with information on consumer preferences, while providing consumers with information on the relative cost to society of the various bundles of goods and services they might prefer (production possibilities), where those costs are minimal, resulting from the effective operation of the competitive mechanism. Incomes earned by individuals participating in the production process determine whose preferences prevail, that is, who receives the goods and services produced. How much of the nation's output is consumed now, and how much is invested, is also determined by the savings decisions of consumers, which are in turn influenced by a special price, the rate of interest.

One of the most important attributes of prices in this system is their flexibility. As imbalances between supply and demand arise—the inev-

itable consequence of constantly changing production possibilities and preferences—prices move, sending signals that cause both producers and consumers to alter supplies and demands in a way that begins to reduce the imbalance.

Even in "pure" market economies the state has a role to play. It identifies external costs and benefits that the price system does not reflect and alters the incentives for individual economic units so that they will take those costs and benefits into account. It also moves to alter the income distribution in order to adjust for some of the potentially extreme consequences of resource allocation via markets.

The Soviet centrally planned economy grapples with the same information problems, but in a much different fashion. The planning process, not the price system, forms the core of the information system. By means of this process, which is supervised by the government hierarchy, society elicits information on production possibilities, combines it with information on preferences, and generates plans that direct economic units to produce the mix of goods and services that, in the judgment of the party, is optimal for society. This process is designed to identify imbalances between supply and demand when they arise and to set into motion changes that will eliminate the imbalances.

The basic rationale for using the planning process, not the price system, to allocate resources is that it enables representatives of society as a whole to have direct control over all decisions relating to the economic welfare of the population. Markets, according to their supporters, automatically make it in the self-interest of private owners to meet society's needs. Soviet leaders categorically reject that proposition, pointing to the inherent tendency of markets to produce high rates of unemployment, inflation, and a skewed income distribution, all of which rather conveniently serve the interests of those who own capital. Instead they propose to avoid those antisocial phenomena through direct and conscious control of the economic process via state ownership of capital and central planning. Among other things this means that the party directly decides whose preferences will prevail, both with regard to the choice of consumption now and investment and consumption later; and also with regard to the mix of goods produced using current capacity not devoted to investment goods (defense versus consumption goods, the type of consumption goods produced, and so on).

Many of the steps that must be taken in order to coordinate resource allocation decisions occur automatically in a market system, in a fashion

that might be regarded as subconscious from the point of view of society as a whole. Under Soviet central planning those steps are deliberate, not automatic. In market economies the engine that drives events is the market, which lies outside the government hierarchy, and governments intervene to shape events that would otherwise occur automatically. In centrally planned economies the government is the machine that makes things happen. In many ways the situation is analogous to deciding to run a system manually instead of on "autopilot." The amount of information required to do that—which involves not only replicating, but improving upon, decisions made by markets—is enormous. As a result, quite naturally, the planning process is extraordinarily complex.

Plans are the primary, but not the exclusive, mechanism that the formal system utilizes to acquire information and act on it. Prices also play a role in guiding resource allocation, albeit a far more modest role than in market economies. Prices exist in the Soviet Union because they are a useful supplement to the planning process, as is reflected in the way they are determined and the way they are put to use. In addition there are a number of other ways in which planners seek to gather information about the system in their effort to run it.

THE PLANNING PROCESS. The planning process is virtually a constant bureaucratic dialogue that goes on within the government hierarchy, on the one hand, and between it and the party hierarchy, on the other. The dialogue is supervised by Gosplan and is organized around negotiations over five-year and annual plans.²⁵ In both cases the bureaucratic process leading up to final agreements and documents goes through four intermediate, and overlapping, stages.²⁶

a/ —Targets for the macro aggregates and basic branch targets—"control figures"—are set. The branch ministries participate in the negotiations by providing information on production possibilities and needs of the system.

25. I do not discuss here long-term, twenty-year, plans, which are supposed to be a part of the system but in fact have rarely been formulated. For a discussion of the hierarchy of plans, see V. F. Filippov, *Besedy o khoziaistvennom mekhanizme* (Conversations on the economic mechanism) (Moscow: Politizdat, 1984), pp. 14–20.

26. For a discussion of the planning process, see Kushnirsky, *Soviet Economic Planning*, pp. 54–86; Herbert S. Levine, "The Centralized Planning of Supply in Soviet Industry," in Morris Bornstein, ed., *Comparative Economic Systems: Models and Cases* (Homewood, Ill.: Irwin, 1965), pp. 251–77; and R. W. Davies, "Economic Planning in the USSR," in Morris Bornstein, ed., *Comparative Economic Systems: Models and Cases*, 3d ed. (Irwin, 1974), pp. 266–90.

b/ —The control figures are approved by the Politburo, then are sent through the ministries and intermediate authorities to individual economic units as guidelines to be applied in the construction of their annual plans.

c/ —Individual economic units negotiate with their ministries, which in turn negotiate with Gosplan, over alterations in the control figures.

d/ —The draft plan is approved by the Politburo, the Council of Ministers, and the Supreme Soviet and subsequently becomes a law, which passes again through the ministries and intermediate authorities to individual economic units as a legal document to which each economic unit is obliged to adhere.

The similarities between the five-year and annual planning processes should not obscure some significant differences, the most fundamental being that the annual plans guide the operation of the system, whereas the five-year plans are simply guides to the formulation of the annual plans. Thus the negotiations over the annual plans are expected to be the most heated. However, the battle over the five-year plan is far from irrelevant, particularly when it comes to large projects that involve multiyear commitments of substantial investment resources.

Throughout the entire process the basic goals are to collect, absorb, and disseminate whatever information is needed to arrive at a balanced plan that conforms to targets set by the Politburo. Because the economy is divided into many subsectors supervised by ministries, the ministries are virtually guaranteed to fight doggedly for their narrow interests, and to have little concern for the national economic consequences of the plans they propose. Gosplan must search for a bureaucratic consensus, choosing among those competing claims on the basis of the national economic interest, in somewhat the same way that the U.S. Bureau of the Budget mediates the competing claims of various components of the federal bureaucracy. When the conflicts prove difficult to resolve or involve issues of fundamental importance, the final resolution can be shifted up to the Presidium of the Council of Ministers. In the most important and difficult cases, the Politburo serves as the economic equivalent of a supreme court.

Five-Year Plans

Five-year plans have been a hallmark of Soviet central planning since the current system began to take shape under Stalin in the late 1920s.

Every five years the planning system is charged with producing a plan for the upcoming first or second half of the decade. The procedure begins approximately three years before the plan is to take effect as Gosplan begins to gather information on evolving performance under the current plan and the Politburo begins to formulate general targets for the next five-year period.²⁷ The basic purpose of negotiations during what might be called years $t-3$, $t-2$, and the first part of $t-1$ is to establish control figures, or basic guidelines (*osnovnye napravleniia*), which will be used to guide the negotiating and drafting of the five-year plan. The basic guidelines specify the targets for growth rates for national income, investment, defense, consumption, and—in support of those—growth for the various branches and the foreign sector. The key variables here, aside from implied output growth rates, are the level and structure of investment, and this is where the major battles occur. If a large project is to be undertaken, then it must be included in the guidelines; otherwise the investment funds will simply not be available.

After extensive negotiations, the draft of the guidelines is approved by the Politburo and the Council of Ministers, at which point the guidelines also come to embody what will be the main targets for the five-year plan itself. These are published, at least in abbreviated form, and are what Western observers typically refer to as “the” five-year plan. Although they are not the plan, either in theory or in fact, they do represent a good estimate of what planners believe the actual five-year plans of all levels of the hierarchy will add up to for the main economic indicators.

In recent years the basic guidelines have been approved and published as a draft quite late in the planning process. For example, the guidelines for the Eleventh FYP (1981–85) appeared in December 1980; those for the Twelfth FYP in November 1985. Even if, as is likely, the guidelines are made known to the hierarchy before they are published, they are probably finalized too late in the year for the ministries to disaggregate the figures and pass them down the line in time to finish negotiations with economic units before the beginning of the five-year plan period. Therefore, the second stage of the planning process probably overlaps

27. It is clear from reports of Politburo meetings, for example, that the Politburo and the government hierarchy were working on the Twelfth Five-Year Plan during much of 1983 and that by 1984 the entire process was in full swing. For some of the key dates, see Ed A. Hewett, “Gorbachev’s Economic Strategy: A Preliminary Assessment,” *Soviet Economy*, vol. 1 (October–December 1985), p. 287.

with the first to a considerable extent. Gosplan is already drafting the five-year plan itself, and the ministries are already negotiating with individual economic units on their five-year plan drafts, at the time that the basic guidelines are being finalized.

The planning process is in one sense a massive aggregation and disaggregation operation. In the early stages Gosplan uses the ministries to draw information out of individual economic units, aggregating the details as it moves up the hierarchy toward the center. For example, the Ministry of Ferrous Metallurgy is charged with gathering information on the possibility of producing key types of steel in its factories; it obtains this information through intermediate authorities who have intimate knowledge of, and are in constant contact with, the individual enterprises.

During later stages of the process, Gosplan uses the ministries to pass down the hierarchy obligatory tasks that constitute in sum the effort to fulfill aggregate plan targets. In the Ministry of Ferrous Metallurgy, for example, the five-year plan will include targets for the output of key steel products, which Gosplan sends to the ministry, and the ministry then disaggregates through intermediate authorities into obligatory targets for individual enterprises.

However, planning consists of another important function in addition to the aggregation and disaggregation of information: during the planning process the hierarchy engages in the critical search for a balanced plan. The branch departments in Gosplan work through the ministries they oversee to find ways to increase output and decrease input use. The most important input figures pass back and forth among branch departments, while other departments charged with achieving overall balance gather information from all the branch departments in order to identify impending imbalances and act to eliminate them by ordering more output, reducing planned input use, or authorizing an increase in net imports. During the negotiations over the five-year plan this process is probably at a relatively aggregated level, and apparent gaps in the balances are probably not a matter of great concern. During the annual plan negotiations, imbalances are a much more serious matter, since all parties are negotiating over actual claims to resources in the coming year.

This process culminates in a set of five-year plans for the hierarchy as a whole, which is aggregated into the five-year plan for the nation. This five-year plan, in the form of a final draft of the basic guidelines, is one of the major items considered by the Party Congress and must also

be subsequently approved by the Supreme Soviet. After that it has the force of law for the entire hierarchy and should guide the formation of annual plans.

To serve that function, the five-year plans should be prepared well in advance of the period to which they apply. According to regulations, the control figures are to be sent to the ministries and intermediate authorities, as well as the union-republic councils of ministers, eleven months before the start of the new five-year period. The draft five-year plan is to be sent to the Council of Ministers for approval five months before the start of the new five-year period.²⁸

In fact the law has never been complied with. In recent years the five-year plan has been considered and passed well into the first year of the five-year period to which it applies, so that whatever guidance it provided, at least in the preparation of the first annual plan of the new period, had to be based on the evolving draft.²⁹

Outsiders know only a fraction of what is included in the five-year plans. The basic guidelines have been published, in truncated form, both as a draft, and in their approved form after being reviewed by the Party Congress. However, recent five-year plans themselves have not been published, even in truncated form, with the exception of the Ninth FYP (1971–75).³⁰

ANNUAL PLANS. The annual plans constitute the operational plans by which the state seeks to control the bulk of activity in the entire economic system. The process by which these plans are developed is basically similar to that for the five-year plans, but it is compressed in time and expanded in coverage. Although planners are to be guided by the five-year plan in preparing the annual plan, they must also react to changing situations, to assumptions that turned out to be unrealistic, and possibly to changing central priorities. These plans embody the decisions of the central authorities that determine how resources will be allocated in the economy. The five-year plan may call for a 3 percent growth in invest-

28. Filippov, *Besedy*, p. 33.

29. The draft of the Tenth FYP (1976–80) was accepted (as basic guidelines) by the Twenty-fifth Party Congress in March 1976 and by the Supreme Soviet in October of that year. The Eleventh FYP was accepted by the Twenty-sixth Party Congress in March 1981 and approved by the Supreme Soviet in November of that year. The Twelfth FYP was accepted by the Twenty-seventh Party Congress in March 1986 and approved by the Supreme Soviet in June of that year.

30. *Gosudarstvennyi piatiletnii plan razvitiia narodnogo khoziaistva SSSR na 1971–1975 gody* (State five-year plan of the development of the economy of the USSR during 1971–1975) (Moscow: Politizdat, 1972).

ment, but the annual plans specify precisely what resources will be devoted to investment in each particular year. The five-year plan may call for rapid expansion of nuclear power and coal, but the annual plan represents the outcome of the battle between the ministries of electric power and coal over investment resources, and it is the annual plan that determines the actual course of investment in those two industries.

It is probably useful to regard the five-year plans as a serious effort by the party and the government to come up with an internally consistent statement of possibilities, priorities, and therefore targets that they will attempt—during the annual planning process—to translate into reality. It is the plan of battle before the battle. What in fact happens will depend on many variables that cannot be, or were not, predicted at the time.

Because the annual plans are operational, they inevitably focus on a search for balance, both in aggregate categories (consumption, investment, foreign trade), and among critical commodities. The approximately 2,000 commodities judged to be of the greatest importance are the direct responsibility of Gosplan, particularly its summary departments, which negotiate with producing ministries on supplies, and with all ministries on use. For each of those commodities the summary department draws up a balance indicating sources (production, imports, stock drawdowns) and uses (industry, final users, export, stock additions). When the balance shows a deficit, the Gosplan department in question must somehow enhance sources or decrease uses in order to bring the account closer to balance. Approximately 400 of these products are designated funded commodities, the distribution of which must be approved by the Council of Ministers. Subsequently they are assigned, generally to ministries or organs of Gossnab, which then distribute them. Funded commodities include key primary and energy products (such as electric power and oil products), important intermediates (such as chemical and rubber goods), and a small list of machinery and equipment.³¹ The remaining commodities are assigned by Gosplan, but without the direct approval of the Council of Ministers, and are also distributed by Gossnab departments.³²

Gossnab, either directly or through its territorial supply administra-

31. For details from the late 1960s, see Gertrude E. Schroeder, "The 'Reform' of the Supply System in Soviet Industry," *Soviet Studies*, vol. 24 (July 1972), p. 99.

32. For details, see Berliner, *Innovation Decision*. His data on the number of commodities planned from Gosplan are for 1969. However, Morris Bornstein has found a 1981 source with similar figures; see "Improving the Soviet Economic Mechanism," *Soviet Studies*, vol. 37 (January 1985), p. 7.

ministries, is responsible for the balances of a much larger group of commodities, which probably number somewhere in the range of 15,000.³³ The branch ministries are responsible for another 50,000 or so product groups.³⁴ During the first quarter the control figures for the coming year are developed. The control figures are based on goals approved by the Politburo, information on recent performance, and norms for improved efficiency in the use of major inputs (labor, capital, and selected materials). In the main, these figures pertain to the planned growth of national income and its distribution among final uses, which in turn will imply outputs for various branches, given plans for net exports. These data, as they apply to various branches, are sent to ministries for disaggregation and are then sent on through intermediate authorities to individual economic units. Individual economic units and ministries are charged with sending draft plans back to the center in response to these control figures. Negotiations ensue during the second and third quarters along the entire chain of authority in the hierarchy as enterprises negotiate with intermediate authorities for adjustments to the targets for outputs and inputs they received. Intermediate authorities in turn must negotiate with the ministries, and the ministries with Gosplan. Except for the most difficult cases, Gosplan is the center of these negotiations, the court to which all participants take their case for more resources.

In theory this process should conclude with a draft plan that is to be reviewed by the Council of Ministers in September, although in fact it typically goes to the council much later. It is then considered at the December meeting of the Supreme Soviet, passed into law, and sent down the hierarchy as an obligatory set of targets.

The annual plan specifies in aggregate, but considerable, detail all major aspects of economic activity in the system. Each ministry, each

33. Different sources give different numbers, and the numbers vary over time. Bornstein, "Improving the Soviet Economic Mechanism," p. 7, quotes a source for 1981 saying that Gosplan is responsible for "up to" 15,000 products. N. P. Fedorenko puts the figure at 18,000 for what must be about the same time. "Planirovanie i upravlenie: kakimi im byt'?" (Planning and management: Which will it be?) *EKO*, no. 12 (December 1984), p. 8. Berliner, *Innovation Decision*, p. 64, has sources for the late 1960s putting the figure at about 16,000.

34. Both Fedorenko, "Planirovanie i upravlenie," p. 7, and Bornstein, "Improving the Soviet Economic Mechanism," p. 7, agree on that general figure. Most of each year the government hierarchy is involved in some phase of the annual planning process, much of it focused on constructing the balances and dealing with deficits. For an account of the annual planning process see, for example, Kushnirsky, *Soviet Economic Planning*, pp. 57-67, 88-90.

republican council of ministers, has a set of specific output targets that add up to a target for total output of key commodities; further down the hierarchy other plans drawn up by Gosplan, the republic ministers and councils of ministers, the ministries, and local authorities specify outputs of many more commodities. The hierarchical system guarantees that the targets for those products planned centrally are disaggregated directly down to individual economic units. For the most important commodities, there are not only output targets, but also allocation certificates (*nariady*) allocating supplies among users; similar certificates are issued by Gosplan and the ministries for commodities under their control.

Those allocations imply a set of final users and uses for the key commodities in the system, both in terms of consumption versus investment and in terms of the types of consumption goods to be produced. Automobile production, for example, is divided among export, Soviet enterprises (including taxi enterprises), the government, and organizations retailing autos; under this allocation system, consumption, investment, government expenditures, and export for that commodity are directly specified. By deciding which enterprises receive how many autos the system even decides the structure of investment expenditures on automobiles, and so on. A similar story could be told for other centrally planned commodities.

In theory Gosplan has also drawn up balances from the side of users: total investment versus the supply of investment goods, total consumption versus consumer income, and so on. In some sense that information is redundant if the commodity allocation system is working well and covers all key commodities, but still it is helpful in order to keep track of aggregate uses of national income, and to detect potential balance problems, such as excess demand for consumer goods.

At the other end of the hierarchy, at the enterprise end, the plan that finally comes down the hierarchy as law is a formidable document—the *techpromfinplan*—which specifies all major aspects of enterprise activity in six categories: production, material inputs, introduction of new technology, capital construction, labor and social development, and finance.³⁵ For a large enterprise, the number of obligatory targets in these six categories can easily fall in the range of 200-300.³⁶

35. Filippov, *Besedy*, p. 65.

36. For example, the head of the Nevsky Factory in Leningrad (famous for its production of 25-megawatt turbines for the large natural gas pipelines) complained recently that his enterprise must seek to fulfill 300 separate plan targets on an annual

just plan → The enterprise is given a set of obligatory targets in each category that set out in detail planners' requirements for that enterprise, filtered through the ministry and intermediate authority. The production plan has a target for overall economic activity of the enterprise (in recent years, the volume of sales), targets for the output of key products in physical units, and targets for the share of enterprise output to be accounted for by products certified as being of the highest quality in the USSR's three-tier quality standards system (highest, high, and all others). If the enterprise produces funded commodities, then it will also receive from Gosstab shipping orders (*zakaz-nariady*) specifying how planned volumes of output will be distributed among potential customers.

The input plan will specify authorized levels of input for funded commodities and the sources of input, along with *nariady* allowing the enterprise to conclude contracts with the designated suppliers (who have received the *zakaz-nariady*). Depending on the plan and *nariady*, the enterprise can proceed to negotiate contracts for inputs.

The plan for the introduction of new technology specifies innovations in products and processes that the enterprise will introduce during the year. The closely related capital construction plan specifies authorized capital construction projects and will include authorizations to acquire the required machinery, equipment, construction services, and so on.

The labor and social development plan includes a specification of the ceilings on the size of the enterprise labor force, with subtargets for the number of white- and blue-collar workers, and for the share of manual laborers in the labor force; a limit on the total wage bill; and norms that specify what share of profits can be placed in accounts the enterprise can use for premiums (Material Stimulation Account), for social-cultural projects and housing (Social-Cultural Measures and Housing Account), and for small capital construction projects (Development Account).

The financial section of the plan specifies the major financial flows for the enterprise, most notably, profits, loans incurred and repaid, and reserve funds.

plan again → The planning process also generates fairly detailed plans for *sovkhozy* and *kolkhozy*, although of a somewhat different nature. Since the mid-1950s Soviet planners have pulled back from efforts to plan the entire production process of each agricultural unit, from inputs through outputs. Instead the plans have concentrated on obligatory deliveries of a

basis. "Korennye zadachi mashinostroitelei" (Fundamental tasks of the machinebuilders), *Sotsialisticheskaia industriia*, November 12, 1986. (Hereafter *Sots. ind.*)

obligatory deliveries + P. → list of products for each farm unit, along with a price schedule for deliveries up to the quota, and a second (higher price schedule) for above-quota deliveries. These obligatory deliveries are sufficiently large and detailed to make them almost as constraining as the output plans sent to industry.³⁷

→ THE PLANNING PROCESS AS AN INFORMATION SYSTEM. The most striking characteristic of central planning institutions as elements of an economic information system is their bias toward the supply side of the information problem. The entire hierarchy is built around suppliers, not purchasers. Much of the planning process is devoted to eliciting information on the production possibilities of the suppliers and to searching for balanced plans that will meet the mutual needs of the production system and fulfill demand targets for various products.

The main link to final customers is the Politburo and Council of Ministers, who together set the basic targets for the system and allocate national product among competing claims on final output from consumers, investors, the military, other government purchases, and foreign trade. Thus in the centrally planned economy, the allocation among claimants is a political decision handled outside the system. It is the Politburo, for example, not the population acting through a market, that sets the savings and investment rate.

Given that basic allocation of national product, there is still the question of what goods each set of final demand claimants will receive. Here the power of the competing groups varies enormously. There is no obvious mechanism that allows consumers to register their preferences for goods and services. Investors have a better chance than consumers of having their preferences taken into account because they are part of the supply problem of direct concern in the planning process. The military has the best chance of all because of its long-standing high priority.

Clearly the task of replicating markets is a formidable one requiring designs that minimize the information required by the bureaucracy to do the job. That is why, in fact, much of the planning actually occurs in ministries or in governmental bodies below the national level (republican, *oblast*, or city). The center tries to focus only on the most important commodities and leaves the lower levels other parts of the planning problem. Also, planners work with commodities aggregated into cate-

37. Jerzy F. Karcz, "An Organizational Model of Command Farming," in Bornstein, ed., *Comparative Economic Systems*, pp. 291-312.

gories, not the individual commodities, leaving to lower levels the disaggregation to actual products. There aggregations are one important reason why commodity values, and therefore prices, are indispensable to planners. But even if planners rely on these devices to cut down on the information load, they are left with an enormous information problem. In the next chapter I discuss the other practices that have evolved as a de facto response to the problem.

THE PRICE SYSTEM. The Soviet price system is designed to support the planning system, not the other way around. Like the planning system, the price system is biased toward the supply side. Whereas prices in market economies are rich with information on both the demand for products and the costs of producing them, Soviet prices in general provide information only on the relative costs of goods and services, which serve as an input into planning decisions. These cost-based prices are also useful to planners as a means of evaluating enterprise performance and controlling it, by inducing enterprises to use their relatively small room for maneuver within the plan in ways that reduce costs. In brief, the Soviet price system is an appendage to the planning system, purposely designed to facilitate planners' efforts to collect information on production possibilities and to control individual economic units.

Because planners must constantly be on the alert for ways to cut down their enormous information load, prices are set for long time periods to facilitate the construction of plans to cover those periods, and to avoid the daunting task of recalculating the myriad of interrelated prices in the entire economic system. For example, following a price reform in 1966-67, prices in industry were not changed again in a large-scale fashion until the price revisions of 1982. In the intervening fifteen years industrial prices in the USSR remained essentially unchanged.

This is what is frequently called a passive price system: that is to say, it is affected by plans, but does little to affect them. One of the most striking testimonies to the passive nature of the system is the fact that in reality there are a multitude of price systems in the Soviet economy, which are only weakly interconnected, if at all. Several categories of prices are important.³⁸

—Industrial or "wholesale" prices that prevail in transactions be-

38. The first six categories in this listing are taken from Morris Bornstein, "The Soviet Industrial Price Revision," in G. Fink, ed., *Socialist Economy and Economic Policy: Essays in Honour of Friedrich Levick* (New York: Springer-Verlag, 1985), pp. 157-58. The last category is my addition.

tween producers which can be divided into three subcategories: (1) enterprise wholesale prices, which are those received by suppliers; (2) industrial wholesale prices—those paid by enterprises for the purchase of goods of other enterprises—which equal the enterprise wholesale price plus, possibly, a tax on the product, a wholesale markup, and transportation costs; and (3) "settlement prices," which differ for each producer, used in branches such as mining, where costs vary widely among producers.

—State retail prices, which are charged by state retail outlets. These equal industrial wholesale prices plus any other taxes and charges that may be added or subsidies. The taxes are used to dampen demand for products in short supply; the subsidies (for example, on housing or food) are a matter of social policy.

—Agricultural procurement prices paid to farms for products procured by state agencies.

—Collective farm market prices, which are prices charged by individuals and collective farms for produce marketed through the collective market system (produce not subject to state procurement, and produce grown on private plots).

—Foreign trade prices, which are the prices the USSR charges foreign customers for its products. There are four price systems here: one each for exports to and imports from the Council for Mutual Economic Assistance (Communist-bloc nations), denominated in transferable rubles; and one each for exports to and imports from developed countries and most developing countries, denominated in dollars. None of these four sets of prices is linked in any systematic way to Soviet domestic prices because Soviet planners are unwilling to allow foreign markets to directly influence the economy.

—Wages and various bonus schedules. Wages in state industry and *sovkhozy* are generally governed by a centrally determined, six-tiered wage scale (linked to skills), with numerous additional gradations for the difficulty, conditions, and location of the work. Soviet planners use the gradations to influence the movement of labor among industries, skills, and regions.³⁹

—What I call planning prices, which are set to guide internal decisionmaking within the system, but which do not actually apply in specific transactions. There are many of these, the most important being (1)

39. For a brief summary, see Leonard Joel Kirsch, *Soviet Wages: Changes in Structure and Administration since 1956* (MIT Press, 1972), chap. 1.

"closing prices" (*zamykaiushchie zraty*), which are rough approximations of shadow prices from large linear programs and are used to plan investments (for example, in choosing among power plants using different fuel inputs, Soviet planners used the ZZ to price the inputs);⁴⁰ (2) "normative net output" for each product produced by an enterprise, calculated as the value that would be added in the production of a particular item by an enterprise if the enterprise used labor in quantities and quality mixes specified in centrally determined norms for that branch (essentially this works out to planned labor costs, social insurance cost, and planned profit on the product); these are "prices" for the enterprise because the normed value added coefficients are used to calculate normative net output (*normativnaia chistaia produktsiia*) for each enterprise, which determines some of the bonuses that an enterprise will receive;⁴¹ and (3) various bonuses established in annual plans, which inform enterprises of the relative rewards for fulfilling individual targets in the plan.

Various national entities determine, or supervise the determination of, these prices. Wholesale, retail, and procurement prices are set by Goskomtsen. Collective farm market prices are basically market prices, although the state monitors them. Foreign trade prices are negotiated by the Ministry of Foreign Trade under the general guidance of the Council of Ministers and the specific guidance for politically determined prices relating to important commodities traded with Eastern Europe. Goskomtrud sets wage rates. The planners' prices are generally set by Gosplan and the branch ministries.

This potpourri of prices and price authorities, although formidable, is not what distinguishes the Soviet Union from other developed economies. Markets may "determine" prices in Western countries, but in reality an equally long list of types of prices and price authorities could be compiled for any Western country. Rather, the Soviet pricing arrangements differ markedly from those typical of a Western industrial country in other ways, and they differ so much that it is stretching the point to talk of a Soviet price "system."

40. For a discussion of ZZ for the energy sector, see Robert W. Campbell, "Energy Prices and Decisions on Energy Use in the USSR," in Padma Desai, ed., *Marxism, Central Planning and the Soviet Economy: Economic Essays in Honor of Alexander Erlich* (MIT Press, 1983), pp. 249-74.

41. The normative net output procedure is discussed in Bornstein, "Improving the Soviet Economic Mechanism," pp. 9-10.

First, the various types of prices are weakly connected. Foreign trade prices have little influence on domestic prices, with the possible exception of imported machinery and equipment.⁴² If, for example, the price of oil falls from \$25 a barrel to \$10, Soviet export prices will follow that, but the domestic wholesale and retail prices of oil and oil products will remain unchanged, unless Goskomtsen moves to change the price. During the 1970s when the world price, and Soviet export price, of oil exploded, Soviet domestic prices of oil and oil products did not change.⁴³ Fluctuations in the world price (and Soviet import price) of grain have no direct influence on Soviet feedgrain prices or the price of grain products. Similarly, although wages are a component of costs used to calculate prices during infrequent price revisions, when they move subsequently, the price of the product does not follow.

The lack of connection among the various price systems can, at the very least, lead to disproportions in the economy that can only be addressed through complex price revisions at irregular intervals. But, in addition, the poor connection between wholesale and retail prices can postpone necessary changes with potentially serious political consequences. For example, the rapidly rising costs in Soviet agriculture in the 1980s, which have not been passed on to consumers, have made it necessary to introduce subsidies to cover the difference between procurement and retail prices, which amounted to 29.9 billion rubles in 1982 and 54.7 billion rubles in 1984.⁴⁴ The 1984 figure amounted to 14.2 percent of the state budget for that year.⁴⁵

There are areas in which prices are interconnected closely; this is particularly the case for industrial wholesale prices. Price reforms take years to prepare because Goskomtsen is seeking to set prices for all of industry, where the inputs of one enterprise are the outputs of another,

42. Price regulations specify that imported machinery and equipment will be priced according to comparable Soviet domestic machinery, or a best guess at that. In fact, Vladimir Trembl's research suggests that such a cumbersome procedure has not worked and that imported machinery tends to receive a price equal to the import price, converted at the official ruble-dollar (or yen, and so on) exchange rate. See Vladimir G. Trembl and Barry L. Kostinsky, *Domestic Value of Soviet Foreign Trade: Exports and Imports in the 1972 Input-Output Table*, Foreign Economic Report 20 (U.S. Department of Commerce, 1982), pp. 20-21.

43. Ed A. Hewett, *Energy, Economics, and Foreign Policy in the Soviet Union* (Brookings, 1984), p. 135.

44. V. V. Dementsev, "Finansovye richagi intensivnogo razvitiia" (The financial means for intensive development), *Ekōn. gaz.*, no. 13 (March 1985).

45. *Narkhoz* 1985, p. 559.

in a way that preserves profitability throughout the system at a relatively constant level across branches.⁴⁶

Enterprise wholesale prices are set to reflect branch costs of production, so that individual enterprises operating at lower than branch costs will be rewarded, and those above penalized, while overall the branch is profitable. If products are not selling but are piling up in warehouses—as happens all too frequently in this system—the result is not a drop in the price. At most, if planners are on to the problem, the enterprises responsible will be pressured to develop a better product or there may be a “sale” in which the retail price of the product (if it is a consumer good) is reduced; but the enterprise wholesale price does not change. Likewise, if an enterprise is producing an item that is highly valued by society or foreign buyers (for example, oil in the 1970s), the enterprise wholesale price does not deviate from the centrally determined, cost-based, price. The only way enterprises will know their product is highly valued is through nonprice signals (direct communication from the customer or possibly a thriving black market for the item).

Another distinguishing feature of Soviet price arrangements is the long time periods for which prices are fixed, particularly industrial wholesale prices, which are at the core of the system. Because the costs of production, even at fixed prices, will change, over time the fixed set of cost-based prices will become obsolete even as a reflection of supply conditions for products. This can easily be seen in the drop over time in profit rates for some branches, particularly those involved in resource extraction, for which input costs can grow rapidly even at fixed prices as diminishing returns force physical inputs to increase.

The experience of the coal industry is typical. In 1970, three years after the price reform, coal industry profits were 7.3 percent of capital (fixed and working). By 1981 the industry as a whole was running losses equal to 9.4 percent of capital. The 1982 price revisions reduced the loss to 3.2 percent in that year, but then losses rose to 5.4 percent on capital in 1984.⁴⁷

Between price revisions, when prices are “fixed,” the price system is nevertheless in constant motion as some items leave production and new ones are introduced. Indeed much of Goskomtsen’s time between

46. For example, preparation for the 1982 price revisions began in 1979 and occupied the bureaucracy for three years. See Bornstein, “Soviet Industrial Price Revision,” pp. 157–70.

47. *Narkhoz* 1984, p. 565.

price revisions is probably taken up with monitoring the process by which new product prices are determined. New products developed by enterprises, typically in fulfillment of plan obligations, are initially sold at provisional prices determined by the ministry (from information supplied by the enterprise), which cover the initial serial production costs plus a profit. Then within several years the ministry is required to apply for a permanent price, which is determined by a complicated set of procedures set out by Goskomtsen.⁴⁸ A number of authorities must approve the proposal, but final approval, which can involve an enormous amount of work, is left to Goskomtsen.⁴⁹

OTHER INFORMATION MECHANISMS. Planners also rely on many other sources of information about the system, but I can only touch on them here. One of the most important is the Central Statistical Administration (TsSU), formerly part of Gosplan until it attained independent status in the late 1940s. Now a ministerial-level entity, this is Gosplan’s most important source of information on the performance of the system and its capabilities. Some of the data collected by the TsSU are published and are an important resource for any research on the Soviet economy. However, much of the data are fairly detailed and of direct use to planners, and are not available to outsiders.

In addition various levels in the hierarchy collect their own information, in part in an effort to carry out the orders from the center. Much of this information does not go all the way up the hierarchy, nor is that necessary. What is important is that as the ministries and local authorities negotiate with individual economic units and the center over resources,

48. For an excellent discussion of new product pricing, as well as other aspects of the administration of price formation in the Soviet Union, see Morris Bornstein, “The Administration of the Soviet Price System,” *Soviet Studies*, vol. 30 (October 1978), pp. 466–90; on new product pricing in particular, see pp. 474–75.

49. A recent account of the work of the Ukrainian Goskomtsen regarding a proposed price for a single product provides some flavor of the enormous effort required to do this job properly. The Prikarpatpromaratura Association in Minkhimmash sent Goskomtsen Ukraine a proposal for a price for a detergent. They estimated their production cost at 18.30 rubles for some unspecified unit. They proposed a wholesale price of 20 rubles, and a retail price of 23 rubles. However, Goskomtsen knew that other associations were producing a similar product at much lower cost; therefore specialists on the price committee delved deeply into the documentation accompanying this application. The price was the outcome of costing out 124 operations; Goskomtsen specialists checked the norms for each, and found 107 were artificially inflated. They redid the calculations with proper norms, and concluded that the cost would be approximately 15.5 rubles, and that the retail price should be 18 rubles. See L. Ogienko, “Obosnovannost’ tseny” (The soundness of a price), *Sots. ind.*, February 18, 1986.

they use their own capabilities to gather data in order to conduct a negotiation with maximum information.

One example of the type of information the center and ministries attempt to collect and use concerns the enterprise *passport*, which each enterprise has had to prepare annually since about 1980. The *passport* consists of thirty-nine forms that the enterprise must fill out in order to ascertain the productive capacity of the enterprise, its full inventory of capital stock and working capital, its labor force, and its recent performance record. This is clearly an attempt to develop a data bank for the economy as a whole showing the productive capacities of each enterprise. Such a data bank, if complete and accurate, could prove an invaluable aid in the planning process.⁵⁰

The Incentive System

In the best of all possible worlds the *passport* would provide the central planner with precise information on production possibilities in his system, and he would have the computing capacity to use that information to devise a consistent plan that maximized the goals of the political leadership. Then it would be possible to order each economic unit to produce a specific mix of goods and services by using a specific mix of inputs and by assuming a certain set of efficiencies for the use of inputs to produce outputs. Enterprise managers in this situation would have no room to maneuver, their sole job being to see that in fact the enterprise was operating as efficiently as the center knew it could. Violations of any part of the plan could be dealt with by the center swiftly and with confidence; they know what each economic unit is capable of, and if they fall short of those capabilities, the management will be replaced.

In this world planners resemble the captain of a ship whose passengers are also the crew. Planners know precisely the performance characteristics of the ship, and can—from the bridge—utilize a wide array of controls to bring the ship up to the edge of any or all of its engineered capabilities. The problem for them is to decide where to go, how to get there, what to do on arrival, and how much of the scarce time of the passengers should be devoted to repairing and improving the ship, as opposed to enjoying the cruise. They know the capabilities of their

50. The *passport* requirement was part of the 1979 decree. For a brief discussion, see Filippov, *Besedy*, pp. 37–45.

system perfectly; what they must focus on is their preferences and how this well-known system can best serve those preferences.

Even the most visionary and optimistic advocates of central planning will readily admit that such a utopian (or nightmarish) vision of an omniscient, and omnipotent, planning authority is currently not even remotely attainable. Soviet planners have learned through long, and sometimes bitter, experience that information is a commodity that can be extremely difficult and costly to purchase and difficult to manage. As a result, they know that to some extent they are flying blind.

To return to the analogy of a ship, in a real-world economy that is centrally planned the planners are on the bridge, facing an array of gauges and controls that report on the status of the ship and control its movements. However, none of the gauges or controls are directly linked to the systems that run the ship. Rather, they are linked to a hierarchy of control panels on various of the lower decks, each of which is manned by other members of the crew who enter data from above that are to be sent down and aggregate data from below that are to be sent up. Speed, direction, fuel consumption, the state of the machinery—all these details come indirectly to planners through a hierarchy of individuals, all of whom have good reasons in some cases to distort the information traveling to the top. By turning the wheel or shouting instructions to other levels, planners issue commands to stop, start, turn, speed up, or slow down the ship. However, individuals at those other levels actually determine what happens. Sometimes what happens is what planners expect, sometimes not. Sometimes they think they know why something happened; at other times, they are baffled. They can run down to this or that station in the ship to check up on some part of the system, but if they do much of that, they won't have time to run the ship. Basically they have to stay on the bridge and cajole the crew into sending up accurate readings and responding to commands.

The formal system in the Soviet Union reflects the scarcity of information and the limits of planners' powers. Implicit in the system is the recognition that the center can never know enough to eliminate the enterprise director's room for maneuver—plan targets will inevitably be internally inconsistent, situations will change, and so on; therefore the incentive system is designed to induce individual economic units to make choices that central planners would make if they knew everything that the management of the individual economic unit knows.

This has obvious potential for becoming an elaborate game in which

the center needs information—and can offer rewards to enterprise management and workers—as well as access to scarce resources in exchange for the information. The individual economic units want those rewards and need the access to scarce resources, and can manipulate the information in an effort to acquire them.

The passage of time makes the game infinitely more complex and interesting than it otherwise would be. Year after year the two sides engage in the game, using the information they have accumulated in an effort to gain an advantage for the future. The past is the major source of information available to the center in its effort to verify independently the current flow of information coming from individual economic units. For example, the norms so critical to the construction of control figures and to the setting of prices are heavily influenced by information on input use in the past. Enterprise managers know this and therefore try as best they can not to take actions which will reveal too much and cause them difficulties in future years. The center knows they know that and is doing its best to draw them out. In the midst of all this stand the ministries, which are also seeking to draw information out of enterprises and control them while dealing with the center on behalf of those units.

→ The center relies on two types of incentives to make the system operate. The primary mechanism is material incentives: bonuses and penalties, but primarily bonuses, designed to elicit cooperation from individual economic units. The secondary mechanism is moral incentives introduced through general propaganda, but also directly through the local party organizations, which are used to supplement material incentives.

The two basic problems the center faces—obtaining information on production possibilities and inducing individual economic units to work up to their full capabilities—are clearly interrelated. Inducing enterprises to do what you want them to do is much easier if you have a good notion of their capabilities. If you are uncertain about those capabilities, the problem of controlling enterprises is much more difficult. When you send a plan down to enterprises and they complain it is outside their capabilities, you cannot be sure that they are telling the truth. In reality the two problems become one, and what the planner must do is keep constant pressure on enterprises to improve their performance, using the information on plan fulfillment to sustain the pressure in subsequent periods.

MATERIAL INCENTIVES. The material incentive mechanism within So-

viet central planning rests on the ability of the center to tightly control the size of earnings retained by the enterprise and their distribution among accounts, which can be used to significantly affect worker welfare and investments in the enterprise. A detailed set of national-level regulations, supplemented by regulations promulgated by each branch ministry, specifies the accounts (*fondy*) that an enterprise can establish, the amount of net earnings that can go into each account, and the uses to which the funds in each account (bonuses, small investments in the factory, and expenditures for housing and other facilities for workers) may be put. Annual plans specify in considerable detail the flow of earnings into those accounts as a function of fulfillment of key targets. The implicit assumption is that enterprise managers will be sufficiently motivated to bring funds into those accounts—in order to pay bonuses, provide amenities for workers (including housing), and make small investments—and that they will make every effort to fulfill the key targets in the plan and thus earn the right to retain and use the funds.

The rules for the distribution of earnings among these accounts constitute one of the policy instruments most frequently resorted to by planners in their effort to improve the operation of the system without dramatically changing it. Every reform introduced since 1965 has included, but has not been limited to, numerous changes in the bonus rules. They are discussed in somewhat more detail in subsequent chapters. For present purposes it is sufficient to outline the basic approach.

The nature of the centrally imposed accounting system under which managers work can best be explained by examining a simplified version of 1985 accounts for all industrial enterprises in the Soviet Union. Table 3-3 shows the distribution of profits in 1985 between contributions to the central budget and retained earnings, and the general distribution of retained earnings. Table 3-4 shows the breakdown of actual disbursements from all the accounts under the heading “economic stimulation” (*fondy ekonomicheskogo stimulirovaniia*), which are the basic accounts that enterprise management can draw on to pay bonuses, finance other expenditures affecting worker welfare, and undertake small capital projects in the enterprise.

Table 3-3 shows that during 1985 enterprises were authorized to retain a total of 45 percent of their profits in various accounts, the two most important being the economic stimulation accounts, discussed below, and those accounts reserved for interest and debt repayments; together

Table 3-3. *Distribution of Profits in Soviet Industrial Enterprises, 1985*

Profits	Percent	Amount (millions of rubles)
Total	100	100,619
Paid to state budget	55	55,340
Capital charges	26	26,161
Rent (resource), miscellaneous	6	6,037
Residual to state	23	23,142
Retained by enterprises	45	45,279
Economic stimulation accounts	17	17,105
Inventory and planned losses	4	4,025
Capital expenditures	4	4,025
Other (interest, debt repayment)	20	20,124

Source: Tsentral'noe statisticheskoe upravlenie SSSR, *Narodnoe khoziaistvo SSSR v 1985 g.*: Statisticheskii ezhegodnik [Narkhoz] (Moscow: "Finansy i statistika," 1986), pp. 548-49.

Table 3-4. *Funds Paid out of Economic Stimulation Accounts in Industrial Enterprises, 1985*

Account	Percent	Amount (millions of rubles)
All	100	21,881
Economic stimulation	93	20,268
Material stimulation	39	8,473
Social-cultural and housing	15	3,203
Development of production	39	8,592
Other	7	1,613

Source: Narkhoz 1985, p. 557.

these accounts hold 79 percent of retained earnings. The remaining 55 percent of total profits reverted to the state via two mechanisms. Some of the profits were paid to the state for specific charges, the largest being the charges for fixed and working capital, which amounted to 45 percent of the payments to the state budget out of gross profits of industrial enterprises. These charges on capital, instituted during the 1965 reforms, represent an effort to induce enterprises to economize on capital that they received free of charge from investments financed out of the state budget.

When all direct payments to the state budget are calculated, along with authorized payments into enterprise accounts, the remainder of

profits reverts to the state budget. In 1985 that amount was 23.14 billion rubles, which was 23 percent of gross profits in that year.

Table 3-4 shows the breakdown of payouts from the economic stimulation accounts, the three important accounts being (1) Material Stimulation, (2) Social-Cultural Measures; and (3) Development of Production.

The Material Stimulation Account is a critical one for enterprise management. It is the sole source for their bonuses (top management's bonuses are determined by the ministry; the remainder of management's bonuses by top management). This account, along with a portion of the Wage Account, is the source of all bonuses to workers. Because wage scales are fixed centrally, these bonuses are the primary device available to management for rewarding those workers who contribute most to plan fulfillment.

Data on the share of worker's income from bonuses are difficult to find. According to the latest data, in the early 1970s bonuses for manual workers constituted 15 percent of their base pay, and that share was rising. Technical staff and management were receiving bonuses averaging about 20 percent of their pay. The top managers, who have the most influence over the performance of an enterprise, also have the largest share of bonuses in their income. A Gosbank inquiry in 1974 reported that almost one-quarter of top managers received bonuses in the range of 38-50 percent of their salary. About half were in the 51-60 percent range; 16 percent received bonuses equal to 65 percent of their salaries; and the remaining 11 percent were above that.⁵¹

Although more recent data, should they become available, may show somewhat different numbers, the basic fact will remain that bonuses

51. Cited in Jan Adam, "The Present Soviet Incentive System," *Soviet Studies*, vol. 32 (July 1980), p. 360. The data here are spotty and should only be taken as a general order of magnitude. For example, Adam quotes a source that estimates bonuses to be 22.1 percent of the salaries of engineering and technical staff in 1973. David Granick has found a source estimating that bonuses represent 27.5 percent of the total earnings of the same group, which would imply that bonuses were 38 percent of their base earnings (0.275/0.725). Granick also quotes a Gosbank study for the Russian Republic showing that one-third of all "upper" managers in enterprises in that republic had total earnings at least double their base salary, so that bonuses must have been at least 100 percent of base salary, a figure considerably higher than appears in Adam's sources. David Granick, "Institutional Innovation and Economic Management: The Soviet Incentive System, 1921 to the Present," in Gregory Guroff and Fred V. Carstensen, eds., *Entrepreneurship in Imperial Russia and the Soviet Union* (Princeton University Press, 1983), note 34 on p. 246.

make up a significant portion of the income of all enterprise staff, even manual workers. For that reason the Material Stimulation Account is important to top management. Historically, planners have relied on that interest to stimulate enterprise management to fulfill plans by linking authorized payments out of profits in the accounts to the fulfillment of key plan indicators. That was a fundamental feature of the 1965 reforms and has continued to be one of the main measures included in all efforts at reform since then.

The Social-Cultural Measures and Housing Account can be used by enterprise management to contribute to the construction of housing for workers (the remainder of the cost is covered by local government), for housing repair, and for the construction of children's institutions (for example, day care facilities), clubs, or sports facilities. Because labor is scarce in the USSR, the workers' amenities financed out of this fund are important to management as they seek to lure workers from other enterprises; hence their interest in this fund is also quite high. Payments into this account have generally been keyed to payments into the Material Stimulation Account (that is, simply some share of those payments).

The Production Development Account is used by the enterprise to make small investments involving, for example, technical refurbishing of a plant. Payments into the fund come from gross profits according to norms, a share of amortization allowances (the remainder reverting to the state), and proceeds from sales of used equipment.

In brief, this is a system in which planners use state ownership of the means of production to link enterprise-retained earnings and the uses to which they are put to enterprise performance indicators of importance to planners. The critical assumptions behind the system are (1) that planners can specify enterprise performance indicators that accurately convey to enterprises information on how the actions they take are valued in terms of society's preferences, and (2) that enterprise directors can only earn rewards via those indicators by in fact doing what planners would have them do if they (the planners) were in the place of each individual enterprise director. As will become clear in the following paragraphs, both critical assumptions are problematical.

Moral Incentives

In the Soviet economy, as in all other systems, people are motivated to participate in economic activity for a rich variety of reasons, of which

material rewards are only one. Productive activity can be a source of personal gratification, which can come from pride of accomplishment, status, satisfaction in taking responsibility, and so on. In addition some people may be motivated by patriotism or feelings of nationalism as is often the case during a war. Historically Soviet leaders have tried to tap all of these motives to reinforce material incentives that may help to elicit information and induce compliance with central plans.

At a general level this is one of the main functions of the mass media. The press is replete with stories praising the work of exemplary workers and criticizing those who fail to show sufficient zeal or initiative in their work. However, the duties of the press in this regard go beyond general propaganda. Each major newspaper has a large staff divided up into departments similar to those in the hierarchy of the economy. The duty of staff in these departments is to follow affairs in their sectors and to publish investigative reports on the activities of ministries or enterprises in their area of responsibility. These reports can be devastating at times and may lead to disciplinary measures against enterprise management, and possibly even dismissal. The pressure of such reports is part of the environment designed to encourage enterprise managers to do their best to fulfill the plan.

Aside from the general propaganda and investigative reporting, there are constant government campaigns to stimulate higher productivity in enterprises. One example is the recurring effort to rekindle the Stakhanovite movement of the 1930s in which a group of workers or individual workers set an example for others by their extraordinary efforts to increase productivity. A myriad of similar devices—awards to factories that fulfill or overfulfill the plan, or honorary awards to individual workers who are exemplary in their work—serve similar purposes. Such approaches are not uncommon in businesses and governments in Western countries, and for the same reasons. Enthusiastic workers are generally better workers, and well-run organizations try to tap all the determinants of that enthusiasm—material or otherwise. “Best Worker of the Month” awards or “Best Plant of the Year” are common ammunition in that effort, both in the East and in the West.

One of the main features that distinguishes the USSR from countries in the West is the complicated and important role of the party in imbuing workers with moral incentive. Every unit in the economic hierarchy—the ministries, the production associations, the individual enterprises—has a party committee. And, because the leadership of each unit is

composed of party members, the party committee has formal authority over those members and the responsibility to see that their activities within the unit serve the best interests of the party, and therefore the state. In addition party organizations all the way up to the Politburo have a potential interest in and are indirectly responsible for the performance of individual economic units. Normally the direct surveillance of and work with enterprises is carried out by the local party committees (*gorkomy*, *obkomy*, and *raikomy*), which are expected to be informed about the performance of enterprises in their jurisdiction and are held responsible for shortcomings in the enterprises.

▷ This means that party pressure for improved performance is normally exerted on enterprises from two sources: the party committee within the enterprise and the local party organization. The party committee within the enterprise—which is composed of the enterprise director, the party secretary for the enterprise, and the leader of the trade union—acts like a board of directors and discusses major aspects of enterprise activity. An ideal enterprise party secretary is well informed about the operation of the enterprise, able to engage the director in an intelligent discussion about all aspects of the plan, and also able to provide the director with valuable information on problems from the shop floor. The enterprise party committee cannot make binding decisions governing the operation of the enterprise, but the enterprise secretary is one of those held responsible for enterprise performance (within the party hierarchy). If there is something terribly amiss with enterprise performance, he had better be able to show that he did his best to rectify the problem, working with top management.⁵²

The local first party secretary, outranking the enterprise director and his party committee, has a direct interest in, and is responsible for, the performance of all enterprises in his area. His role is to keep track of enterprises and also to guide them in setting policy to ensure that it is consistent with central preferences. His staff will undertake investigative work to analyze problems in individual enterprises, will help management to solve them, and in some cases will use the power of the *nomenklatura* to replace some of the top management.⁵³

52. Hough, *Soviet Prefects*, pp. 87–100.

53. For a discussion on this subject, see *ibid.*, pp. 101–25, 178–96. To give an example, consider the case of a factory under the Ministry of Light Industry for the RSFSR that was performing poorly in that it was failing to fulfill the plan and producing low-quality goods in a mix not consistent with what consumers wanted. The Vologodskii

In addition, party pressure may be exerted on enterprises by the CC itself, which may single out enterprises for attention when a particularly important matter is involved, about which the CC wishes to make a point and set an example. A recent example that illustrates the role of the central apparatus here is the June 1986 decree concerning the quality of television receivers produced by the Ekran Production Association in Kuibyshev *oblast'*.⁵⁴ The decree charges that television receivers produced by the Ekran association are of poor quality and frequently in need of repair. The factory, the decree goes on, is poorly managed, allows equipment to go unrepaired, tolerates poor work habits, pays little attention to worker amenities, and so on. The party committee of the association was accorded part of the blame, and the leader of the committee was reprimanded. The enterprise director was fired; the minister heading the Ministry of the Radio Industry (P. S. Pleshakov) was reprimanded for not paying more attention to increasing the quality of consumer goods produced in his enterprises. The Kuibyshev *obkom* first secretary, who escaped censure, was ordered to assist the association's party committee and new manager in setting things right.

As this case illustrates, even the central apparatus of the party takes direct interest in individual economic units and will use them to set an example where an important policy goal (in this case the production of consumer electronics) is involved. Conversely, individual enterprises may be praised for a particular approach to a matter, also to set an example.

Moral incentives probably play an even greater role in the effort to induce ministries to lead the way in the fulfillment of plans. Ministries, like enterprises, have obligatory plans, but there are no well-defined criteria linking the fulfillment of those targets to the incomes of ministers or their staff. Although the performance of a ministry's enterprises may, over the long run, affect the income and job prospects of a minister, the link is probably poorly defined.

Here the party committees are expected to play an important role, although it is not noticeably different from that played by the party

gorkom responsible for the enterprise investigated the situation and concluded that the enterprise leadership was at fault. The director was fired, and the chief engineer replaced him because "he had the ability to unite and mobilize people." See V. Kuptsov (first secretary of the Vologodskii *gorkom*), "Effekt khoziaistvennoi initsiativy" (The effect of economic initiative), *Ekon. gaz.*, no. 33 (August 1984).

54. See the resolution by the Central Committee under the heading "V Tsentral'nom Komitete KPSS" (In the Central Committee of the CPSU), *Pravda*, June 3, 1986.

committee within the factory. The basic expectation is that the ministerial party committees will reinforce signals from the Council of Ministers and the party apparatus regarding the importance of working to fulfill the plan and that they will take initiatives consistent with party preferences. Like the committees within enterprises, party committees are expected to be familiar with the operation of their ministries, alert to problems, and diligent in their search for solutions. This may involve, for example, pushing a reluctant bureaucracy into accelerating the development of precision machine tools and numerically controlled machines, as the party committee of the Ministry of Precision Instruments, Automation, and Control Systems (Minpribor) apparently did with success in the 1960s.⁵⁵ On the other hand ministerial party committees can come in for heavy criticism if they fail to address chronic problems in the ministry, as the head of the party committee for the USSR Ministry of Light Industry recently discovered.⁵⁶

Ministries also come under party surveillance and pressure via the departments of the Central Committee apparatus. Each of the economic ministries and state committees is supervised by one of ten departments in the Central Committee. Those departments are expected to maintain close ties with the units of the administrative apparatus that are their responsibility, monitoring performance and urging actions where there are shortcomings. Aside from virtually constant contact with each organization, this can also take the form of meetings in CC headquarters relating to the affairs of a ministry or a group of ministries. The party secretary responsible for that CC department (and therefore the ministry or ministries involved) will attend and speak; if the topics are important, a number of other secretaries may be involved, including—for high-priority issues—the general secretary.

Together the material incentives associated with the enterprise's plan

55. Ronald Amann and Julian Cooper, eds., *Industrial Innovation in the Soviet Union* (Yale University Press, 1982), p. 29.

56. An investigative article in *Sotsialisticheskaia industriia* castigates the head of the ministry's party committee for being subservient to ministerial leadership and for not making a genuine effort to deal with long-standing tendencies for enterprises in the ministry to produce low-quality goods not responsive to consumer demand. The article cites specific cases in which the party committee did actually investigate the problems, but then concluded they were not serious or that they were fixed, when in fact they were serious and nothing had been done to rectify matters. Because this situation is from the Gorbachev era, it may well include an element of new-found enthusiasm for the role of party committees in ministries, but the expectations have always been there. "S ogliadkoi na rangi" (Being very careful of rank), *Sots. ind.*, June 1, 1986.

and the moral incentives throughout the system (which are conveyed primarily through complex and multiple links between the party and government hierarchies) add up to formidable pressure at all levels of the hierarchy to take the plan seriously and to attempt to fulfill the most important indicators. No enterprise director ignores the plan or the many supplemental signals he receives from his ministry or the various party organizations with which he is linked and deals. No minister will lightly ignore the main indicators he receives from Gosplan.

In this sense the formal system and the plans that result from the operation of that system are the driving force behind the de facto system. However, they function with inadequate information. As a result, local units have ample room in which to maneuver and thus still seem to (and even actually do) meet plan indicators, although they fall short of the basic goals planners sought to achieve through those inadequate indicators. That room for maneuver and the quite natural inclination of enterprises to exploit it in search of the easiest way to obtain bonuses constitute the foundation of the de facto economic system, which differs in important ways from the formal system portrayed here.

The Formal System in Action

The logic of the formal system cannot be fully understood without some idea of the procedure used to identify and respond to changes in underlying economic forces. The design of that procedure strongly influences the performance of the system. The elements of critical importance are the devices used to (1) identify and respond to changes in supply conditions (for example rising costs of extracting raw materials); (2) identify and respond to changes in demand; (3) decide how to expand productive capacity; and (4) stimulate technical progress (innovation in production processes or products), which in turn leads to changes in supply conditions or demand (for example, for inputs). I discuss each of these briefly, using hypothetical examples to illustrate the operation of the formal system.

Changes in Supply

There are three questions of interest concerning supply. First, what are the actual changes in supply conditions, and how rapidly are they

occurring (gradually over years, or quickly over days or weeks)? Second, how is the system designed to identify changes in supply? And third, how does it move to adjust?

Consider an example with relevance to the Soviet economy: the sustained rise in the costs of extracting oil. This is an unavoidable consequence of declining returns in an extractive industry; it comes gradually, over a series of years. Because the Soviet economy is a fixed-price system, prices will not automatically rise to reflect changing real production costs, except during infrequent price reform cycles. The only signals planners receive between those cycles are declining profits in oil extraction. Their main source of information is the negotiations with the Minnefteprom (oil industry), during the annual planning process, when it becomes clear that either input allocations to that industry must rise or output plans will have to be adjusted downward. That information, confirmed probably over several planning periods in which planners see underfulfilled output targets despite heavy pressure on the oil industry, is what eventually convinces planners that they are faced with different (and continuously changing) supply conditions for that product.

In the formal system, the reaction to recognized changes in supply conditions will be some combination of centrally directed increases in input allocations (including capital expenditures to expand productive capacity) to the oil industry and efforts to curb demand (direct cuts in petroleum product allocations to some users; new incentives to conserve on oil or to switch to natural gas). The reaction may also include cutbacks in exports (or increases in imports, depending on the product). All of this is managed within Gosplan and Gossnab through the material balance system and the bureaucratic bargaining process that it both reflects and drives. The important point here is that, if planners do nothing, then the supply begins to shrink (as fixed inputs produce progressively less oil), and a widening gap forms between demand (since customers know nothing of scarcity other than what the center communicates to them through the planning process) and shrinking supply—or so the design of the formal system suggests. Planners in this system are the main adjustment mechanism; if they refuse to see a problem or react to it, then it persists or grows worse until they change course.

Suppose, however, that the change in supply is sudden, say, in the first months of the year after the plan for that year has been approved; it could, in addition, be temporary. A particularly cold winter that creates a shortage of transport capacity is a case in point. The difference between

this and a longer-term change in supply is that it occurs between planning cycles and therefore bypasses the major mechanism that the formal system uses to identify problems in supply. There is no explicit provision for such a development in the system. Of course, in fact, the planners are constantly monitoring the performance of the system and will be aware of such problems as they arise. The result, quite naturally, will be within-plan modifications of targets.

Changes in Demand

Typically the goods and services in a system are divided between intermediate commodities traded between enterprises (raw materials, semifabricates) and goods to final users (consumers, defense, enterprises undertaking new investments). However, in the Soviet economic system the more relevant distinction is between goods purchased by enterprises or the government and those purchased by consumers, since information on demand by those two groups is treated differently. Time is also a factor here, as it is on the supply side.

Long-term shifts in enterprise demand for intermediate or final goods (investment goods) will show up in the formal system through the planning process as enterprises and their ministries request more of some inputs and less of others. Heavy and light trucks might be an example. As enterprises come to emphasize increased reliance on trucking for short hauls, they may have an increased demand for small trucks and therefore will put in requests for increased shipments of that item. Suppliers of trucks will have no direct way of perceiving and responding to that increased demand except through the planning process. As the material balance system identifies the developing imbalance, it should react by some combination of cutting demand (refusing requests for more light trucks), ordering increased output of light trucks (increasing direct targets for light truck production, with bonuses attached to them), and directing investments to the expansion of productive capacity for light trucks. Typically planners will use norms to indicate whether the increased demand for light trucks is legitimate (say, because enterprises are moving into activities that require greater use of light trucks). If nothing is done, the imbalance will persist, and may grow worse if other aspects of the plan sent to enterprises tend to raise the derived demand for light trucks.

Consumers, on the other hand, do not participate in the planning

process, and shifts in their demand for products must be communicated to planners through intermediaries. They are represented by the Ministry of Trade and by the enterprises producing consumer goods, which—through negotiations with retailers—learn of shifts in demand. An increased demand for, say, automatic washing machines can only make its way up to the center through those avenues. If the information somehow does not get into the system, or if it is ignored, then the resulting imbalance persists. If planners decide to close the deficit in some consumer goods market, they will build that into plan targets. However, for many consumer goods the all-union authorities are dealing in targets for ruble sales, and it is up to the republican planning authorities and the responsible ministries to identify and respond to specific imbalances. Note the difference between imbalances in the supply and demand for consumer goods, and for intermediates or final products to enterprises. The latter can cause imbalances that directly affect the production process. Imbalances in consumer goods markets will not have such a direct effect, although persistent imbalances may affect the supply of labor.

Investment Decisions

One of the most important aspects of the system's procedure for responding to changes in supply or demand is the method of allocating investment funds among sectors. In developed market economies enterprise-retained earnings and funds obtained through financial intermediaries jointly determine how investments are allocated to various sectors. The bidding process involved strongly favors investments with high rates of return, those being directly linked to the price system in its capacity as a source of accurate information on supply and demand conditions. In a market, increases in demand for a product will not only cause short-term increases in production (if productive capacity will allow that), but will also draw in new investment funds on the strength of an increase in anticipated returns.

In the Soviet system, Gosplan plays the role that financial intermediaries play in market economies: it decides who will receive available investment funds, or—what is more important—who will receive authorization to purchase specific equipment needed to undertake specific investments. In fact, Gosplan is a pseudo-financial intermediary, and

more, because enterprises are allowed to retain so little of their earnings for investment purposes (in the Development Account).

The allocation of investment funds within Gosplan is an important part of the planning process and is accomplished through bureaucratic bargaining in which the various ministries supervising productive enterprises fight for a share of total investment resources. No explicitly defined criterion governs this process, but clearly decisions on investment are closely linked to the information that is generated through planning, particularly through material balancing. Ministries producing goods in short supply (for example, coal or oil) have an obvious case for more investment funds. That does not mean they will win their case; there are more shortages than there are investment funds to eliminate them. However, a proven shortage is the required foundation for a ministry's argument for investment funds.⁵⁷

This procedure for allocating investment funds among sectors, although it differs significantly from that used in market economies, does not necessarily lead to a dramatically different result. After all, the mechanisms allocating investments in market economies are ultimately reacting to changes in supply and demand, which cause imbalances, which in turn change relative prices. The result is to draw funds away from areas in which surpluses are rising (and prices falling) to areas in which shortages are rising (and prices are rising). When the Soviet material balance system is working well, it does the same thing. The differences may be in the choices that the two systems make in an environment of scarce investment funds. Soviet central planners may be quicker to invest in expanding capacity in some sectors than in market economies would instead see rapidly increasing prices leading to significant reductions in demand.

Stimulating Technical Progress

In the Soviet system the stimulus to develop new products, or to develop and introduce new production processes, comes primarily from the center. The performance indicators for the manager include targets for increases in product quality, new investments designed to modernize

57. Planners are supposed to use an elaborate set of criteria in choosing among closely related alternative investment projects relating to an expanding capacity to produce a product in a particular sector. I do not discuss those here since my main concern is intersectoral investment allocations.

the enterprise, and increases in efficiency (which may imply process innovation). This system leaves room for innovation from below, that is, for the development of innovative ideas in individual factories in response to real customer needs, or in response to a need to reduce production costs. Indeed, the principal purpose of most moral incentives, and one of the main functions of the party, is to attempt to draw innovations out of enterprises.

Notice, however, that this system is designed around well-defined sectors that are supervised by individual ministries; it is therefore best able to generate those innovations that can be developed within the enterprise, or at least within the given ministry. Innovations that require the cooperation of enterprises in different ministries will have to be negotiated through the planning process. Furthermore, innovations that require close cooperation with the eventual user will similarly require negotiations through the planning process. All of this suggests that, although the formal system does not openly discourage innovation, neither does it make innovation terribly easy. Here, as elsewhere, planners play a pivotal role.

CHAPTER FOUR

The Soviet Economic System As It Actually Operates

THE SOVIET economic system, like any economic system, works differently in fact than in theory. It is more complex and much less clear-cut than Soviet leaders wish it were. An understanding of the de facto economic system is indispensable for understanding the roots of Soviet economic weaknesses, and of Soviet economic strengths. An analysis of the potential effect of reforms on the system must rest on an understanding of how those reforms will interact with the system as it actually functions, rather than as it is supposed to function.

But there is also much to be learned from analyzing the reasons for a divergence between the formal and de facto systems. In some parts of the system the divergence is small; in others it is enormous. An understanding of the roots of this variance provides insights not only into the determinants of Soviet economic performance, but also into the types of economic reforms which are most likely to improve that performance.

Comparison between the Formal and De Facto Systems

The de facto system is not entirely different from or counter to the formal system. It is a product of the formal system and in many ways complements it. The hierarchy of actors in the formal system, with its complex set of rights, responsibilities, and procedures, finds an imperfect, but nevertheless recognizable, counterpart in the hierarchy of