

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

actors in the de facto system, where the rights, responsibilities, and procedures have evolved over time.

In the formal system, Goskomtsen either determines or tightly controls the determination of prices in the economy. In fact, although it exercises considerable control over price levels and structures, it "shares" its price-setting rights with enterprises and ministries. In the formal system, Gosplan and Gossnab enjoy formal monopoly rights over the materials distribution system, allocating rights of purchase for scarce products of national economic importance. In the actual system the official allocation mechanism is supplemented by an active black market in which enterprises unable to obtain the product they need through formal channels can barter for, or buy, those products from others with surplus stocks. In the formal system consumers have their autos serviced at state-run service centers. In fact some go there, but some also go to private individuals or to state employees working outside regular hours, who repair autos much more quickly and more reliably than state service centers can manage, although at considerably greater expense.

Areas of Convergence and Divergence

The differences between the formal and de facto systems stem from two basic factors: (1) the mismatch between the responsibilities assigned to particular central authorities and their capability to collect and process information; and (2) differences between preferences of central authorities and those of consumers and enterprises.

CONSEQUENCES OF LIMITED CENTRAL CAPACITY TO COLLECT AND PROCESS INFORMATION. By far the most important source of problems in the Soviet economy today is the fact that in the formal system particular central bodies have been assigned responsibilities they cannot fulfill because of the amount of information that must be collected and processed to do the job. This is also the greatest concern, although not always articulated, behind efforts to reform the system. Right now many of the most prominent central institutions have formal powers they cannot hope to use intelligently because much of the information they require is locked in lower levels of the hierarchy. Such are the limits to commanding this very large ship from the bridge.

This mismatch between formal power and the capability to collect and process information has different consequences in different situations. In some cases, lower bodies that have the information gain power

and use it to their own ends, which are not always congruent with state goals. In others, incentives in the system are so structured that actors devise ways to compensate for problems arising from this mismatch.

Goskomtsen provides a good illustration of the first phenomenon. Given the reasonable limits on its staff and computing capability, that body can never hope to control fully the level and structure of the prices of manufactured goods in the USSR without the help of market pressures. It must primarily resort to rules to control the formation of prices by enterprises and ministries. The mere fact that it issues rules indicates that it has neither the time nor requisite information to set prices directly and also creates opportunities for producers and ministries to use their de facto power to inflate prices and profits. Goskomtsen can, and does, use spot checks to catch individual producers in the act. But the "spots" it can check are minuscule compared with those it must simply assume are satisfactory.

The operation of the materials distribution system illustrates the self-healing devices—sometimes but not always illegal—that actors in the de facto system use to replace or supplement the unworkable or poorly working parts of the formal system. Here, too, the duties and information-gathering and processing capabilities of central authorities are mismatched. Gosplan and Gossnab find that, even for the 16,000 or so products they directly distribute, they cannot consistently obtain information on supply and demand of sufficient accuracy to avoid serious bottlenecks during the year. Thus enterprises may find that they have certificates authorizing them to purchase products (and they have the rubles), but the products are not available. Yet the enterprises must try to fulfill the main plan targets, and so they go to black markets to obtain their products. As a result a system has evolved in which *expeditors (tolkach)* working on behalf of enterprises sell surplus commodities and purchase products the enterprises need. This secondary supply system is illegal yet openly discussed in the Soviet press; it has no place in the formal system, although it is an important component of the actual system that allocates resources. More important, without this secondary system, economic performance would clearly be worse than it now is.

Here the de facto system complements the formal system, compensating for flaws in its design. Notice also that the compensatory mechanism is a market in which the price (barter or monetary) of goods traded fluctuates according to supply and demand.

In other cases the efforts of individual economic units to protect

themselves from the consequences of the center's problems with collecting and processing information may have harmful effects on the economy. Enterprises and ministries therefore tend to strive for self-sufficiency in inputs (as discussed below), but this merely leads to a substantial amount of small-scale, low-technology, high-cost production that reduces the efficiency of the system.

DIFFERENCES BETWEEN CENTRAL PREFERENCES AND THOSE OF THE POPULATION. Historically Soviet leaders have used various strategies to impose their preferences on the country's population and enterprises. An important point to note at the outset is that the phrase "their preferences" refers not to the personal preferences of Soviet leaders, which do not differ substantially from those of the population as a whole, but to state preferences, which favor investment over consumption and heavy industry over light. In fact, Soviet leaders seem to have typical preferences, but their special privileges make it possible to realize them in a way not open to the population at large. It is this special access that allows them, without great personal sacrifice, to impose state preferences on the system as a whole.

Although one can only speculate, it seems likely that the state and the population differ most significantly in their time preferences. The Soviet Union has consistently invested one-third of its GNP, but most of that goes toward expanding productive capacity. One suspects that, if the population as a whole could effectively express its preferences, the investment share of GNP would be lower, probably approaching one-fifth of that characteristic of Europe. In addition the distribution of investment imposed by the leadership favors heavy industry over light industry and housing. Here, too, the population would surely opt for a different set of choices.

These differences relate to the level and distribution of additions to Soviet productive capacity. Clearly, the population and the leadership also differ with respect to how that productive capacity should be used, as is evident from the chronic shortage of a broad range of consumer durables and services. A population able to express its preferences over government expenditures might also opt for more social services and significant new investments in infrastructure, financed by a reduction in the 15–17 percent of GNP devoted to defense expenditures.

In the formal system, the possibility that preferences may differ is ignored, and the party is purported to represent the interests of society

as a whole. Furthermore, the formal system provides the party with the necessary tools to impose its preferences on the system. Yet evidence that popular and leadership preferences differ is constantly present in the population's complaints about inadequate supplies of consumer goods, the long lines for many of those goods, and the persistent upward pressures on their prices. It is the existence of those diverging preferences that has given rise to the USSR's "second economy."

The state withholds resources allocated to the production of consumer goods and services, but puts a lid on their prices to obscure the extent of the shortage. The result is long lines for the consumers and substantial profits for those willing to break the law and supply goods and services on the black market. Automobile repair is just one of many examples in which private entrepreneurs operate illegally, using time, materials, and even productive capacity sometimes stolen from the state to supply goods and services in amounts, qualities, and quantities greater than the state intended. Again a market springs up, but here it undermines, rather than supports, official state goals. Black markets for housing construction and rental, various manufactured goods, and other services yield additional examples.

Enterprises, too, have their own preferences, which differ from those of the state, and they have developed mechanisms—with sympathetic assistance from ministries—to undermine, or at least dilute, state preferences. The virtual conspiracy among design bureaus, ministries, and enterprises to build new plants rather than to renovate and modernize existing plants, as the state would prefer, is but one of the numerous ways that the de facto system operates to produce investment decisions different from those the center would prefer.

The Significance of Comparing the Two Systems

It would be impossible to present a definitive account of how the de facto system operates in a single chapter. The purpose of this chapter is narrower and therefore more feasible: to provide a context in which to analyze current debates on Soviet economic reform, and actual reform measures as they are introduced. The goal is to understand the principles by which the system operates, without being overwhelmed by details.

To construct a context useful for analyzing economic reforms, one must first understand the logic of the existing system. That is, one must

identify the various parts and determine how they relate to each other. Second, one must examine the links between the de facto system and economic performance to determine why its performance record has been strong in some cases and weak in others.

THE LOGIC OF THE DE FACTO SYSTEM. If there were such a thing as an economic systems engineer and he were given the blueprints of the USSR's formal economic system, he could quickly explain why this system cannot work, or, at least, cannot work very smoothly. Certainly the institutions that make up the formal system are mutually consistent. However, they alone cannot conceivably handle the information needed to complete the tasks formally assigned to them.

Nevertheless the Soviet economic system "works" reasonably well by world standards and has done so for over a half-century. Growth rates have been respectable; industrialization has occurred at a rapid pace; Soviet military power, constructed on the base of the economy, is rivaled only by that of the United States. This "implausible" system somehow works. All of this suggests that the de facto system contains mechanisms that are not part of the formal system, that have a logic of their own, and that make the economy operate more smoothly than it otherwise could be expected to operate.

The analyst must identify those mechanisms in order to explain the present system and to evaluate economic reforms and their potential for affecting those mechanisms. Reforms are debated within the context of the formal system, yet by definition they are effective only if they have an impact on the de facto system. To have an impact, the reforms must incorporate elements of the de facto system into the formal framework—for example, previously illegal private activity might be legalized—or they must introduce changes in powers and responsibilities that will alter the way the system actually operates. In either case, only in the context of the de facto system is it possible to analyze what the consequences of such reforms might be.

Consider, for example, that Gorbachev's reforms include stricter laws on unearned incomes from sources such as speculation and price gouging. Note, however, that the *tolkachi*, whose actions add up to a de facto mechanism that makes it possible to trade surpluses for deficits throughout the system, could easily be labeled speculators, not without justification in some cases. The effects of such a reform on economic performance would depend on the mechanisms simultaneously put in

place to compensate for the loss of the services of *tolkachi*, or to protect them.

To take another, less obvious example, one of the goals of Gorbachev's reforms is to reduce ministerial interference in the daily affairs of enterprises, and thereby to reduce their authority, vis-à-vis enterprises, within the formal system. Yet ministries are not only pests for enterprises, but also an important intermediary with the center, aiding enterprises and interceding on their behalf in cases where other avenues have been unproductive. Therefore an important question to ask is whether the reforms, should they prove successful, would destroy this valuable channel for enterprises, and, if so, what would replace it.

THE DE FACTO SYSTEM AND ECONOMIC PERFORMANCE. To explain the performance record of the de facto system, the analyst must turn to the interlocking institutions that together provide an extraordinarily high degree of economic security. That economic security is both the greatest strength of the system and the source of its weakness: the general inertia of the R&D process, the apparent lack of feedback (which helps to perpetuate imbalances in the supply of and demand for many products), and the tendency toward extreme inefficiency in the use of human and material inputs. The leadership has used each of these to justify economic reforms; and each is the subject of specific reform decrees. To understand the likely effects of the reforms, one must understand how they are linked to the actual system.

In analyzing the links between the system and performance, one must also be constantly alert to the danger of painting black and white pictures that add up to caricatures of the true state of affairs. This is a system full of paradoxes or contradictions, the causes of which it is too easy to assume are exceptions in the system. Is it just happenstance or some complex order that is responsible for the fact that the Soviet system produces some of the world's most reliable turbines for electric power stations, whereas its television sets are by and large obsolete and unreliable? Was it just a quirk that the USSR, when faced with the Reagan embargo, managed to finish its natural gas export line ahead of time by using Soviet technology almost exclusively, although it clearly had planned to rely heavily on imported turbines for the line? If this is a system constantly fighting incipient balance of payments problems, then why have dollar trade balances been consistently positive, and why has net debt remained so low for most of the postwar period?

These are but a sampling of questions that together suggest the system not only is more complicated than it might seem at first glance, but may have within itself the power to improve its performance.

Issues Concerning Evidence

The difficult problem in studying the de facto system is the lack of reliable data. No one in the Soviet Union has yet published, or at least written, a much needed book on the Soviet system at work—myth versus reality—but the newspapers and the scholarly literature contain countless anecdotes that could go into such a book. Although some of these are quite frank in their portrayal of systemic failures, they must be viewed with healthy skepticism. Recall that the press is part of the system that monitors and critiques the activities of economic organizations at all levels in the hierarchy below the Politburo and Council of Ministers. Some of that involves praising various economic activities that Western readers tend to ignore; they focus instead on the critiques that also reflect part of the media's duties, and part of the reality of the Soviet economy. The implicit assumption (in the West and the USSR) is that the ratio of praise to condemnation in officially sanctioned publications far exceeds the ratio of what is praiseworthy to what is condemnable in the system. Although that may be true, it is also likely that the stories of praise reflect some aspect of the reality that makes up the Soviet economy.

The problem is one of weighting the various anecdotes, and there is no easy solution. Drawing inferences from a mass of anecdotes is a highly subjective exercise and is not amenable to replication by others. The best one can do is to make prior assumptions (or biases) clear. My bias is to find anecdotes that help to explain how this system works as well as it does. Clearly the system has many weaknesses; the anecdotal evidence documents those; and they should not be ignored. However, the challenge is to explain how a system with all those failings has nevertheless made it possible for the Soviet Union to emerge as one of the world's two military superpowers, while sustaining respectable GNP growth rates. Explaining why this system cannot work, and should be changed, is elementary. Explaining why it nevertheless has worked for so long is a daunting task indeed.

The approach in this chapter, as in chapter 3, is to focus on the decisionmaking hierarchy and the information and incentive systems.

The time frame is again the mid-1980s, although that is a less important caveat here than it was in the discussion of the formal system, since in its basic principles the de facto system has existed in its present form for at least the last quarter century; and some would go back to the 1930s in their dating.

The Decisionmaking Hierarchy

The decisionmaking hierarchy in the de facto system differs from that in the formal system in several ways. To mention the obvious ones first, the popular elections for the Party Congress, the Central Committee, the Politburo, and so on, are facades behind which the power brokers who constitute the Politburo hold and exercise power. That does not mean the system is devoid of politics in the traditional sense; nor does it signify that the issues are unrelated to genuine concerns of the population, or to its welfare. On the contrary, it appears that in the struggles over the choice of a general secretary, or the Politburo, many of the large social and economic issues that play a role in Western elections also loom large here. At least one factor that contributed to Khrushchev's demise was the modest results of his expensive Virgin Lands scheme for producing wheat in semiarid Kazakhstan; and Gorbachev's plans to revitalize the economy probably helped him become general secretary.

Nevertheless, the elections and "campaigns" surrounding them, both in the government and in the party, have an essentially formal character and as a result reflect, rather than constitute, the debates among those who actually make the choices. Elections below the level of the Politburo are occasions to signal shifts in power within the leadership, as in the election of a new Central Committee at every party congress, or the choice of a republican party leader. Elections to the Politburo itself signal how the general secretary has managed to construct the coalition with which he will govern the system. Retirements "for reasons of health" may accurately describe the situation in some cases, but can also provide a cover for a dismissal.

Aside from that obvious difference, there are several important ways in which the hierarchy in the Soviet Union differs from the formal description, or at least is a good deal richer than the formal description implies. The most notable of these differences have to do with the role of the party in the economy, the distribution of power among government

institutions, and the role of nongovernmental institutions in resource allocation.

The Role of the Party in the Economy

In the design of the formal system the party is given awesome powers over the economy in large and small decisions. In fact it realizes all of those powers, and then some. The distinction here between the formal and de facto systems is primarily one of degree. Whereas the formal system specifically excludes party organizations at all levels from involvement in the operational side of the economy, the party in fact plays an important, if not constant or consistent, role even there. That role is most evident in the activities of the Politburo and of local party organizations.

→ THE POLITBURO On December 11, 1982, Iurii Andropov, then general secretary, began a tradition, still honored, of publishing a selective summary of topics discussed at each week's Politburo meeting.¹ As is clear from the summaries themselves, some topics discussed in the meetings are not enumerated in the summaries; and presumably some of the topics omitted are of major importance. Further, it is not guaranteed that a summary will be published after every meeting of the Politburo, although there have been no hints to the contrary. Those limits on what is known do not change the fact that we know much more than we have in the past about how the Politburo and the powerful CC staff operate, what topics interest them, and how they seek to control the system.

In general the Politburo does everything one would expect from its position in the formal system. Consider, for example, the role of the Politburo and CC staff in the formulation of the Twelfth FYP (1986–90). In 1983 the Politburo was already discussing plans for particular sectors to be built into that five-year plan.² The May 31, 1984, Politburo meeting included a general discussion of the party's economic strategy in the context of general guidelines for the plan.³ On July 20, 1984, a major

1. "V Politbiuro TsK KPSS" (In the Politburo of the CC of the CPSU), *Pravda*, December 11, 1982.

2. See, for example, "V Politbiuro TsK KPSS," *Pravda*, September 24 and December 24, 1983, in which a program for consumer goods and services to be built into the Twelfth FYP is discussed.

3. "V Politbiuro TsK KPSS," *Pravda*, June 1, 1984.

meeting on the Twelfth FYP was arranged by CC staff at CC headquarters and was attended by heads of ministries at which (then second secretary) Gorbachev spoke.⁴ Increasingly detailed and numerous meetings (including full-scale reviews of the Twelfth FYP drafts in the May 24, 1985, Politburo meeting) followed in government and party institutions under the leadership of the Politburo and Gorbachev in particular.⁵ Another general meeting was held at CC headquarters on August 23, 1985.⁶ The full (probably by now at least the fourth) draft of the plan was considered at the November 14, 1985, meeting, after which it was published for general consideration.⁷ That draft was considered at the Twenty-seventh Party Congress in February–March 1986, then modified, and, after yet another discussion in the June 13, 1986, Politburo meeting,⁸ was passed by the Supreme Soviet on June 19, 1986.⁹

This presumably partial list of high leadership meetings devoted to the Twelfth FYP illustrates the considerable and sustained attention the Politburo gives to the general direction of the planning process. It also does this for other aspects of the planning process and economic reforms. At various times during the year it reviews economic performance; every December it devotes a major meeting to assessing the year's performance and plans for the following year. Throughout the year Politburo staff discuss particular topics relating to major issues in the economy, make decisions, issue orders to CC staff, and so on. In this sense the Politburo and CC staff are just as active and powerful as one would expect, to judge by the formal system.

What is most interesting about the Politburo, and at variance with the formal system, is that it does not limit its concerns or its activities to the general and most critical goals and decisions of the system. Nor can it do so. Its immense power also draws it into decisions on countless matters that in Western countries are frequently decided by the boards, or even the management, of large corporations; the number is so great,

4. "Soveshchanie v TsK KPSS" (Meeting in the CC of the CPSU), *Ekonomicheskaya gazeta*, no. 31 (July 1984). (Hereafter cited as *Ekon. gaz.*)

5. "V Politbiuro TsK KPSS," *Pravda*, May 25, 1985.

6. "V Tsentral'nom Komitete KPSS" (In the Central Committee of the CPSU), *Sotsialisticheskaya industriia*, August 23, 1985. (Hereafter cited as *Sots. ind.*)

7. "V Politbiuro TsK KPSS," *Pravda*, November 15, 1985.

8. "V Politbiuro TsK KPSS," *Pravda*, June 14, 1986.

9. "Zakon Soiuza Sovetskikh Sotsialisticheskikh Respublik. O gosudarstvennom plane ekonomicheskogo i sotsial'nogo razvitiia SSSR na 1986–90 gody" (Law of the Union of Soviet Socialist Republics. On the state plan for the economic and social development of the USSR during 1986–90), *Ekon. gaz.*, no. 26 (June 1986).

in fact, that the threat of information overload is ever present. In the four meetings that normally occur every month, the Politburo can hear reports and issue decrees relating to the Yamburg natural gas pipeline, the preparation of livestock for winter, the development of the television industry, changes in selected retail prices, and the rational use of the various bus fleets in the USSR.¹⁰ The development of a particular town, the state of shoe production, the use of a Soviet-developed technology in assembly lines, techniques for stock-breeding, the management of the Chernobyl' disaster, and the fall harvest are additional, fairly random samples of what Politburo members discuss and make the subject of decrees. Although many of these discussions and decisions represent no more than a ratification of proposals and detailed work by the CC staff and government bureaucracies, the number of detailed decisions ultimately discussed and approved by this very small group of leaders is striking and leaves no doubt that they have an abiding interest in everything that happens throughout the system.

In addition to overseeing economic affairs, the Politburo directs foreign policy and domestic policy in other areas. Those duties, combined with the various ways it seeks to control the economy, add up to a set of powers and responsibilities that have no counterpart in a developed Western country. If it is viewed in the U.S. context, the Politburo has all of the powers and duties of the president's cabinet, a good portion of congressional power, some judicial powers, and a portion of the power and responsibilities that in the United States are held by boards of directors of major corporations.

The authority over the economy left to government institutions is a residual composed of all of the mundane details of economic administration (save those few in which the Politburo happens to take a particular interest) and some of the middle-level economic decisions that the Politburo cannot or does not involve itself in (concerning the types of conventional plants used to generate power, allocation of investments within sectors, and so on). Because the Politburo is the court of last resort in both the party and the government, the residual authorities of the government can change dramatically, and quickly, over time. When, for example, the Politburo decides that conveyor-rotor technology should be pushed in Soviet manufacturing, then the government has just lost control over what should have been a middle-level decision.

10. This is a sampling of the topics included in the published reports for the Politburo meetings in August 1984, under the leadership of Konstantin Chernenko.

LOCAL PARTY ORGANIZATIONS Local party authorities (*obkom*, *gor-kom*, and *raikom* secretaries) are held responsible for the economic performance of "their" regions, and their formal powers (control over appointments through the *nomenklatura*, influence through party members holding important posts in the enterprises, general influence with higher party officials) give them tools to influence enterprises in their geographic areas. Formally, however, they are enjoined to stay out of operational decisions in enterprises. Party authorities are to achieve their goals through general propaganda and education, which will motivate party workers and the enterprises in which they work to fulfill plan targets and to meet the more general expectations of party authorities.

That is one of the concerns motivating local party leaders, but not the only one. Local first party secretaries are responsible for the general economic performance of their region, and for many of the details: "The first secretary of the party committee is concerned with a broad set of problems. Those include technical progress, science and culture, ideological work, the education of people, questions concerning the development of trade, services, health. . . . He must thoroughly scrutinize everything; he is held responsible for everything."¹¹

These expectations create a strong incentive for local party officials to intervene directly in enterprise activities, to become advocates for their enterprises, and at times to become apologists. Furthermore, because party organizations are in general responsible for all aspects of local welfare, they find that they must use enterprises to serve local interests, even though at times that interferes with enterprises' efforts to fulfill plan targets from above. The formal system implies that these party organizations will be one-way transmission belts representing the interests of the party at a local level. In other words, they are meant to act as party "prefects," to use Jerry Hough's term, without interfering in economic decisions best left to trained industrial managers. In fact they have to some extent become, quite naturally, miniature images of the national Politburo, mixing work on "pure" party issues with considerable involvement in detailed decisionmaking in individual enterprises.

One of the responsibilities of local party organizations, for example, is to do everything possible to ensure that supplies of food are regular and adequate and that local *kolkhozy* and *sovkhozy* fulfill procurement targets from the plan. One of the major devices local party organs use in

11. "Pervyi sekretar' " (The first secretary), *Pravda*, July 22, 1986.

an effort to fulfill these expectations is a "patronage" (*shestvo*) system in which workers in a particular factory are encouraged by the local party organization to adopt a local farm and to provide "voluntary" work and materials. This may involve assistance during the harvest or in the construction of buildings. Such assistance can be provided during the regular working hours of the enterprise, in which case it still must pay the workers wages, or it can be on the weekends, during harvesting, for example, or when the crop is being unloaded. In the latter case the workers "volunteer."¹² In some cases the activity may be fairly loosely organized and sporadic, whereas in others the local party organs may systematically use "volunteers" to assist agriculture. The head of the ZIL Production Association based in Moscow, one of the USSR's major producers of trucks, complains that up to a thousand or more workers from each of his factories are requisitioned annually for agricultural work, and as a result the association must incur the additional expense of overtime and extra shifts to fulfill its own plan.¹³

The Karaganda *obkom* studied the *shestvo* system and concluded that firms were providing slow and inefficient support to agricultural enterprises, the main sign being a great deal of unfinished construction. The *obkom* then reorganized the system so that local enterprises used standard blueprints in producing parts for prefabricated buildings and plants for use in villages. Now construction projects that before required ten to twelve months of work are completed in three.¹⁴

The more general responsibilities of local party secretaries make it necessary to requisition the labor force and materials of local factories for various other tasks. During the 1970s provincial cities and towns received virtually no funds earmarked for local public projects. These were nevertheless their responsibility, and they turned to local enterprises for work on roads, sewage systems, municipal services, and so on.¹⁵ The result is a tax in kind on the enterprise which, according to one

12. Jerry F. Hough, *The Soviet Prefects: The Local Party Organs in Industrial Decision-making* (Harvard University Press, 1969) pp. 157, 236.

13. "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, general director of the ZIL Production Association), *EKO*, no. 10 (October 1986), p. 7.

14. A. Korkin, "Predpriimchivost' rukovoditel'ia" (The enterprising nature of an enterprise director), *Sots. ind.*, September 27, 1984. Korkin was at the time the *obkom* first secretary in Karaganda, so there may be some hyperbole in this account.

15. Fyodor I. Kushnirsky, *Soviet Economic Planning, 1965-1980* (Boulder, Colo.: Westview Press, 1982), pp. 73-74.

of the deputy directors of Gosplan's Economic Research Institute, has grown with extraordinary rapidity in the past fifteen years. "Besides the economic losses," he goes on to say, "this has brought enormous social damage, worsening the relationship of people to their main duties."¹⁶ How large that tax in kind may be, and whether in fact it has grown in recent years, is something anecdotal evidence cannot shed light on.

Local party officials play as great a role in the agricultural affairs in their district, if not greater, than they do in industry. The main purpose of the *shestvo* system—to requisition urban labor for agriculture—emphasizes the organic relationship between local party organizations and the *sovkhozy* and *kolkhozy* in their area. The local party official is the guarantor of the welfare of the population in his area, which means he must be concerned with food supplies and must do all he can to keep those supplies coming to his area as well as to the national economy.

Alec Nove argues that the local party may be even more intrusive in agriculture than in industry, in part because the agricultural laborer can violate the plan in many more ways than his urban counterpart (for example, by working his private plot instead of state or collective land), but possibly also because of a lingering fear of the political challenge that could come from the countryside.¹⁷ The party's role in agriculture could also be the natural consequence of the persistent attempt by planners to treat agriculture as they do industry—by managing it through detailed annual plans—even though the costs of overcentralization are somewhat greater in agriculture than in industry. The continuing poor performance inevitably draws the party more and more deeply into the operations of the sector.

Because local party organizations are expected to participate in economic affairs in their regions, and in fact do help local economic organizations make operational decisions, they have taken on an advocacy role. Quite often they plead their enterprises' cases for more investment funds before higher authorities in the party and government. Successful pleas may not only improve the performance of their enterprises, but may also mean more staff, not to mention more influence and prominence for the party secretary.¹⁸ In some cases the local party organs may even act as *tolkach* and attempt to secure scarce inputs that

16. V. Kostakov, "Zaniatost': Defitsit ili izbytok?" (Employment: deficit or surplus?), *Kommunist*, no. 2 (January 1987), p. 81.

17. Alec Nove, *The Soviet Economic System* (London: George Allen and Unwin, 1977), pp. 127-28.

18. Hough, *Soviet Prefects*, pp. 256-57.

enterprises need and have been unable to obtain through regular channels.¹⁹ Party secretaries may even be sorely tempted on occasion to look the other way when an enterprise director breaks the law in an effort to fulfill a plan target of importance to the center.²⁰

The fact that local party organizations have been drawn into operational decisionmaking throughout the system, far beyond what is considered wise or justified by the principles of the formal system, is generally recognized. Party officials have on numerous occasions indicated a desire to reduce the burden of operational decisions by shifting it back to local governmental bodies and enterprises.²¹ However, the party's strong signals to local party organs that they will be judged by the economic performance of their areas do not jibe with the party's admonitions to stay out of operational decisions. It is not surprising that local party officials respond by doing all in their power to see that their region performs well (even to the point of becoming directly involved in detailed decisions).

THE PARTY AS A STRENGTH AND WEAKNESS OF THE CURRENT SYSTEM. The de facto powers here do not add up to an omnipotent party, simply because omnipotence is beyond the capabilities of the organization. Rather, the party is more like a "spotlight," which, when it focuses on one part of the system, must perforce ignore others. What these powers do is to make particular parts of the system work extremely well, relative to, and maybe even at the cost of, the rest of the system. When the party has a particular goal and that goal is an important one, it can utilize the innumerable links between the party and the economy, each with its particular history of debts and commitments, to mobilize the economy in service of that goal.

The Soviet reaction to President Ronald Reagan's pipeline sanctions is a good case in point.²² By 1980 the Soviet Union had already outlined a very ambitious program to rapidly expand the capacity of its gas transportation system during 1981–85 by 40,000 kilometers (from a total of 130,000 kilometers in 1980). Half of that increment was to be accounted for by six 56-inch-diameter lines stretching from West Siberia to the

19. Ibid., p. 227.

20. Ibid., p. 200.

21. See, for example, Konstantin Chernenko's speech accepting the post of general secretary (*Pravda*, February 14, 1984); or L. N. Zaikov's complaints at the time he was Leningrad obkom first secretary about the excessive burden of operational decisions on his staff (*Leningradskaya Pravda*, March 20, 1985).

22. On the history of this, see Ed A. Hewett, "The Pipeline Connection: Issues for the Alliance," *Brookings Review*, vol. 1 (Fall 1982), pp. 15–20.

European USSR. One line was to be dedicated to exporting an additional 40 billion cubic meters (bcm) of Soviet natural gas to Western Europe.²³ There were strong indications that the Soviet Union intended to rely heavily on imported compressors and turbines, which were far superior to its own, to implement this ambitious program. The equipment was either of U.S. or European origin, but embodied U.S. technology for critical parts.

President Reagan, in response to developments in Poland, placed an embargo on exports of that equipment that lasted less than a year and had the effect of delaying some shipments of turbines and blades. The Soviet response to this action was to mobilize local party and government organizations in an all-out effort to meet the goals of the pipeline expansion program by relying almost exclusively—contrary to the original strategy of the ambitious plans—on Soviet turbines and compressors. That is precisely what happened, and more. The entire pipeline expansion program was completed ahead of schedule, and without further imports of western turbines and compressors beyond those few purchased before the Reagan embargo.

This was no mean feat, and how the Soviets managed it is still somewhat of a mystery.²⁴ What is clear is that the Soviet leadership responded to the Reagan threat by mobilizing the entire system through the party, signaling to all levels that the gas pipeline program was a first priority. There can be little doubt of the importance placed on this when, as one official in Minneftegazstroi (the ministry charged with overseeing the pipeline construction program) noted, his ministry was required to produce a full report daily on the previous day's work throughout the entire system, a report that went to Gosplan, the government, the relevant ministries, party organizations, and trade union offices.²⁵ Local party officials all along the route of the lines were mobilized to see that

23. See Thane Gustafson, *The Soviet Gas Campaign: Politics and Policy in Soviet Decisionmaking*, R-3036-AF (Santa Monica, Calif.: Rand Corp., 1983); and Ed A. Hewett, "Near-Term Prospects for the Soviet Natural Gas Industry, and the Implications for East-West Trade," in U.S. Joint Economic Committee, *Soviet Economy in the 1980s: Problems and Prospects*, Joint Committee Print, 97 Cong. 2 sess. (GPO, 1982), vol. 1, pp. 391–413.

24. I had concluded from an analysis of Soviet capabilities in turbine and compressor technology that the Soviet Union would not be able to bring the new lines up to full pressure as quickly as it did. See Ed A. Hewett, *Energy, Economics, and Foreign Policy in the Soviet Union* (Brookings, 1984), pp. 77–78. They clearly have done it, but there are many unknowns on how and at what cost.

25. "Velikaia stroika piatiletki" (The great construction project of the five-year plan), *Izvestiia*, February 18, 1982.

construction moved on schedule. Ministries were mobilized to see that they contributed their part in the supply of necessary equipment, and where possible Eastern European technology was substituted for what were to have been imports from the West.

This is but one example of an important source of strength in this system: its ability to see that a certain limited number of things are done when and how the leadership wishes them to be done. However, the limits to the party's capabilities are real, and if the party identifies too many "first" priorities, or if those matters identified as high priorities are difficult to express in terms of easily verifiable performance criteria (such as kilometers of pipeline brought up to full pressure), the results will be far less impressive than they were in the pipeline case. A general campaign to increase the quality of goods and services might be a case in point. No matter how intense the party's desire is in this area, there are too many escape routes available to an enterprise for the party pressure to produce results commensurate with the effort.

The Distribution of Power among Government Institutions

The de facto distribution of power among the ministries and state committees and between them and the lower-level economic units differs in important ways from what the formal system would suggest. Most important is the constant effort of the ministries to avoid cooperating with other ministries. As a result, many of them try to minimize contacts with the remainder of the system, sometimes on an enterprise-by-enterprise basis.

Outsiders tend to view the Soviet Union as an autarkic economic system that avoids contacts with the outside world so that the leadership can keep a strong hold on the system. There is much to be said for this hypothesis, but for the purposes of this discussion the more interesting proposition is that this desire to keep contacts with the outside to a minimum pervades the entire system, from the ministries to the enterprises themselves. Individual enterprises, and their ministries, will strive for vertical integration, by producing most of the inputs and services required to produce the outputs for which they are held responsible in the plan. This is a natural consequence of an uncertain material-technical supply system in which even enterprises with the authorization and rubles necessary to purchase an important input may find they cannot acquire it. Yet they are still held responsible for meeting the plan

objectives. Difficulties in acquiring inputs, although formally a valid excuse for not meeting a plan target, are so common that planners expect managers to somehow deal with them.

In some cases *tolkachi* can be used to solve the problem, particularly if the input involved is already being produced somewhere in the system. The more difficult, and probably more common, situation is the one in which the enterprise is developing new products and requires new inputs from suppliers in other ministries. The typical experience is probably that of A. I. Shokin, who in 1965 founded the Ministry of the Electronics Industry (Minelektronprom, one of the nine defense machine-building ministries) and was its head until 1985. In discussing the initial years of operation in the 1960s, he provides a quite frank and spirited defense for self-sufficiency:

When starting to organize our sector, we spent 4 years searching for suppliers, and ran up against departmental barriers. The reply we constantly heard was: "We don't know anything about that, we're unable to do it." We finally concluded that we would have to do it ourselves, since nobody could make this complex and very precise equipment except its immediate customers.

As a result, a scientific and production base was set up for specialized technological equipment without which the development of electronic equipment would have been inconceivable. That, as time has shown, was justified. Other ministries have followed such a path. The electronics industry includes the production of equipment which, according to existing specialization, would belong to [sectors producing] machine tools, electrotechnical, chemical, radiotechnical, non-ferrous metals, instrumentmaking, construction materials.²⁶

This is a system in which customers are far less important than ministries, and the logical consequence is not only dissatisfied consumers, but also dissatisfied enterprises that cannot purchase the inputs they need. As a consequence, the successful enterprise is the vertically integrated enterprise, and the successful ministry, the vertically integrated ministry.

DATA ON AUTARKY. The result is what the Soviets call a "natural economy" (*naturalnoe khoziaistvo*) in which enterprises are designed to come as close to self-sufficiency as possible and ministries encourage that. No general statistics are available to give a clear idea of ministerial self-sufficiency and changes in it over time, but bits and pieces of

26. "Podkhod—gosudarstvennyi" (State approach), *Pravda*, May 27, 1984.

information suggest it is an important phenomenon. For example, Minpribor (Instrument-making, Automation Equipment, and Control Systems) produces only 57 percent of such equipment; only 59 percent of the wood products are produced by Minlesbumprom (Timber, Pulp, Paper, and Wood), and Minlesbumprom shares with almost seventy ministries the production of sawn timber; sixty ministries and other institutions produce construction materials.²⁷

More aggregated data are available on machinebuilding, the core of the industrial economy. Twenty of the approximately fifty ministries supervising economic activity share responsibility for machinebuilding. Together they account for 11.8 million employees and 3.7 million units of metalworking, stamping, and other equipment valued in excess of 100 billion rubles.²⁸

Entire enterprises are devoted to producing machines in other sectors and employ a total of approximately 3 million workers. Most of the equipment in these enterprises is quite old, so that operating costs must be quite high.²⁹

Some departments in nonmachinebuilding enterprises also produce machinery. Forty-five percent of all metalworking equipment in the Soviet Union can be found there, a stock that by itself exceeds in value the entire capital stock of the U.S. machinebuilding sector. Those departments account for 5 to 6 million workers, approximately one-third of all those employed in machinebuilding in the USSR.³⁰ These, also, must entail very high unit production costs. The one piece of corroborating information that is available comes from a survey of small metalworking shops in Belorussia, which found that castings produced in those shops were one and a half to two times as expensive as the average for Belorussia as a whole.³¹

27. R. G. Karagedov, "Ob organizatsionnoi strukture upravleniia promyshlennost'iu" (On the organizational structure of the management of industry), *EKO*, no. 8 (August 1983), p. 57.

28. G. A. Dzhabadov, *Mezhotraslevoe upravlenie proizvodstvom* (Intrasectoral management of production) (Moscow: Ekonomika, 1983), p. 47.

29. *Ibid.*, p. 48.

30. S. A. Kheinman, "Razvitie mashinostroeniia: organizatsionnye i strukturnye faktory" (The development of machinebuilding: organizational and structural factors), *EKO*, no. 6 (June 1984), pp. 91, 109.

31. David A. Dyker, *The Process of Investment in the Soviet Union* (Cambridge University Press, 1983), pp. 38-39.

Most new enterprises are specifically designed to be as self-sufficient as possible. A Central Statistical Administration survey (for probably a recent, but unspecified, year) showed that for every 100 machinebuilding enterprises, 84 produce their own forgings (*pokovki*); 76 their own stock (*shtampovannye zagotovki*); and 65 their own metal hardware (*krepezh* and *metizy*).³²

Vertical integration per se is not necessarily bad. However, to be rational it must come primarily as a consequence of cost calculations that show that outsiders cannot produce the goods as cheaply or as well as insiders. It appears that in the Soviet economy extraordinary uncertainty and unwillingness to accommodate customers lead to vertical integration at almost any price. This, also, is the result of a rational calculation by enterprises, and one they are probably reluctant to make since it takes them into a wide range of activities outside their assigned product mix and their expertise. The result is costly for society: large quantities of goods and services produced in small batches at very high cost and probably of variable quality.

A related symptom of the problem can be found in the quantity of cross-shipments in Soviet transport, particularly railroads, as ministries ship "their" products back and forth among their enterprises, while other ministries ship identical products, possibly in opposite directions. Timber products provide a good example. Sixty ministries and twelve Gosplans (the all-union and eleven republican Gosplans) distribute timber products. They tend to look out for their own enterprises, irrespective of the cost to the economy. Minenergo (Energy and Electrification), for example, ships sawn timber produced by construction firms at the Bratsk and Krasnoiarsk hydroelectric stations in Siberia 3,000-5,000 kilometers away to its enterprises in the European USSR. Simultaneously Minlesbumprom ships sawn timber to Siberia from its enterprises in the European USSR.³³ Nearly one-half of the reinforced concrete produced in major industrial centers is transported by ministries to "their" projects in other oblasti or krai, irrespective of distance.³⁴

32. Iu. Lavrikov and V. Andreev, "Put' k mezhotraslevym proizvodstvam" (The road to intersectoral production), *Sots. ind.*, July 12, 1985.

33. V. Medvedev, "V poriadke isklucheniia. Pochemu prodolzhaitsia neratsional'nye perevozki?" (In the nature of an exception. Why are irrational shipments continuing?), *Sots. ind.*, October 2, 1985.

34. N. Solov'ev, "Proizvodstvennaia infrastruktura: rezervy rosta" (Industrial infrastructure: the growth of reserves), *Ekon. gaz.*, no. 5 (January 1986).

The tendency of enterprises and ministries to shun cooperation outside their bureaucratic territory and to perpetuate costly output and transport patterns just to remain independent of the rest of the system is a major target of current efforts at reform. At the same time self-sufficiency, or at least production outside the normal mix, is encouraged in selected areas of consumer goods and food, even though the efficiency of output may suffer.

MIXED SIGNALS ON AUTARKY. Soviet enterprises have for some time been encouraged to produce consumer goods regardless of what they normally put out. Thus defense industries have become important sources of consumer goods, some of which are the highest-quality goods available. Julian Cooper has done a superb detective job in identifying consumer goods supplied in significant measure by defense. To give some of the more striking examples from his data for 1980, Minmash (the Ministry of Machinery, prime supplier of ammunition to the military) produced about 30 percent of all bicycles; Minobschemash (General Machinebuilding, main supplier of strategic missiles) produced 60 percent of the tramcars; Minoboronprom (Defense Industry, supplier of conventional army material) produced about 27 percent of the railway freight wagons, 10 percent of the passenger cars, and all of the motor-scooters; and Minaviaprom (Aviation, producer of aircraft and parts) produced about one-third of all the vacuum cleaners. All of the television sets, radios, video cassette recorders, and cameras produced in the system come from the defense ministries.³⁵

The defense ministries are not the only ones to be pressured for consumer goods. Each ministry and each enterprise now receives a target for the production of consumer goods. In recent years heavy industry (the twenty machinebuilding ministries and those in fuels, raw materials, chemicals, timber, and construction materials) have produced about 30 percent of the consumer goods.³⁶

These blanket requirements for all enterprises, whatever their basic production profile, to produce consumer goods are probably leading to

35. The figures are from Julian Cooper, "The Civilian Production of the Soviet Defence Industry," in Ronald Amann and Julian Cooper, eds., *Technical Progress and Soviet Development* (Basil Blackwell, 1986), p. 41. The product responsibilities of the defense machinebuilding ministries are from David Holloway, *The Soviet Union and the Arms Race* (Yale University Press, 1983), p. 120.

36. "Tsentral'noe statisticheskoe upravlenie SSSR, *Narodnoe khoziaistvo SSSR v 1983 g: Statisticheskii ezhegodnik* (Moscow: "Finansy i statistika"), p. 122. (Hereafter cited as *Narkhoz*.)

some serious losses for the economy. Consider the Tochmash factory in Tula, whose story probably has far too many counterparts throughout the USSR. Tochmash produces machinery for making hosiery and socks, both scarce items in the USSR because the capacity to produce them is fully utilized. Therefore it would appear that an expansion in Tochmash's output of machinery would expand production of consumer goods in short supply. Nevertheless, Gosplan has stood firm in requiring Tochmash to produce consumer goods in which it has no experience, even at the cost of developing and introducing into serial production a new, more efficient machine (which it already has in prototype) for producing hosiery and socks. Instead, Tochmash produces motorcycle parts, flashlights, and a plastic brain-teaser game for children, each of which its own staff helped to develop and it produced at enormous cost.³⁷

Planners also encourage all enterprises to produce food. A first party secretary in Volgodonskii *gorkom* reports with pride that a factory in his area whose main task is tractor repair has, with its own labor, constructed a 12,000-square-meter greenhouse. Over the last two years it has produced 29 tons of cucumbers, tomatoes, and greens. In addition it produces 15 tons of pork annually, 40 kilograms per worker.³⁸

Nikolai Ryzhkov, in discussing the Twelfth FYP, noted that most industrial ministries showed a willingness to do their part in boosting agricultural output by proposing targets for live-weight production of livestock and poultry in the range of 15-20 kilograms per worker. However, he complains that the ministries of instrument making and communications (Minpribor and Minsviazi) fell far short of that, proposing live-weight production of less than 4 kilograms.³⁹

Obviously the de facto distribution of power among ministries is far more complex than the formal system suggests. The ministerial system was designed to enable the center to supervise economic activity by

37. Iu. Voevodin, "Schet ne obmanet" (The count should not fool you), *Sots. ind.*, January 6, 1987. The most eloquent testimony this story offers to the irrationality of the current approach lies in the fact that when Tochmash was ordered by Gosplan to undertake the production of scarce consumer goods, the factory was given a list of such goods from which to choose, and socks and hosiery were on the list.

38. V. Kuptsov, "Effekt khoziaistvennoi initsiativy" (The effect of economic initiative), *Ekonom. gaz.*, no. 33 (August 1984).

39. "O gosudarstvennom plane ekonomicheskogo i sotsial'nogo razvitiia SSSR na 1986-1990 gody. Doklad Predsedatelia Soveta Ministrov SSSR deputata Ryzhkova N. I." (On the state plan of economic and social development of the USSR during 1986-1990. Report of the chairman of the Council of Ministers of the USSR, Deputy N. I. Ryzhkov), *Pravda*, June 19, 1986.

product group: the steel industry would handle the production of steel, the timber industry the production of sawn timber, the electric power industry the production of electric power. Gosplan is divided into departments that supervise ministries; Gosplan distributes products among ministries.

In most cases it appears that the responsible ministry produces more than half of its assigned products, but in some cases it is not much more. The fifty ministries that supervise production increasingly resemble self-sufficient conglomerates focused on the production of a narrow range of final products, supplemented by a range of intermediates and final products from a wide range of product groups. Planners support those trends in their effort to deal with shortages of food and consumer goods by requiring each enterprise to contribute to supplies. What planners do not support, but have been powerless to stop, is the more general tendency toward ministerial autarky, referred to in the Soviet literature as *vedomstvennost* ("departmentalism").

Part of what is coming to constitute economic reform under Gorbachev is an effort to strengthen interministerial ties, by increasing specialization and interministerial trade, in order to increase efficiencies and stimulate technical change. However, the logic of the de facto system suggests that if ministries are to move voluntarily in the direction of opening up to other ministries, then the material-technical supply system will have to become far more secure and responsive than it now is. Otherwise *vedomstvennost* will continue to be a rational response to the system as it now functions.

Economic Institutions outside the Formal System

By now it should be clear that enterprises must resort to a wide range of tactics, not all of them legal, if they are to fulfill their plans. As a result a set of institutions has developed outside the formal system through which enterprises do what they otherwise could not. Consumers are in a similar situation, finding that in many cases they have rubles, but the goods and services they wish to purchase are unavailable either in state stores and cooperatives or in legal private markets. Here, too, institutions have arisen to serve those needs outside the parameters of the formal system, and the law.

→ THE SHADOW ECONOMY. In the search for ways to fulfill their plan and meet the other needs of their enterprise, managers find it necessary to rely on what has been called the "shadow economy" to obtain goods and services that the official, or formal, system cannot supply.⁴⁰ There are no formal organizations in the shadow economy, only individuals and transactions. Yet together they constitute institutions that supplement Gosplan and Gosplan in ways that allow the system to perform better than it otherwise would.

Tolkachi are part of this system, assisting in or carrying out barter deals between enterprises, black market transactions, and bribes. Shabashniki (moonlighters) who provide construction services for cash are also a part of the system, allowing enterprises to undertake construction projects that the official system will not permit. The production of goods and services well outside the product mix of the enterprise is also part of the shadow economy.⁴¹

The case of V. Mizin, director of Tulachermet, illustrates what all of this can involve.⁴² Tulachermet is a scientific-production association (combining in one organization research, testing, prototype, and serial production facilities), which presumably produces ferrous metal products. Mizin was pushing for the firm to expand, but could not receive approval for the investment projects he desired. He decided to go ahead anyway by relying on the shadow economy. He purchased a brick factory that had been closed down and used the workers in his research institute to bring it back into operation. Tolkachi were used to find concrete blocks in the neighboring *oblast'* and to forge an agreement with a concrete factory that it would supply concrete if Tulachermet would send the labor to operate a third shift. Other materials were acquired in a similar fashion, for example, by requesting more of some products in the planning process than Tulachermet required and then using those to barter for the needed products not available through the material-technical supply system. Mizin apparently managed in the end to have his new projects completed but at considerable cost and considerable

40. See Gregory Grossman, "The 'Shadow Economy' in the Socialist Sector of the USSR," in *The CMEA Five-Year Plans (1981-85) in a New Perspective: Planned and Non-Planned Economies* (Brussels: NATO Economics and Information Directorates, 1982), pp. 99-115.

41. Ibid.

42. See L. Obukhov and E. Mokhorov, "Zakon vedomstvennogo tiagoteniia" (The law of departmental gravitation), *Sots. ind.*, January 16, 1985.

risk. However, as the account of this enterprising manager's handiwork suggests, he had no other choice: "It was necessary to fulfill state tasks."⁴³

Much of what Director Mizin did is illegal, yet it is also a type of activity familiar to the manager of any large Soviet factory. From the manager's vantage point, he has plan targets that he knows are of first importance to the center, and more specifically to his ministry and local party first secretary. He quite naturally does all in his power to fulfill those targets, relying (probably without thinking consciously about it) on a mix of legal and illegal devices, getting what he can from the planning system and the rest through the shadow economy. The planners know their enterprise directors are doing this; implicitly they expect it of them. An enterprise director would be a fool to "work according to rule" and fail to fulfill the plan because he chose not to rely on the shadow economy. He would either have to change his ways or lose his position. It would be equally foolish to minimize contact with the formal system; the safest, fully accepted behavior is to use the shadow economy only insofar as the formal system (including not only the ministry, but also local party officials) cannot, through legal channels, meet the enterprises' legitimate needs; namely, those created by plan targets.

No data are available by which to measure the contribution of the shadow economy to economic activity in the Soviet Union, nor are they likely to be constructed. Conceptually, the shadow economy makes possible a higher national income because surpluses and deficits created by the formal system are traded off outside the system, in its shadows, heading off what would otherwise be more severe bottlenecks. This translates into a "what if" question that is impossible for an outsider to answer and is unlikely to be asked or answered within the USSR. This also demonstrates that the anecdotes, entertaining as they may be, are of no use in analyzing the significance of the institutions involved.

THE SECOND ECONOMY. Consumers, like enterprises, have many needs that the formal system cannot meet. There is a wide range of clothing, services, food, and other commodities for which excess demand is persistent in the USSR. The problem is not, as noted in chapter 2, an across-the-board shortage of goods. Many goods are available in adequate quantities; some are in surplus. The problem is the shortage of high-quality goods, or goods embodying the latest technology. More-

43. Ibid.

over, services are almost universally in short supply and of variable, generally low quality.

Because consumers have money that they are willing to spend on these goods and services in short supply, there are substantial profits to be made for any individual willing to violate the laws on private economic activity or for any enterprise willing to engage in private economic activity on the side.⁴⁴ The result is what Grossman has called the "second economy," that being the sum of production and exchange that is directly for private gain or in known contravention of existing laws.⁴⁵ Several types of activity are involved here:⁴⁶ work by single artisans operating without the legally required license; use of the "putting-out" system to produce illegal products; private production on the job (for example, an employee in a state garage repairs a car for a fee); parallel production in a plant, using extra materials to produce unreported output distributed through the system using bribes; private, organized production in a state enterprise or collective farm; private underground manufacturing; construction by private teams (*shabashniki*); and brokering and information selling.

The important distinction between the second and shadow economies is that the former is based on the search for private gain. The shadow economy evolves from the enterprise directors' search for ways to meet their plan; it is the consequence of an effort to achieve the most important targets set in the formal system, at the cost of less important targets and norms. In the second economy the motivation is to make money. Enterprises are simply making goods on the side, outside the planning system, which they sell for profit. Here individuals are knowingly operating without a license and in some cases are undermining state monopolies in search of profits.

The two economies overlap in some areas. Enterprise managers making investments outside the plan in an effort to fulfill output targets may deal with *shabashniki* who are offering construction services as a team, in contravention of the law. Unneeded inventories accumulated

44. As noted in chapter 3, the legal limits for private activity are narrow, and even within those limits most activities require a license, which means a hefty income tax. The law clearly forbids enterprises and farms to enter into economic activity outside of that specified in the plan.

45. Gregory Grossman, "Notes on the Illegal Private Economy and Corruption," in U.S. Joint Economic Committee, *The Soviet Economy in a Time of Change*, Joint Committee Print, 96 Cong. 1 sess. (GPO, 1979), vol. 1, pp. 834-55.

46. Grossman, "Notes," pp. 837-39.

by an enterprise seeking to barter for needed goods not available in the formal system may be traded to other enterprises that need the goods for purposes of parallel production. The distinction is in the motives of buyers and sellers. As a result, the two economies are in fact intertwined.

There is no question that the second economy is important in the USSR, although its importance for economic activity is difficult to measure. Two Soviet authors estimate that second-economy services alone involve the labor inputs (not necessarily full-time) of 17–20 million persons (the higher figure being 15 percent of the 1984 labor force)⁴⁷ and account for 5–6 billion rubles in receipts a year. They also estimate that urban dwellers go to the second economy for about 45 percent (presumably in value terms) of their apartment repairs, half of clothing repairs, 30 percent of home appliance repairs, and 40 percent of auto repairs.⁴⁸

The servicing of automobiles is an increasingly important activity in the second economy. In 1984 about 4 percent of the Soviet population owned automobiles, up from 0.5 percent in 1970.⁴⁹ State auto service centers, supervised by Minavtoprom (Automobile Industry) are widely regarded as inadequate in the quality and speed of service they offer and the stocks of spare parts. A survey by Mintorg (Trade) concluded that by 1982 only half of the automobile owners were using the state centers to service their automobiles. The remainder were relying on private services, which are faster, frequently of higher quality, and sometimes cheaper. Consumers also resort to the private market for about half of all spare parts purchases, frequently paying prices well above the official state price. Spare parts are generally in short supply, and those particularly in demand show a "remarkable ability . . . to secretly disappear from the stocks of stores and stations for technical service, and show up in the hands of speculators."⁵⁰

Most Soviet consumers, like enterprise managers, rely on a mix of the formal economy and the range of de facto institutions to meet their needs. The second economy is important to them as it provides a way to circumvent state-determined priorities. The state has committed relatively little in the way of capital resources to the expansion of the capacity

47. *Narkhoz* 1984, p. 408.

48. G. Gukasov and V. Tolstov, " . . . i drugie zainteresovannye litsa " (. . . and other interested persons), *Izvestiia*, August 19, 1985.

49. "Lichnyy avtomobil'—ne lichnoe delo" (The personal automobile is not a personal matter), *EKO*, no. 5 (May 1985), table on p. 103.

50. G. N. Andrienko, "Legkovoi avtomobil' v sem'e" (The light automobile in the family), *EKO*, no. 5 (May 1985), p. 113.

to produce services. Thus it has created the incentive for private individuals to fill the gap, sometimes by diverting state resources from their intended uses.

If there was no second economy, possibly because law enforcement officials somehow managed to eradicate it, the supply of services would be inferior to what it now is. The supply of goods would be somewhat worse; in particular, the mix and distribution would be different. The precise decline in the supply of services and goods would presumably be less than the total value of second-economy services, if it is assumed that the theft of state time and materials ceased and therefore supplies from state outlets increased.

To imagine a world without the second economy is to engage in fiction, a fiction that Soviet leaders are too politically wise to contemplate. Instead, they have chosen to try to co-opt it through new laws on individual and cooperative activity, which are discussed in chapter 7.

AN OBSERVATION ON THE ENTREPRENEURIAL SPIRIT. This discussion on the shadow and second economies suggests an important and sometimes not sufficiently appreciated point about Soviet managers: one of the potentially formidable barriers to a successful radical economic reform in the USSR is the management cadre itself. Is it possible, one might ask, for managers who have been nurtured for a half-century by a central plan to suddenly accept the responsibility for their own actions, live with the uncertainty associated with markets, and take initiatives on their own? There is no simple answer to these questions, but at least part of the answer lies in the reality of the shadow economies.

It is true that Soviet enterprise directors do not face uncertainties concerning output markets that are the hallmark of private sectors in Western countries, nor do they face the risks associated with investment decisions in that uncertain environment. However, their uncertainty is palpable where input markets are concerned, and the reliance on the second and shadow economies suggests a willingness to take initiative and risk that might elude many businessmen educated in a different system. Similarly, the second economy suggests the existence of a private entrepreneurial spirit despite formidable barriers to private economic activity in the USSR.

The consequences of radical economic reform for Soviet managers have less to do with whether they can learn to live with uncertainty and more with what new skills they may have to develop as the uncertainty they face shifts from their dealings with the government and party

hierarchies to their dealings with markets, and from input to output markets. It is also in that sense that the use of reforms to coopt portions of the *de facto* system seems promising for a leadership looking for inexpensive ways to improve performance.

The Information System

The divergences between formal and *de facto* institutions are particularly noticeable in the information system. Although the planning process represents a genuine effort to cope with horrendous amounts of information, it is simply not up to the task. This system is incapable of gathering reliable information in the necessary detail regarding production possibilities and true demands for goods. Moreover, it is poorly equipped to detect and react quickly to shortages and surpluses as they arise. Poor information leads to infeasible plans, or potentially feasible plans that individual economic units will tend to ignore because they know better than the center what the true possibilities are. That weakens central control over the system. Although the system may produce plans and there may be economic activity, the link between the two is not always clear as economic units use their room for maneuver to pursue their own goals.

The price system is consciously designed as a secondary mechanism supporting, not supplanting, the plan. For that reason it is focused on supply-side information and therefore cannot be an active institution identifying and reacting to shortages and surpluses, or changes in demand and supply that precede those conditions. Furthermore even as a source of supply-side information on changing relative costs, the system has glaring weaknesses. A fixed price system with tight rules on cost-based prices invites enterprises to introduce new products and obtain higher prices in the process. Soviet enterprises have accepted the invitation, and thus the *de facto* price system in the Soviet Union is a combination of some fixed prices and the prices that come out of a myriad of new prices set every year, only some of which are closely scrutinized by Goskomtsen.

Neither the planning nor price system is remotely adequate to monitor changing supply and demand conditions and to initiate reactions to them. In many cases this simply means that shortages or surpluses persist for what would be extraordinarily long time periods by the

standards of a developed economy. But a set of institutions has arisen in the *de facto* economy that partly compensates, in a crude fashion, for the inadequacies of the planning and price systems as information systems.

The Planning System

Soviet economists frequently state, with an understandable lack of precision, that the Soviet economy produces about 24 million products.⁵¹ That the number could be off by several million is of little consequence; it seems a reasonable approximation. In round numbers, there are about 50,000 enterprises in Soviet industry and 50,000 collective and state farms in agriculture. Therefore the average farm or enterprise produces roughly 240 products. Many of the products, probably the majority, are inputs into other products.

Nevertheless, Gosplan's task is to coordinate the production of the 24 million products in a way that at least fulfills or overfulfills targets for variables important to the leadership: output (aggregate and for important commodities), efficiency, balance of trade and payments, and quality. To attack the task on a commodity-by-commodity basis would require not only targets for each of the 24 million, but also knowledge of input requirements for producing each (the steel, plastic, rubber, and glass that goes into the production of an auto, along with the machinery and equipment required, and so on). In order to choose among investment options the center would also need to know the alternative ways each product could be produced (alternative possibilities to produce autos from steel, plastic, rubber, glass, and various types of machinery) so that it could make socially rational choices.

Impossible as this problem sounds, it probably understates the task facing Gosplan. The various interconnections implied in the wide range of choices are well beyond any conceivable set of capabilities Gosplan could hope for in this century. Indeed, even if Soviet authorities were given unrestricted access to the world's most advanced computer hardware, they would still be faced with an impossible task. Clearly Gosplan must compromise, devoting its scarce resources to address directly those decisions critical to the entire system and leaving to

51. See for example, the interview with N. P. Lebedinskii, a deputy chairman of Gosplan, "Distsiplina planirovaniia" (The discipline of planning), *Pravda*, September 21, 1983.

ministries and enterprises most of the decisions, according to rules designed to induce those bodies to decide as Gosplan officials would if they (the Gosplan officials) were faced with the detailed decisions made at lower levels and had all the information lower levels have.

How this planning system actually operates, which aspects of its operation actually affect economic activity, and which have little or no impact are all questions relating to Gosplan's compromises and their implications for the system. Michael Ellman surely goes too far when he compares Soviet planning to a "rationality ritual" that conveys "the illusion that the chaos we see around us is in fact part of a rational order . . . [and ascribes] to the priests (planners, economists and other technicians) and the rulers they serve, the function of bringing order out of chaos, of leading society to the Glittering Future."⁵² But he does introduce a valuable note of caution into any study of links between the planning process and economic activity. The fact that plans are made and that economic activity then occurs need not mean that the two are closely linked in all, or even many, ways.

In fact Gosplan does have tremendous influence over the operation of the Soviet economy, but the sheer magnitude of its information problem limits that influence. In addition the compromises Gosplan has made to bring its information collection and computational capabilities into line with the task it faces may have been misguided, having the effect of reducing Gosplan's actual influence over economic activity relative to its conceivable influence if it had made all the right strategic choices in its compromises. The implication is that not all of Gosplan's obligatory plans or the elaborate procedures that produce them have an effect on the system, but some may. From the data in chapter 2 it appears that the five-year planning cycle has little influence on economic activity. Some evidence in the same vein can be compiled for the annual planning process. The crux of the matter lies in how Gosplan has chosen to make an otherwise impossible task possible and what evidence there is on how the resulting planning system affects economic activity.

GOSPLAN'S COMPROMISES. Gosplan has arrived at three important compromises in an effort to make its problem manageable: it attempts to control only a few commodities directly, leaving most of the commodity-by-commodity control to lower-level bodies; it relies heavily on planning on the margin (growth rates or absolute increments) to minimize the

52. Michael Ellman, "Changing Views on Central Economic Planning: 1958-1983," *ACES Bulletin*, vol. 25 (Spring 1983), p. 14.

information requirements; and it allows corrections to be made to plan targets that cannot be fulfilled to ensure that many specific targets are, ex post, fulfilled.

Delegation of authority. Gosplan's first and most obvious compromise was unavoidable. Gosplan directly controls output and distribution of only a few key commodities. In recent years its departments have, as indicated in chapter 3, computed balances for 2,000 commodities; Gossnab is responsible for another 15,000. Each of these numbers is quite "soft," and the total number of commodities controlled by Gosplan and Gossnab together could be 15,000 or 25,000. Furthermore, these numbers would surely be higher if they were tallied in the same way that the entire output of the economy is counted to reach an estimate of 24 million products. Nonetheless, the fact remains that Gosplan attempts to exercise direct control over only a tiny fraction of the products produced in the system.

Commodity-by-commodity control has instead been delegated to middle-level authorities. The fifty ministries, republican gosplans, and republican ministries divide among themselves all remaining products of national or regional importance. Targets for these products are determined within more general targets set by Gosplan for the output of key products in each ministry or republic, along with targets on the value of output, targets for key inputs (with explicit or implicit efficiency targets linking output to input), investment and foreign exchange limits, the quality of goods and services produced, and technical innovation in the sector.⁵³

By reserving for itself full control over the intersectoral allocation of investment funds and foreign exchange (under the sometimes very tight supervision of the Politburo), Gosplan makes certain it has a say in the expansion of new capacity in the system. Ministries vie with each other for access to those scarce funds using arguments linked to their ability to meet targets for output, efficiency, and quality. Minugleprom (Coal)

53. Many of the products that the ministries plan are actually detailed varieties of those planned by Gosplan or Gossnab; another large group includes products intermediate to the ministry, for which the issue is not so much control as a proper estimate of detailed input-output coefficients. This bundle of detailed targets adds up to a set of constraints that reduce a ministry's room for maneuver, without removing it. For example, Minchermet (Ferrous metallurgy) receives a target for steel output and targets for the mix of steels produced. Its task is to determine detailed targets, theoretically in ways responsive to demands in the system, but the resulting outputs should at least add up to the value and quantity targets from Gosplan.

will argue for funds to build new mines and refurbish old ones; Minneftprom (Oil) will argue instead for investments in oil production. Both will be facing machinebuilding ministries pleading for funds to enable them to modernize, one effect being energy conservation. All will make cases for imported equipment, cases that must be balanced against the use of hard currency for imports of food and intermediate goods.

The problem with the compromise on products is that it does not relieve Gosplan of the crushing information burden implicit in what it is expected to do. When Gosplan sets targets for growth in the value of outputs of each ministry, it is implicitly concerned with the output of particular products. What other reason can there be for setting growth rate targets for output in each of fifty ministries? When Gosplan sets efficiency indicators (labor inputs per unit of output, capital-output ratios, reductions in the use of key raw materials and fuels), it implies a knowledge of the possibilities available to each ministry to achieve such goals on a commodity-by-commodity basis. When Gosplan allocates investment funds among ministries, it is also allocating real machines and equipment and by implication is making choices among technologies.

In that sense it has not compromised. The question, then, is how does it nevertheless manage? Here there is the obvious potential to set plans that have little to do with reality.

Note also that ministries face the same problems Gosplan faces. They cannot possibly have sufficient information to specify in detail all outputs and inputs for their share of the 24 million products. They also must compromise, in this case giving some of their power to enterprises, but within general parameters that constrain enterprise choices.

Planning on the margin. For both Gosplan and the ministries a major component of the solution is planning on the margin, or "planning from the achieved level."⁵⁴ Anyone who has read Soviet plan documents is struck by the heavy reliance on growth rates and absolute increments, but particularly growth rates, to express targets. It is the growth rate of national income, investment, per capita real income, industrial production, and so on that receives attention. This could, of course, be simply the final outcome of a complex process that begins with recalculating all production possibilities, comparing them with current levels, and making

54. Igor Birman, "From the Achieved Level," *Soviet Studies*, vol. 30 (April 1978), pp. 153-72, provides an excellent discussion of this often-used phrase and the concept behind it.

choices among those that appear likely to generate the same or higher growth rates than those achieved in the previous year.

In fact, appearance and substance coincide here. Soviet authorities have quite naturally fallen into the practice of basing plans for next year's performance on increments related to this year's performance. There are adjustments, responding to clear signs of surplus or shortage (for example, investment acceleration responding to difficulties in the oil industry); and there are clear indications of relative priorities in the growth rates for particular sectors (for example, high growth rates for numerically controlled machinery). However, the general language of the plan is growth rates, from macro indicators down to indicators for individual enterprises (growth of output or sales, growth of labor productivity, growth of output of consumer goods, and so on). Gosplan communicates its expectations to ministries primarily through growth rates; ministries in turn deal with enterprises primarily via targets expressed as growth rates. Gosplan, which must actually issue rights to purchase certain quantities of products and issue orders to suppliers to sell them, still runs its balances on the basis of increments.

There is nothing surprising about this. Budgetary processes in Western governments work according to similar principles, as indicated by occasional attempts to go back to "zero-based budgeting." But it has the same inertial effects in the Soviet economy that it has in governments. The working assumption is that things will move "from the achieved level," with no automatic reconsideration of the wisdom of the achieved level. If energy efficiency in a factory improved 2 percent last year, then the plan will call for at least that improvement this year, probably more. If labor productivity in a particular ministry rose 3 percent last year, then this year should be at least that much, if not more.

The strength of this approach is its tendency, in the right hands, to produce plans that are not totally irrelevant. As long as this year's plans do not depart significantly from last year's achieved level, it should be possible to come within an acceptable range of the targets. On the other hand if there is something going on that planners do not understand, then the planning procedure runs the risk of recording hopes, rather than targets with a decent chance of fulfillment.

The best illustration of the operation of planning from the achieved level can be found in figures 2-2 through 2-6, which explore the link between planned and actual growth rates. Those figures clearly indicate how plans follow actual performance, seeming to "learn" from large

deviations between actual and planned magnitudes; hence the tendency for annual plans to be reasonably close to actuals. Yet, because they are "learning" from actual performance, they lag behind it. And in the growth slowdown of the 1970s and 1980s this has meant that plans for output growth rates are frequently underfulfilled, whereas plans for investment growth rates tend to be overfulfilled.

However, given that tendency to miss changes and to have to correct during the next year, it is puzzling that ministries nevertheless manage to fulfill their output plans with almost monotonous regularity, and with surprisingly few exceptions.⁵⁵ Similarly, enterprises meet their plans frequently even though the system as a whole is falling well short of aggregate plan targets. The existence of this persistent inconsistency reflects the third compromise Gosplan (and in this case the ministries) has made: it allows plans to be corrected.

Plan corrections. Corrections are the last resort for planners faced with plans that obviously are not going to be fulfilled. They take two basic forms: a reduction in planned growth rates in order to match the plan, ex post, to the actual situation; and a change in plans within a year in an effort to change the supply or demand for a product in which imbalances are emerging.

The change in a plan target toward the end of a plan period simply to indicate the occurrence of fulfillment is apparently quite common, particularly in the plans for ministries, but also in some specific indicators for enterprises. N. P. Lebedinskii, a deputy chairman of Gosplan, describes the game well. "Many ministries, establishing lower plan indicators during the first half year, transfer the pressure to the second half, particularly to the last quarter, which artificially leads to an unrealistic series of plan tasks. And then the ministries turn to the corresponding organs with requests for corrections in the plan in the downward direction."⁵⁶

Given the fact that planners are operating with a highly imprecise notion of what actual production possibilities are in the system, and thus are working from the achieved level, there is little they can do when faced with the reality that a plan they have devised will be substantially underfulfilled. Willingness to "learn" from last year's achievements

translates into willingness to learn from last month's achievements, or failures; hence plan corrections.

The practice is similar for similar reasons in the relations between ministries and enterprises, and is strengthened by the symbiotic relationship between the two. Enterprises frequently find that with some effort they can convince their ministry to agree to amendments to their plan targets that will make them easier to achieve than they originally were. Indeed some regard the "battle for corrections" as a test of their strength, and the winning of corrections a badge of bureaucratic prowess.⁵⁷

The general practice of corrections leads to many ex post inconsistencies in what was never a terribly consistent plan in the first place. One has already been mentioned: ministries can fulfill their plans while the major macro targets are underfulfilled. Similar phenomena are observed at the enterprise level. The first party secretary of Lithuania complains that nineteen of twenty-one enterprises in his republic significantly underfulfilled their delivery commitments while simultaneously overfulfilling their plans on sales as a result of corrections to the sales plans.⁵⁸

Within-year plan corrections in response to an imbalanced plan are a constant phenomenon, and a major source of complaint within the system. If, for example, it becomes clear early in the year that targets for energy conservation are too ambitious, Gosplan may allow corrections, but at the same time will move to "correct" upward the plan for the output of various forms of energy. Or, a ministry may tell an enterprise that it can retain a certain amount of its depreciation funds for investment purposes, then change the target if it decides the money is needed elsewhere. These constant adjustments to the plan—what one Soviet author has referred to as an "epidemic" of corrections—are a major irritant within the system, especially for enterprises.⁵⁹ It provides them with a clear rationale for hiding reserves—aside from the rational flowing related to the practice of planning from the achieved level.

THE CONSEQUENCES OF GOSPLAN'S COMPROMISES. By using these compromises to reduce the informational requirements of its job, Gosplan has managed to maintain significant influence over economic activity.

57. V. F. Filippov, *Besedy o khoziaistvennom mekhanizme* (Conversations on the economic mechanism) (Moscow: Politizdat, 1984), p. 30.

58. P. P. Grishkiavichus, "Otvetstvennost' za dogovor" (Responsibility for the contract), *Ekon. gaz.*, no. 22 (May 1984).

59. Filippov, *Besedy*, p. 30.

55. See Alice C. Gorlin and David P. Doane, "Plan Fulfillment and Growth in Soviet Ministries," *Journal of Comparative Economics*, vol. 7 (December 1983), pp. 415-31.

56. "Distsiplina planirovaniia."

Gosplan has real investment funds and controls the allocation of the most important products in deficit, both of which give it some influence over enterprises and the direction of economic activity. No matter how skillfully ministries and enterprises play the game of correcting plans, Gosplan, not the ministries and enterprises, sets the rules by which the game is played. It is therefore an exaggeration to suggest that the planning process is a ritual without meaning. It is probably far more appropriate to look at planning as a ritualized battle for real resources, the outcome of which has a major impact on the performance of the system.

This description of the system as it actually works helps to explain how this system manages to operate in the face of what appear to be insuperable odds. The fact is that planners resort to rules of thumb wherever possible in order to make their problem tractable. They are not in any conceivable sense optimizers. They are trying both to understand a highly complex system in constant movement and to influence it. And they are always behind the game, but never enough to say that they are out of it.

Notice also that the system is not as inflexible to intrayear perturbations as the description of the planning process would suggest. It is true that in this system the focus is on making major decisions once a year, but the plan corrections compensate for unforeseen circumstances, or for miscalculations. Although this explains how the system can react fairly quickly to a shock, it still indicates a fundamental weakness in the sense that the system does not have a regular, smoothly functioning mechanism by which to identify changes and respond to them.

It is another matter whether Gosplan is a government service that, to use the language of economists, has positive value-added. Does the presence of Gosplan, other things being equal, lead to increased national welfare, or even to increased national income? Because one of the other things remaining equal is the absence of a set of markets and flexible prices, the answer is probably yes, but to a very narrowly construed question. The broader question of whether a Gosplan making different compromises might contribute to higher economic welfare is more interesting, and, in effect, the question behind efforts to reform the system.

The operation of the de facto planning system suggests two good reasons for economic reforms. First, a rational enterprise director or minister in this system will go to considerable lengths to hide the

production capabilities of his enterprise or the enterprises in his ministry. Planners have an automatic adversarial relationship with lower levels, which is a direct consequence of planning from the achieved level and of the corrections designed to adjust to imbalanced plans. This is clearly the opposite of the intended result, and much of the history of reforms is a story of attempts by leaders to find a formula that would induce lower levels to reveal hidden reserves.

Second, the constant increase in the complexity of the system is eroding the effectiveness of Gosplan's devices for compromising. The economy is not standing still; the information problem is growing worse. Already weak, Gosplan's grip on the reality of the system grows weaker; and the bargaining power of the enterprises and ministries grows stronger. That also motivates the search for a system that will reassert the strength of the center, but through a different set of compromises.

The Price System

The price system is one area in which the formal design and actual practice are relatively close, although there are still important areas of divergence. The set of weakly interconnected price subsystems, with prices fixed for long periods and driven primarily by supply-side considerations, exists in reality in the USSR. When the world price of oil drops from \$30 to \$10 a barrel, there is no impact on domestic wholesale or retail prices for crude oil or its products; nor will a price rise have any effect. A shift in demand for a product causes no change in its state price—indeed, there is no mechanism to accommodate that—but rather long lines, and possibly associated bribes. On those infrequent occasions when a general price revision occurs, it is production costs alone, and not demand elements, that enter into decisions on the new prices. Production in excess of current demand does not result in a price decline for the producer. Therefore, the price system is in fact, as well as in theory, not used to signal emerging disequilibria.

Several factors have combined to create pressures that drive de facto price determination away from the system as designed. As a result the system contains even less information than the modest, narrowly defined information that planners are seeking.

GOSKOMTSEN'S COMPROMISES. Like Gosplan, Goskomtsen is forced to make compromises.⁶⁰ It is infeasible for Goskomtsen and its republican

60. In discussing Goskomtsen here, I refer both to the all-union organization and its

departments to set prices on all new products. In fact most prices in the USSR are set not by Goskomtsen, but by enterprises and ministries, according to rules issued by Goskomtsen. Goskomtsen's role here is to enforce rules; apparently it actually sets prices for only a few products, primarily raw materials, fuels, and food.

But even as an enforcer, Goskomtsen has an enormous job, and presumably many of the price proposals it considers receive only brief attention. As it is, Goskomtsen considers approximately 200,000 price proposals per year, which averages out to 770 price proposals per working day, or three to four price decisions per day for every price specialist in Goskomtsen.⁶¹ According to one source, that is only 42 percent of the prices proposed; the remainder of what are presumably about 500,000 price proposals per year are handled by ministries or other authorities.⁶² Goskomtsen reportedly responds to 90 percent of the price applications within two to three weeks, and 99 percent within three to four weeks, of receipt.⁶³

It is difficult to believe that Goskomtsen gives serious consideration to any but a few of that 42 percent of proposals. It is probably forced to make decisions on which proposals to explore in depth in much the same way that the U.S. Internal Revenue Service decides on which tax returns to audit, by searching for apparent oddities (relatively high costs for a particular input, high price relative to similar products, and so on). Computers are probably relatively lightly used as of yet. It is more likely that the core of the system is the human equivalent: specialists in the prices of particular groups of products who develop a "feel" over the years for reasonable and unreasonable prices for "their" products.⁶⁴ For relatively small anomalies price authorities may do a cursory check and reduce price proposals by a small amount, and for a few they may carry out the full review.⁶⁵

republican offices, the latter taking on much of the burden relating to the prices of products of less than national importance.

61. N. Petrakov, V. Volkonskii, and A. Vavilov, "Tsena: Nuzhny krutye izmeneniia" (Price: radical changes are needed), *Sots. ind.*, April 3, 1987.

62. I. Lipsits, "Tsena izdeliia" (The price of a product), *Pravda*, September 6, 1985.

63. V. I. Shprygin, "Kak sozdat' protivozatratnyi bar'er?" (How to create an anti-cost barrier?), *Ekonom. gaz.*, no. 32 (August 1986).

64. Recall, for example, the work by the Ukraine Goskomtsen (see chap. 3, n. 49) in which an initial check of prices of comparable products produced by other factories suggested the price was too high, after which an extensive audit of the price proposal revealed a number of irregularities.

65. This is, I suspect, what would happen if, as one Soviet economist reports, Goskomtsen had to correct two-thirds of the price proposals it received because they

This means that in effect most prices actually set in the USSR between price revisions are probably proposed by enterprises, but are still consistent with the general parameters for prices of similar products. This is the price equivalent of "planning from the achieved level," which has the same advantages and disadvantages it has for the planning process. For enterprises, much as for tax evaders in the United States, the goal is not to trigger an audit. For the price authorities, the goal is to convince enterprises that audits are plentiful, easy to trigger, and thorough.

Most important is the fact that the system tends to perpetuate high prices in sectors that have relatively high prices by world standards, or by standards of what is possible. As one persistent critic of the system notes, it ratifies inefficiencies and hides reserves.⁶⁶ The price specialist for each category of goods only has Soviet producers as his referent; if a particular branch is generally inefficient, then the best the price specialist can do is to "lean" toward prices that reflect below-average costs in the branch.

Given the way this system operates, the clear incentive is for enterprises to introduce new products, even if they are not new. This allows them to propose new prices, which probably mean higher profits for them, with only a small risk that Goskomtsen will spend the time to find out if the product is really new and if the proposed price is justified.

THE ECONOMIC ENVIRONMENT AND THE SELLERS' INTEREST IN HIGH PRICES: A second important factor placing a wedge between the formal and de facto price-determination mechanisms is the economic environment itself. Economic power is highly concentrated in a few enterprises in each sector, with high barriers to entry and no effective competition from imports. Enterprises are primarily concerned about plan fulfillment, not costs, since cost overruns are much more easily forgiven than violations of plan targets. The result is a sellers' market in a general climate of excess demand flowing as a natural consequence of the constant pressure for high growth rates. In this context the inability of Goskomtsen to control prices allows producers to inflate prices without opposition from buyers, who in fact even formally agree to such rises.⁶⁷

were too high. A. Komin, "Tsena na novuiu tekhniku" (The price for new capital goods), *Sots. ind.*, June 6, 1986.

66. See N. Petrakov, "Tsena—rychag upravleniia" (Price—tool of management), *Ekonom. gaz.*, no. 16 (April 1986).

67. It is a common complaint in the Soviet literature that when price authorities discover inflated prices, they frequently discover that buyers readily accepted those

Goskomtsen's fragmentary control over the process combined with the effective power of the seller is particularly important because sellers have a strong interest in high and increasing prices. In part the interest stems from the importance of the value of output, net normative output, or sales (which one depends on the time period and the industry) as a bonus-forming indicator.⁶⁸ Hidden inflation swells any of these indicators, reducing the effort necessary to fulfill sales or output targets, and thereby reducing the effort necessary to fill bonus accounts in the enterprise.⁶⁹ Even a shift to higher-priced products within the year can inflate the output or sales indicator, so that Soviet enterprises will prefer the high-priced end of their output mix.⁷⁰ Notice that the corollary of this interest is a distinct lack of enthusiasm for decreasing the cost of output, hence the value of output, sales, or net normative output. Reductions of that sort increase the difficulty of fulfilling the plan and forming bonus accounts.

Enterprises also have a direct interest in high profits. Although they assume only a fraction of the importance of plan fulfillment, and that, too, can lead them to seek higher prices. At a minimum, enterprises strive to be profitable in order to avoid the stigma of reporting losses and the difficulties of negotiating with authorities for subsidies. Price officials show great sympathy for that concern. One clear motivation during price revisions is to make sure that most enterprises come out profitable.⁷¹

prices. It was discovered, for example, that Mistankoprom (Machine Tools and Tool Building) had, with the agreement of its customers, inflated by an average of 30 percent the prices of over 100 types of forges and presses (Komin, "Tsenu na novuiu tekhniku"). See also Shprygin ("Kak sozdat' protivozatratnyi bar'er?"), who reports on research by the Research Institute on Prices showing that on the average one-half of the price proposals reaching Goskomtsen, after they were approved by sellers, buyers, and—where required—the State Committee for Science and Technology, were inflated by 10–30 percent; one-tenth of the proposals were inflated by more than 50 percent. He also comments that even after sellers admitted to inflating their initial proposed prices, in many cases their amended proposals were still significantly inflated relative to actual production costs.

68. Net normative output, which is to be discussed in more detail in chapter 5, is the value added in producing a product, where the value-added weights are not actual but the normed labor inputs for a particular industry.

69. It is clear how hidden inflation would raise the sales or output indicators. Net normative output also provides opportunities as enterprises negotiate with the center over what norms are appropriate for a "new" product.

70. Since 1980 an increasing number of enterprises have been switched to an indicator linking net normative output directly to the wage fund, which increases the incentive to shift to costly products within the mix.

71. As Morris Bornstein notes, for example, a major signal of the need for price

This is not an absolute requirement. After the 1982 price reform, 13 out of every 100 enterprises in industry were still incurring losses, including one-half of the enterprises in Minugleprom (Coal), one-fourth of those in Minudobrenii (Fertilizer), and a significant number of enterprises in construction materials, food, timber, and other sectors.⁷² Nonetheless, it is an important consideration for authorities.⁷³

CONSEQUENCES OF THE PRICE SYSTEM IN OPERATION. The price system is supposed to provide planners with an accurate reading of relative costs of production that will be useful in making choices and in evaluating the performance of enterprises. In fact it falls far short of that goal. Enterprises have a clear motive to inflate prices, and Soviet authorities generally acknowledge that fact. The result is a constant game between price authorities and the enterprises in which the enterprises look for ways to raise prices and the authorities, aware of that urge, seek to control it. Official Soviet price indexes are so few and so flawed that we have no official information on the rate of inflation that this system allows. As indicated in chapter 2, there is evidence of a significant rate of inflation. On the other hand, things are not by any means out of control. The combination of Goskomtsen's rules, the threat of an audit, and the relatively common price corrections seem to add up to a system that keeps the lid on the price level. As one Soviet economist has noted, Goskomtsen appears to be this system's major line of defense against high rates of inflation.⁷⁴

From the economic point of view, probably a more serious problem is that the system tends to favor individualized deals between each enterprise and the center. The goal is to set prices that reflect branch average costs, but in fact there is considerable evidence that quite

revisions in the late 1970s was the falling profit rates in extractive industries. See Morris Bornstein, "The Soviet Industrial Price Revision," in G. Fink, ed., *Socialist Economy and Economic Policy: Essays in Honour of Friedrich Levick* (Vienna: Springer Verlag, 1985), p. 160.

72. G. Chubakov, "Tsena i plan" (Price and plan), *Ekonom. gaz.*, no. 17 (April 1986).

73. Aside from a desire to avoid losses, enterprises have good reasons to strive for high profits, the easiest way being to raise prices. Profitability (as a percentage of capital) is a direct success indicator for some enterprises. It is the source of payments into enterprise accounts. And, on an informal basis, high profits are probably a useful bargaining chip when the enterprise is applying to the ministry for authorizations on large investment projects. Berliner noticed this in his interviews with Soviet émigrés who had worked in Soviet enterprises before the war, and it seems likely that it is still the case today. See Joseph S. Berliner, "The Informal Organization of the Soviet Firm," *Quarterly Journal of Economics*, vol. 66 (August 1952), p. 352.

74. See Lipsits, "Tsena izdeliia."

possibly most prices for manufactured goods reflect not branch but individual enterprises' costs of production, and thus weaken the pressure on enterprises to economize.⁷⁵ As a result, it is even radical now to argue that prices should be set strictly on the basis of average costs of production in a branch—even though that is the formal requirement for the system—because the effect would be to render unprofitable half the output of that product.⁷⁶

Demand considerations are almost as irrelevant in the de facto system as they are in the formal system. The persistent high demand for the output of most enterprises may only provide the means to raise prices; but the prime motive is to reduce the effort required to fill enterprise accounts. Of course if the economic environment was different and enterprises encountered resistance from the center or customers in attempts to inflate the value of sales, then the desire to feed enterprise accounts could translate into an effort to reduce costs. That, in turn, could introduce into the system demand-side pressure on prices. But the environment has taken its present form for virtually all of the history of Soviet central planning, and unless it is changed, the incentives to ignore demand considerations are tremendous.⁷⁷

Other Information Mechanisms

The planning system, although somewhat more flexible than the formal description would suggest, has few mechanisms to identify shortages and distribute scarce goods among competing users. The price system is certainly little help in that regard. Other mechanisms must be allowing enterprises to sense increasing scarcities and react to them. Otherwise the system simply would not work as well as it does.

Although little systematic research has been done on these mechanisms, at least one path-breaking study has been carried out by Raymond Powell, who was fascinated by the cindynophobic (ability to avoid

75. A. Buzhinskii, "Obosnovannost' urovnia tseny" (The validity of the price level), *Ekon. gaz.*, no. 8 (April 1986); and Petrakov, "Tsena—rychag upravleniia."

76. The more traditional remedy suggested by economic theory—marginal cost pricing—can lead to disastrous results in a system dominated by sellers who are negotiating with the center, since basically they can use marginal costs to justify prices far above the average for the branch without any fear that buyers will shun them. See Chubakov, "Tsena i plan."

77. A point made, for example, by Lipsits in "Tsena izdeliia."

danger) character of the Soviet system.⁷⁸ He concluded that enterprises rely on a surprisingly large number of indicators to signal scarcities. "For a given decision, they may include money price and other money costs of acquisition; psychic costs of time and effort and risk of penalty; quantity indicators in the form of physical stocks and flows, queue lengths in their various manifestations; and verbal messages of entreaty, threat, etc. Information may come free, or it may be acquired at a cost. Its vehicle may be anything from a formal official report to a wink of the eye or a shrug of the shoulders."⁷⁹

Powell's point is a critical one. Faced with an "inactive" price system and an imperfect planning system, enterprise management has been forced to develop other mechanisms for sensing scarcity and dealing with it. The shadow economy provides a considerable amount of information on scarce products, but the official system can do so as well.

Even here, however, the system tends to be asymmetrical. It sends far clearer signals on emerging shortages than it does on emerging surpluses; and it sends higher-quality information on physical shortages than it does on inefficiencies (although those may lie at the source of shortages). In that the de facto system cannot compensate for the failings of the formal system. It is the way this system forgives persistent surpluses, as well as persistent shortages, that forms part of the agenda for economic reform.

The Incentive System

Enterprises and individuals face a complex set of incentives in the de facto system, only some of which are intended incentives in the formal system. The constant pressures from above for improved performance, combined with the extraordinarily complex regulations and the persisting shortages, create a complicated and rich milieu in which individuals, the enterprises, ministries, and central organs find themselves in a never-ending game in which they are motivated to do things that outsiders sometimes consider strange.

The central institution in the entire system is the enterprise, the basic unit through which society brings together the labor force and capital to

78. See Raymond P. Powell, "Plan Execution and the Workability of Soviet Planning, *Journal of Comparative Economics*, vol. 1 (March 1977), pp. 51–76.

79. *Ibid.*, p. 61.

produce goods and services. The enterprise hires labor and sets up the incentives that by and large determine how the labor force functions. Plans revolve around enterprises, which are used to control the composition of the aggregate supply of national income and the demand for that national income. By understanding the world of the enterprise as it actually exists, one can understand a great deal about the incentives that drive actors in the system and therefore the system itself.

Formally the system appears to be a conceptually neat, if extraordinarily bureaucratic, incentive system created by the state to entice enterprises to reveal their true production possibilities so that they can be used in the most efficient way possible to fulfill centrally determined plans. Enterprises operate in the context of bonus rules linking what they do to possible bonuses. They respond, and the bonuses result. Dysfunctional behavior leads to modifications in the bonus schemes. Pathological behavior can trigger a new reform.

The de facto system differs from this formal description in several fundamental ways. First, because the center wants so many things, not all of which are consistent with each other, enterprise management is forced to choose which parts of the plan to fulfill and which to violate. In essence the life of an enterprise manager in the Soviet Union is a constant flow of economic triage decisions for which the plan offers little help; thus informal communication with all levels of the party and government hierarchy is essential. Sometimes managers must rely on subtle indications of which targets are truly important to the center and which are expendable.

Second, enterprise directors have personal motives as well as the desire to meet the needs of their enterprise and the objectives of their local party and government officials. The resulting goals need not, and usually do not, coincide with those of the center. As might be expected, enterprise management attempts to fulfill the indicators judged most important to the center in ways that best serve the other complex motives of enterprise management.

These two factors give rise to another distinction: the central planners, faced with the de facto inconsistency of their assigned objectives and the efforts of managers to serve many motives, begin to make special deals with each enterprise, through the ministries. The resulting relationship between the state and enterprises is far more complex and individualized than the regulations would suggest, as both sides are forced by circumstances to reach a tacit agreement that they will ignore

regulations and norms in the service of higher goals. The enterprise must therefore pay constant attention to bureaucratic politics; the assiduous enterprise manager is rewarded with considerable benefits that may not even be achievable under the regulations. However, it is an arbitrary system in which published regulations are obeyed irregularly and unpredictably. The successful "entrepreneur" in this system is not a person who develops new products and new technologies, but one who successfully develops a workable relationship with the government and party authorities supervising his enterprises.

The Enterprise Director as a Master of Triage

Regulations governing the indicators included in enterprise plans are extraordinarily complex and are changed with some frequency, although the fundamental structure of the system has remained intact since it was set in the 1965 reforms. I discuss here the system as it existed in the mid-1980s, leaving to chapter 5 an account of how procedures changed in the 1960s and 1970s.

The targets conveyed to enterprises in their five-year and annual plans are set by ministries, which are guided by general regulations outlining ministerial rights in this area. Each enterprise receives a set of targets from the annual plan, which is the operational plan from its point of view. These targets may be divided into the following categories.⁸⁰

1. Output, including the output in physical units of the most important products, the volume of normative net output, sales (to measure contract fulfillment), and the growth of output of goods in the highest-quality category.
2. Labor productivity, the size of the labor force, and the size of the wage fund.
3. Finance, including targets on the cost of production, limits on expenditure of materials per unit of output, and profits and payments to the state budget.
4. Capital construction, including targets for additions to capacity from new machinery and modernization of existing plant.
5. Technological progress, including targets for the R&D program of the enterprise, for the introduction of new technologies embodying

80. M. G. Greshchak and others, *Sovershenstvovanie planirovaniia na promyshlennom predpriatii* (The improvement of planning in the industrial enterprise) (Kiev: Tekhnika, 1983), pp. 19–20; and Filippov, *Besedy*, p. 65.

increased efficiencies, and for the organization of production processes and management.

6. Inputs, including deliveries of key inputs linked to plan fulfillment, and targets for reductions in the use of key inputs.

The center mandates which indicators of this group are most critical to measures of output, quality, and labor productivity for all enterprises. Beyond that, ministries have substantial latitude on particular indicators they use for their enterprises, although they must bear in mind the performance indicators by which Gosplan judges their branch total output, output for key products, productivity, and quality.

Numerous specific targets are formed in each of these categories, which can easily add up to several hundred obligatory targets, ranging from indicators of overall activity of the enterprise (profits or sales) to the smallest details of the enterprise operation. The head of a metallurgical enterprise complained that of the more than 100 indicators in his plan, 28 were for the output of specific products, and 15 of those products were intermediate products used only within the enterprise.⁸¹ Similarly, one of the top managers in the Kama Truck Association—a premier Soviet enterprise built primarily with Western technology—complained that the organization receives a plan with 150 targets. As with the metallurgical plant, the targets include a number of detailed products that are only shipped between factories within the association.⁸² G. F. Beliakov, the head of Leningrad's Nevsky Factory, complained recently of having to cope with 300 specific targets.⁸³

The most striking characteristic of this system of targets is that an entity outside the enterprise attempts to control its entire operation, specifying not only final results, but also intermediate results, which are inextricably intertwined. The plan specifies total wages and wage rates; total output and the output of key products, including intermediates; labor productivity and the introduction of new technologies. The several hundred indicators and their myriad interconnections guarantee that the enterprise director will face an inconsistent plan. If the ministries knew enough about enterprise production capabilities to specify the structure

81. "Govoriat uchastniki vstrechi v TsK KPSS," (Participants speak in a meeting of the CC of the CPSU), *Sots. ind.*, April 12, 1985. The speaker was B. I. Kolesnikov, director of the Norilsk Mining and Metallurgical Kombinat.

82. G. Popov and V. Shcherbakov, "Podriad dlia zavoda" (Contract for a factory), *Pravda*, June 8, 1985.

83. See chapter 3.

of outputs accurately and to identify the key links between inputs and outputs, they would not have to rely on plans with bonuses for overfulfillment and penalties for underfulfillment. In fact they know much less than they need to know, and the plan tends to contradict itself.

The enterprise may find, for example, that to meet the targets for increased quality of output it will have to violate targets requiring that the use of key inputs be reduced. The plan to introduce new technologies may conflict with the plan for outputs of key products, since the introduction of new technologies can easily involve interruptions in factory operations. The plan to increase the output of certain products may violate targets for the output of intermediate products. The plan to increase labor productivity may conflict with restraints on wage levels. The list is endless.

What it goes to show is that enterprise directors must choose which targets to violate and which to try to fulfill. Their choices will be based on their assessment of which targets are truly important to the ministry; that judgment in turn is determined by the indicators to which Gosplan attaches the most importance. The bonus schedules themselves give important signals; only a few of the targets actually form inputs into bonus determination, and of those only a few determine the majority of bonuses. In addition to issuing bonus regulations, ministries make clear to enterprises in many ways what the truly important indicators are.

Historically the list of critical targets has been short and stable: the growth of total output and the output of key products. Factory managers who are contemplating violating those targets, even in order to fulfill other targets, risk the ire of their ministry in much the way that is depicted in Aleksandr Avdeenko's story of the deputy director of a large metallurgical combine who has decided to push ahead with the reconstruction of his factory. " 'You've gone in for reconstruction,' they think up there [in the ministry]. 'Fine. That's all to your greater glory. But be so kind as to fulfill your quotas of cast iron, steel and rolled metal as you did previously, before reconstruction. If you don't improve your basic work in the next few days, we'll tighten the purse strings.' And they do. They cut bonuses. Or don't give them at all. . . . That's what reconstruction means if you look into it." ⁸⁴

The existence of several hundred indicators and the rhetoric surround-

84. Aleksandr Avdeenko, "The Sweat of One's Brow," excerpt in Martin Crouch and Robert Porter, eds., *Understanding Soviet Politics through Literature: A Book of Readings* (London: Allen and Unwin, 1984), p. 114.

ing them suggest that although output indicators are vitally important to planners, many other things are significant, indeed too many things. Moreover, there have been periods in which regulations have signaled a move away from output indicators toward indicators of efficiency and quality (these are discussed in more detail in chapter 5). All the same, the factory manager must try to see through the new regulations and accurately assess what is truly important to his ministry. Even if the new regulations accurately express a shift in the underlying priorities in the system, the wise factory manager treats the new situation as no more than a working hypothesis to be tested in the course of day-to-day negotiations with the ministry.

It is not decrees and resulting regulations that ultimately determine the true priorities associated with the mass of plan indicators. Rather, it is the underlying logic of the system expressed in the way planners seek to control the system and the resulting performance criteria the center uses to judge ministries and party secretaries. The main concern today, as in the past, is to control and coordinate production on a commodity-by-commodity basis. That is how the system generates plans for the output of key products; that is what drives the interest in increases in output. As long as Gosplan judges ministries (and local first party secretaries) by those few output indicators, those will be first priority for ministries, first party secretaries, and enterprise managers.

The Problem of Fulfilling the Indicators

The reasoning implicit in the system of targets used in the formal system, although not made explicit by Soviet economists, nevertheless exerts a powerful influence on the way the system operates and the way that economists and their leaders think about the system. It begins with the assumption—which is almost universally accepted in the USSR, at least by those who make policy—that no single enterprise performance indicator can adequately convey the diverse objectives the state has for enterprises. This does not necessarily constitute a defense of several hundred targets, but it does indicate little support for the notion, say, that profits are appropriate as the sole indicator of an enterprise's success. In its most extreme form this assumption asserts that enterprises will only do what the state wishes if targets are set for them, and will do many things contrary to state wishes if they are not explicitly forbidden to do so.

② The second assumption, which is really an article of faith, is that everything important to the state is measurable. Outputs, whether they are apples, drafting services, research, or computer production, are all measurable and therefore can be controlled by targets in the plan. Output quality can be measured to ensure that enterprises will not only increase output, but also quality. Efforts to introduce new technology, save energy, protect the environment, develop new products can all be measured, and controlled by targets. All outputs and the efforts that go into their production can satisfactorily be measured. It is possible therefore to specify the quantity and quality of goods and services to be produced, to ensure that they are produced efficiently, and to induce enterprises to constantly innovate in the output mix and production processes they use. Bonuses can be attached to all these indicators to signal the state's priorities, should enterprise directors find a need to choose. The idea is that this is possible, not that the current system of indicators actually does that perfectly; hence the constant need to "perfect" the system.

③ The final assumption is that, where quantitative indicators leave room for doubt, and therefore for maneuver by the enterprise, moral incentives (supplied by the local party apparatus) will induce enterprise management to fulfill the spirit, not merely the letter, of the targets. If there are two ways to increase the quality of a product, both of which would satisfy quantitative quality targets and earn bonuses but one of which would clearly benefit society more than the other, the enterprise director will choose correctly from society's point of view. This is in part an assumption that spontaneous goodwill on the part of managers will lead them to make an effort to "read" the spirit of the plan and strive to fulfill it. In addition it is presumed that party officials will, in the course of their duty, nourish that spirit of goodwill.

All three assumptions have their weaknesses. The greater the number of indicators, the more room for maneuver by enterprises. The assumption that everything is quantifiable is obviously flawed; yet Soviet leaders stubbornly adhere to it and thus keep the entire system of targets and bonuses in fairly constant flux as they search for what can never be found. The third basic assumption actually consists of two ideas: that somehow one can induce enterprise managers to adhere to the spirit of targets that are otherwise ambiguous out of good faith and that such a good faith effort will adequately compensate for ambiguities in the incentive system. Both are problematic.

Without even referring to Soviet experience, a moment's reflection suggests how difficult it is for any central authority to quantify the activities of enterprises in a way that unambiguously identifies what is "good" or "bad" from the point of view of the state. How does one measure, for example, the output of computers and thereby set targets? Using the value of computer output invites the production of expensive, but possibly not very good, computers. Simply manufacturing computers that have old transistors and tubes, which are now expensive to make, would generate high value output totally counter to social interests. Computing power, measured possibly in nanoseconds required to make a computation, is a possible indicator, but would probably result in computers that are fast, but that have few other redeeming characteristics (such as flexibility or memory). A mixture of indicators outlining the basic capabilities deemed desirable in a computer would be a potential solution, but for most products there are generally enough characteristics so that planners cannot specify all of them.

The problem is that even managers with the best of intentions are drawn quite naturally to try to maximize the indicators and therefore will tend to ignore product characteristics or aspects of their operation not specified in the plan. Furthermore, unless planners are extraordinarily lucky and skillful, managers will find ways to fulfill the indicator(s) but shortchange other variables of concern to the center.

The Soviet economic system is rich with examples of distortions caused by relying on quantitative indicators to measure enterprise activities. In research institutes attached to industry, budget utilization, not project completion, has been the main performance indicator. In many cases the result is much research and little output.⁸⁵ Design bureaus, which are judged by the number of designs they produce, are flooded with designs, most of which embody few new ideas, a great deal of obsolete technology, and a low level of standardization (because standardization would reduce the number of designs required).⁸⁶ Enter-

85. Ronald Amann and Julian Cooper, eds., *Industrial Innovation in the Soviet Union* (Yale University Press, 1982), p. 14. One recent, extreme illustration is a research institute in Minstankoprom (Machine tools) with a 600-person staff that had generated two patentable inventions over the last nine years of its existence. Nikolai Ryzhkov announced its closing in his speech on the Twelfth Five-Year Plan: "O gosudarstvennom plane" (see note 39).

86. On the bias against standardization, see Amann and Cooper, eds., *Industrial Innovation*, p. 14. Ryzhkov in the speech cited in n. 39 indicated that a survey of designs for new factories approved by machinebuilding ministries showed that half needed significant revision to bring technologies up to current levels, and 10 percent were not worth continuing, "O gosudarstvennom plane."

prises producing durables also receive targets for the production of spare parts, but the targets are in rubles. Therefore they concentrate on the spare parts easiest to produce, irrespective of consumer needs. The output of many important manufactured products is still measured in simple units (numbers of computers or numerically controlled machines), with the result that enterprises are induced to focus on quantity, not quality.

The main game between the planners, ministries, and enterprises is not over quantities per se, which are so important—both formally and de facto—that enterprises tend to fulfill those targets. Rather, the problem is that enterprises tend to compromise on quality or ignore customers' needs, or allow input usage to go out of control. Planners respond with other indicators or procedures designed to reduce enterprises' room for maneuver. The dynamic of that battle explains much of the history of efforts to reform the economy over the last quarter century and the tendency for targets to proliferate.

The game between enterprises and the state over measuring product quality illustrates the pitfalls of the Soviet approach. The key instrument used to measure output quality and to reward or penalize improving or deteriorating quality is the quality certification system. Since the late 1960s Soviet planners have developed an increasingly elaborate system for checking the quality of enterprise outputs, which they classify as highest (which receives a seal of quality, or *znak kachestva*), first, or second.⁸⁷ The highest category includes products up to the best world standards, and the first category contains products up to best Soviet standards. The second category has not been recognized since 1984, although many products that would be classified as such are produced.⁸⁸ The certification system is now being modified under Gorbachev, but the essence of the system remains unchanged: quality certification boards representing consumers, producers, and technical experts review products and certify their quality. Only the most important output of the system goes through this process. By 1983, 80,000 products were certified as being in the highest category.⁸⁹

A plan indicator for ministries and therefore enterprises since 1971

87. The first *znak kachestva* was awarded on April 22, 1967, to an electric motor produced by the Vladimir Il'ich electromechanical factory in Moscow. Filippov, *Besedy*, p. 104–09, provides an account of this system.

88. I. Isaev, "Plan, standart, kachestvo" (Plan, standard, and quality), *Planovoe khoziaistvo*, no. 12 (December 1983), p. 15.

89. Filippov, *Besedy*, table on p. 105.

has been the share of highest-quality products in their mix, or the growth of goods with that certification.⁹⁰ Ministries also receive targets for producing new items.⁹¹ In addition various schemes have been used in recent years to raise the prices that enterprises receive for products achieving the highest-quality certification.⁹² Each enterprise has a quality control department charged with ensuring that enterprise output is up to state standards.⁹³ All of this is designed to ensure that enterprises will not meet their output indicators by reducing the quality of output.

Although this approach to quality control has not led to failure, neither has it led to success. Enterprises and ministries have naturally focused their efforts on the indicators, not quality per se, or the preferences of their customers for goods with particular qualities. Quality control boards are overloaded and not always staffed with the best specialists, and presumably are forced to rely on sellers' documentation and judgment to make a decision. The result has been an indeterminate, but presumably large, number of products that clearly fall short of world standards, and the introduction of "new" products that actually incorporate minor modifications of previous models.⁹⁴ Products that may have deserved certification in their prototype versions fall short of standards in serial production as the quality control departments in the enterprise allow them to slip through.⁹⁵

Aside from the possibilities for enterprise maneuvers, another weakness of the quality control system is an inherent bias toward supply-side quality indicators. In those industries where competitive pressures are strong in Western countries, enterprises are constantly engaged in a search for goods and services that meet the needs of consumers. Many products that would surely be acceptable by the standards of quality in the Soviet system fail because consumers reject them for competing products. Because enterprises need to survive, they learn from that or

90. Jan Adam, "The Present Soviet Incentive System," *Soviet Studies*, vol. 32 (July 1980), p. 357; and Filippov, *Besedy*, p. 66.

91. Isaev, "Plan, standart, kachestvo," p. 11.

92. Bornstein, "Soviet Industrial Price Revision," p. 164.

93. These are the *Otdeli tekhnicheskogo kontrolya* (Departments of technical control). See, for example, V. Trapeznikov, "Eshche raz o kachestve, tekhnicheskome progresse i stimulakh" (One more time on quality, technical progress and stimuli), *Pravda*, October 2, 1985.

94. Isaev, "Plan, standart, kachestvo," p. 15.

95. The director of the quality control department (OTK) is paid premiums according to the same criteria as plant managers, which clearly places him in an awkward position. Trapeznikov, "Eshche raz o kachestve."

they fail. The result is a demand-driven, unforgiving, quality-control environment.

In the Soviet system the survival of enterprises is not the issue. Bonuses are, and the management focuses on the determinants of those: that is to say, it focuses on the plan targets for quality and output. Even a well-meaning Soviet manager could easily end up producing goods that precisely meet the quality targets, but fall short of what customers need.

The game over quality is an important, but not unique, example of the way that the reliance on quantitative indicators creates problems within the system. Other examples—such as energy conservation, which in reality has not occurred, or innovations in production processes that are in fact not innovations—merely provide additional evidence without adding to the basic story. The problem here is Soviet unwillingness to accept the costs of relying on a single and hard indicator such as profits. The fear runs deep that a firm solely interested in profits will be inclined to antisocial (and antisocialist) activities. The Soviet solution is to use a multiplicity of indicators and constantly try to perfect them, while accepting the antisocial consequences of that system as inherently less costly than the alternative.

A World of Special Deals

The formal system consists of a bonus schedule linked to targets and clear rules stating the link between bonuses and the economic activity of the enterprise.⁹⁶ Since the mid-1970s Gosplan has distributed bonuses to ministries according to criteria linked to the wage bill of the ministry and gross value of output. Ministries in turn negotiate with enterprises over the size of bonus funds. The basic negotiation is for a five-year-plan period, which determines the size of the bonus fund. Then the ministry specifies a set of performance indicators and a bonus schedule that will determine how the actual bonus fund will deviate from that planned, depending on actual performance. Those indicators must include the proportion of highest-quality output in total output and the growth of labor productivity. Other indicators, such as profitability, gross output, cost reductions, or the mastering of new technology, can also be included, the choice depending on what is appropriate for the branch. In addition

96. Unless otherwise specified, this paragraph relies on Jan Adam, "The Present Soviet Incentive System," pp. 352–57.

a number of specific indicators, as discussed above, are part of the plan. Some—the output of specific products or the fulfillment of delivery contracts—are a type of threshold indicator: if they are not fulfilled, then some portion of bonuses is lost.

Despite these elaborate procedures, there is evidence that in fact the relations between Gosplan and the ministries, and between the ministries and their enterprises, tend to dissolve into complex bilateral bargains, customized to suit the needs and requirements of each side. These deals, which contravene the formal bonus distribution procedures specified in numerous regulations, reflect a number of complex considerations, two of which stand out: (1) enterprises should somehow be able to cover their wages and a minimal amount of bonuses for the work force; (2) on the other hand, enterprises should not be able to do so well that they can offer bonuses and other privileges to their workers dramatically higher than those of other enterprises in the same branch. Basically the system operates to ensure that there is a tight safety net to prevent an enterprise from failing, and a rather low ceiling to prevent extraordinary success. It is, at an enterprise level, the reality of *uravnilovka* that many complain about and that Soviet leaders say they wish to do something about.

The existence of the safety net is clear from basic facts known about the Soviet economy. Enterprise failures are few. Mergers and management changes occur with frequency. Unemployment is typically voluntary. Unwanted products fill warehouses, but there are no dramatic consequences for the suppliers. Many of the plan corrections introduced during the year are no more than ratifications of enterprise failures. "Everyone knows," said Iurii Andropov, "the phrase 'correct the plan. . . [but] if one speaks of the need to 'correct,' then it means reductions are being discussed. Production falls, but wages remain as before."⁹⁷

The "ceiling" suppressing the incomes of the most successful enterprises is a direct result of the cross-subsidization necessary to support poorly performing enterprises. There are no aggregate data on the magnitude of these cross-subsidies; most of the evidence is anecdotal in the form of complaints from successful enterprises that funds from their economic stimulation accounts are being confiscated by their ministry—

97. "Vstrecha Iu. V. Andropova s moskovskimi stankostroiteliami" (The Meeting of Iu. V. Andropov with Moscow machinebuilders), *Ekonom. gaz.*, no. 6 (February 1983).

in direct contravention of the rules governing the formation of those accounts—to subsidize weak enterprises.

One piece of direct evidence consistent with the existence of both the safety net and the ceiling comes from a study of 100 enterprises in the Russian Republic's light and food industries covering the years 1966 to 1974.⁹⁸ The basic conclusion of the study is that for the years in question there was no clear connection between the size of the material stimulation accounts in these 100 enterprises and the rules governing the formation of those accounts at the time. Whatever determined payments into the material stimulation accounts in those enterprises in those years, it was not the bonus regulations.

Aside from this circumstantial evidence that bonus rules are generally not de facto determinants of actual bonus payments to enterprises, that state of affairs makes intuitive sense. Ministries and enterprises are locked in a complex, constant game of wits in which each side needs the other. Enterprise performance is as much a result of central decisions on prices, investments, materials allocations, and regulations as it is a reflection of the skill of enterprise management and the workers. It is the operation of the entire central planning mechanism, with its sometimes arbitrary consequences for a particular enterprise, that gives the manager of every large enterprise in the Soviet Union the right to argue that his enterprise should be an exception. But the all-encompassing nature of central institutions in the economy also gives the ministry the right to argue that any enterprise receiving an unusually large income flow is earning rents from mistakes in central controls, and therefore does not deserve the income. The result is a system in which special deals, not compliance with bonus regulations, are the norm.

One important consequence of this difference between the formal and de facto system is the fact that outsiders have great difficulty telling what performance indicators are actually used to judge enterprise performance and determine bonus account payments. Enterprise directors may have similar difficulties. Aside from obviously having to take into account output indicators, enterprise directors are living in a symbiotic relationship with their ministry in which the written rules rarely guide decisions and the unspoken rules can change without notice. This is yet another

98. See N. A. Vasil'eva, "Fond material'nogo pooshchreniia i fondoobrazuiushchie pokazateli" (The fund for material stimulation and fund-forming indicators), *Izvestiia sibirskogo otdeleniia Akademii Nauk SSSR*, no. 11, (1977), pp. 137–43, esp. p. 138. I am grateful to Vladimir Kantorovich for this reference.

example in which "working according to rule" would be a radical reform in its own right.

This network of special deals that defines the ceiling and the floor on enterprise results is the foundation on which economic security rests in the USSR. Workers need not fear for their wages or their jobs thanks to the special deals. Enterprises need not fear that they will fail if they do not satisfy consumers—or, for that matter, some of the minor wishes of planners. Although managers can, and do, experience the fear of personal failure, their enterprise and its workers are extraordinarily secure.

On the other side of the special deals, however, are the extremely truncated rewards for success. Enterprise management and workers know from long experience that even wildly successful commercial innovations in this system lead to positive, but modest, rewards. Regulations may tell enterprises that a burst in sales or profitability or productivity will bring a significant increase in bonuses. However, experience tells them that the gains will be short-lived, as they will be taken away in the next plan period through modified norms or more taut plans.

The ceiling and the floor are not coincident, and enterprises in the USSR can be found on both, as well as in between. The floor, however, takes away the fear of failure and hence one of the major incentives to innovation. The ceiling takes away the other key incentive: the knowledge that an extraordinarily good idea will bring large rewards. Together these factors amount to an institutional explanation for the tendency of civilian enterprises in the USSR to avoid innovation, or at best to simulate it in an effort to fulfill the indicators.

The Workers

Ultimately, the entire system of plan indicators and the elaborate bonus structure surrounding it are designed to induce Soviet workers to produce what the state wants, with maximal efficiency. Enterprise directors are on the front lines of this effort, and the special deals they negotiate (or are forced to accept) provide them with the funds to pay workers and obtain new capital equipment. Thus, the incentive for Soviet workers to work to fulfill plans is directly linked to the wage and bonus systems used within the factory.

The enterprise director's room for maneuver here is severely constrained. As discussed briefly in chapter 3, he must work within a six-tiered wage scale, with numerous possibilities to award special bonuses

for particularly difficult work conditions, length of service in the factory, and the location of the work, as well as bonuses for overfulfilling particular plan indicators. Although this can, and does, lead to variations in the earnings of individual workers, the variance is relatively modest. The system as a whole is biased toward equality, so that it is difficult to penalize poor workers or adequately reward superior workers. The de facto impossibility of laying off workers for economic reasons, because of the safety net, is one of the strongest constraints.

It would be a mistake, however, to focus on the wage and bonus system as the sole, or even the major, problem with the incentive system linking workers to national economic goals. The general shortage of high-quality consumer goods is another factor contributing to weak incentives for high labor productivity. It may well be the major factor: even the most elaborate mechanism for redistributing rubles among workers within a Soviet factory will have little effect if the rubles will not buy commodities of interest to workers. "It is insufficient to improve the system of financial rewards for labor," said Iurii Andropov at the June 1983 party plenum; "one must also produce the necessary quantity of commodities which are in demand."⁹⁹

It is in this sense that the macro performance of the economy and the performance of individual enterprises and individual workers are intertwined. Problems in worker productivity, which in turn contribute to (but are not the sole cause of) problems in enterprise performance, lead to poor performance in the overall economy. That, combined with planners' low priority for consumer goods and the very weak incentives for enterprises to produce consumer goods in demand, leads to persistent shortages of consumer goods. And those, in turn, affect worker productivity. This interconnected set of problems in the de facto system is what Soviet leaders have sought to address through economic reforms over the past quarter century. The only effective strategy is one that addresses all points on this vicious circle.

The De Facto System in Action

The logic of the de facto system is now analyzed in terms of how its actors (1) identify and respond to changes in supply conditions; (2)

99. "Rech' General'nogo sekretaria TsK KPSS tovarishcha Iu. V. Andropova" (Speech of the general secretary of the CC of the CPSU comrade Iu. V. Andropov), *Kommunist*, no. 9 (June 1983), p. 9.

identify and respond to changes in demand; (3) make investment decisions; and (4) stimulate technological progress. Each situation is discussed briefly and compared with the formal system.

Changes in Supply

As noted earlier, the formal system, when faced with a change in supply such as a secular rise in the cost of oil extraction, would have difficulty detecting the rising costs and handling quick, within-year changes in supply. The de facto system compensates somewhat for both of these weaknesses.

? Signals that the costs of extraction are rising move through the system by means of Powell's numerous informal information mechanisms. Increased difficulty in procuring scarce products via formal channels or via *tolkachi* or increases in implicit prices (including bribes) tell users that the relative cost of the product is increasing and that they should substitute away from it if possible. This comes in addition to information of various types and quality gleaned in negotiations with the units of the formal system. If there are substitutes, the trend may be to substitute toward cheaper alternatives, as in a market economy, even though the official price for the product does not move.

The quick, within-year changes in supply cannot be accommodated in the formal system in any obvious way owing to the stability of annual plans. In the de facto system constant plan corrections in part respond to that problem. Shortages in a particular product may—if lags for increasing output are short—trigger within-year revisions in plan targets for producing ministries, and in turn for their enterprises. Simultaneously, if the product involved is under the central control of Gosplan or Gossnab, reductions in authorizations for purchase may be ordered. Furthermore, reductions in shipments to particular customers may be imposed automatically, without notice to those authorized to purchase the product, according to previously specified priorities in the event of shortage (first the military, then heavy industry, light industry, and agriculture).

The shadow economy will also play a role. Emerging shortages of a product increase demand via *tolkachi* and the party network for the scarce materials. The result may be to ferret out reserves that otherwise might not have been brought into circulation and thus to reduce the magnitude and effect of the shortage.

This is hardly a neat or simple way of identifying and reacting to

changes in supply conditions. It is no match for a well-functioning price system. Even a price system hampered by regulations and high concentration of economic power is probably superior to the de facto Soviet system. Nonetheless, this is a workable arrangement, as has been proven over time, although it is probably more useful for identifying emerging shortages and triggering a response, than it is for noticing emerging surpluses and generating a response there. In a system oriented to increasing output, shortages are of far greater concern than surpluses, and that fundamental concern determines the shape of institutions in the de facto system.

Shifts in Demand

When there is a shift in demand for the intermediate products used in industry or agriculture, the concerns that arise in the formal system and the consequences for the de facto system are similar to those that involve supply-side phenomena. Emerging changes in demand show up through the informal information system, trigger the use of the shadow economy, may bring about plan corrections and other short-term adjustments in the material supply system, and eventually will work their way through the planning system.

For consumers, excess demand for many goods and services may reflect true priorities of planners; however, they are masked by the rhetoric of politicians. The planning system is not well designed to pick up signals of shortages or surpluses in consumer goods and services, and where it does the decision may be to allow them to persist. For the formal system the matter stops there.

In the de facto system persistent shortages trigger the second economy into action as individuals seek to fill gaps in the supply of goods and services in contravention of the law. The result is an essentially illegal, highly flexible system that identifies changes in demand and responds to them. It is primarily in the business of supplying services, but also some goods. This is a clear example of a way in which the de facto system is far more adroit at responding to changes in demand than the formal system would suggest.

Investment Decisions

It is true, as the formal system specifies, that Gosplan wields tremendous power in decisions on the level and structure of investment. Under

the Politburo's guidance, Gosplan decides on a basic structural strategy for the system; Gosplan sets policy on the types of investments industry and agriculture will make; and Gosplan controls the materials that ultimately determine which investment projects will be completed irrespective of investment allocations. Yet there are unmistakable indications that in the de facto system Gosplan's control is diluted and that it has far less control over investment processes than the description of the formal system would lead one to expect.

Recall from chapter 2 that by virtue of the relationship between planned and actual investments in recent years, planners have been unable to hold down the growth of investment. This system must constantly be on guard against a seemingly insatiable hunger on the part of enterprises for investment funds.¹⁰⁰

Ministries fully share that hunger, and thus, despite valiant efforts by central planners, the number of investment projects under way far exceeds the capacity of the construction industry, with the result that human and capital resources are dispersed over too many projects. In 1985, for example, the country's 4.1 million construction workers were busy on 350,000 investment projects; that meant an average of 12 workers per project.¹⁰¹ This type of dispersion in construction resources contributes to long delays in project completion. In the 1980s close to a decade is needed to bring a factory from the design table to full capacity.¹⁰² The logical response from planners of the five-year plans for the 1970s was an effort to increase the share of reconstruction in total investment. That was to have the double advantage of reducing demands on an overburdened construction industry and shifting emphasis away from building totally new factories for which there is no new labor. Yet, because ministries hunger for new enterprises, they have successfully resisted, and the share of reconstruction in investment has not risen.¹⁰³

This record of weakness for a system in which the center has strong

100. In negotiations for the 1982 annual plan, for example, Gosplan received proposals for 2,000 projects, which it had to boil down to 385. See N. Baryshnikov and G. Galakhov, "Kapital'noe stroitel'stvo—reshaiuschchii uchastok sotsialisticheskogo vosproizvodstva" (Capital construction—a decisive part of socialist reproduction), *Planovoe khoziaistvo*, no. 3 (March 1982), p. 26.

101. T. Khachaturov, "Investitsionnaia politika" (Investment policy), *Sots. ind.*, July 20, 1985.

102. Dyker, *The Process of Investment*, p. 36.

103. See Boris Z. Rumer, *Investment and Reindustrialization in the Soviet Economy* (Boulder, Colo.: Westview Press, 1984), chap. 2.

formal powers over investment has some implications for several interconnected portions of the de facto system. For large projects, enterprise directors receive investment funds in the form of grants from the center, and there is no direct requirement to repay, only a capital charge on all assets. At the same time, ministries and their enterprises are under constant pressure to produce more goods. That, combined with the safety net, means that investment is virtually a riskless proposition for an enterprise director and his minister, and the easiest way to eventually increase output. That also explains the profusion of investment starts, since delayed completions cause no problem owing to the safety net and the zero cost of the investment. Construction enterprises readily agree to accept more contracts than they can handle since their performance indicators reflect work in progress, not completion.

The preference for new factories arises from the desire of ministries and local party secretaries to have their empires grow, the fact that reconstruction is not as prestigious as building new factories, and the bias of construction organizations against reconstruction (it is harder to fulfill the same indicators).¹⁰⁴

These considerations have a dual effect on Gosplan. On the one hand, its role as a financial intermediary, acting to curb the otherwise boundless appetite of enterprises for investment capital, becomes more important. Virtually everything in the de facto system tells enterprises and ministries to do their utmost to expand productive capacity; and virtually nothing save Gosplan tells them there are limits. Profits are not a constraint, the cost of the investment is not a consideration, risk is virtually nil, and banks are a source of easy money.

On the other hand, Gosplan cannot fully control the system and curb these demands. Enterprises know the game and play it well, underestimating the ultimate cost of their projects when they apply, and then revealing the true costs as the project gets under way and is hard to stop.¹⁰⁵ Investments are therefore a negotiated outcome between Gos-

104. See A. Stepun, "O ratsional'nom napravlenii kapitalovlozhenii v odinnadtsatoi piatiletke" (On the rational direction of capital expenditures in the eleventh five-year plan), *Planovoe khoziaistvo*, no. 10 (October 1981), pp. 34–41.

105. See, for example, V. Kirichenko, "O nekotorykh voprosakh dal'neishevo sovershenstvovaniia planirovaniia i upravleniia khoziaistvom" (On several questions concerning the further improvement of the planning and management of the economy), *Planovoe khoziaistvo*, no. 9 (September 1982), pp. 63–64. Kirichenko, who at the time was director of Gosplan's research institute, illustrates the point for the latter half of the 1970s during which authorized capital expenditures for projects in process rose 1

plan and the ministries and enterprises, which is a considerable departure from the formal system.

Technological Innovation

This system has chronic difficulties in bringing technological innovations into production processes and products in part because of the way the entire de facto system operates. Technological change is a major consideration behind efforts to reform the system and a continuing source of frustration.

→ The formal system itself accounts for some of the barriers to technological progress. The innovative process is a prime example of an activity that resists quantification and therefore centrally set targets. It is too easy to fulfill any target the center might impose without actually introducing an innovation. Furthermore the urge to specify from above the organizational structure of the entire system and the internal workings of organizations dampens whatever entrepreneurial urges may exist in the system.

However, the major barriers to technological progress lie in the de facto system itself, as it has evolved in response to the formal system, the behavior of planners, and the incentives those two factors create. The same incentives that explain the hunger for investment in ministries and enterprises also explain their lack of appetite for innovation. Innovations in Western industries occur not because they are enjoyable or because they are ordered by the state. They arise out of a desire to survive and thrive in a competitive environment. The safety net in the Soviet Union takes away that incentive; and the ceiling takes away the possibility of large rewards for innovative effort. But things are even worse than that in this system, as Iurii Andropov once lamented: "The business leader who has taken a 'risk' and introduced in the enterprise a new technology, introduced or produced new equipment, not infrequently is a loser, while those who avoid that which is new lose nothing."¹⁰⁶

This system favors expanding productive capacity, not improving it; expanding output, not improving it; and expanding the use of inputs, rather than conserving them. The formal system relies on quantitative

percent a year and their estimated costs were revised at a rate of 6.9 percent a year. This is one factor contributing to project stretch-outs.

106. "Rech' General'nogo sekretaria TsK KPSS tovarishcha Iu. V. Andropova," p. 7.

indicators to lean against those incentives, with very little apparent effect.

Even so, some products produced in the USSR are up to world standards and innovations occur. Soviet turbines for hydroelectric stations are up to world standards; the USSR leads in the development of long-distance high-voltage transmission lines; and it has a formidable military capability built primarily on the basis of Soviet technology. The question is, why? The system seems to be so stacked against innovations that it is difficult to understand when they occur. In answering that question, it is best to separate civilian industries from defense.

INNOVATION IN CIVILIAN INDUSTRIES. Successful innovations in civilian industries seem to be related to two factors. The most important goes back to the role of government and party organizations in forcing innovations. When the attention of the government and the party turns to a particular industry, product, or process, innovative activity quite naturally picks up. Limits exist even here, however, and the innovations tend to be easiest to elicit when the support of government and party organizations is long-term and the requirements for interdisciplinary research (across branches) are modest.¹⁰⁷

The nuclear power industry illustrates both the potentialities and limits of long-term central support as a spur to innovation.¹⁰⁸ The sustained high priority accorded that industry has produced an impressive array of technologies based almost exclusively on Soviet research and development efforts; and that accomplishment is directly attributable to sustained central attention to the sector. Yet the problems in developing a manufacturing base for the equipment, which has involved the work of numerous sectors, and in building the power plants, have been difficult. In particular the transition to 1,000-megawatt reactors has been bedeviled with problems; and that is testimony to the limits to central attention in a sector where coordination among many sectors is involved. Of course the other eloquent testimony to the costs of central intervention is the Chernobyl' tragedy, where the Soviet Union's casual attitude toward nuclear safety cost it dearly.¹⁰⁹

b The second set of factors, intangible and difficult to evaluate, are

107. Amann and Cooper, eds., *Industrial Innovation*, p. 7.

108. See Robert W. Campbell, *Soviet Energy Technologies: Planning, Policy, Research and Development* (Indiana University Press, 1980), chap. 5, especially pp. 163-69.

109. On Chernobyl' see the special issue of *Soviet Economy*, vol. 2 (April-June 1986).

those "human" factors on which Mikhail Gorbachev has come to rely so heavily for the success of his efforts to turn the economy around. This includes the simple human desire to push through innovations, a result of pride in one's work. A complementary motivating factor may be the tradition of high-quality work in some institutions, which somehow is passed from one generation of managers and workers to the next and is in some sense a "culture" of quality. Finally, there is the possibility that some individuals, who are not risk averse, will seek to use the leadership's thirst for innovation to push an organization in ways it is not otherwise inclined to go to generate visible innovations, in the hope that the result will advance their, and their organization's, political and economic fortunes. Anyone who has traveled to the USSR has met individuals who show some combination of these motives or has visited organizations whose traditions value a quality of product uncommon in the system.¹¹⁰ This system does not forbid such people to operate; indeed there are plan indicators for them to fulfill in spirit as well as in form. However, it is much harder to be an innovator than need be the case and much easier than it should be to avoid change.

INNOVATION IN DEFENSE INDUSTRIES. Defense products in the Soviet Union are different. The quality of Soviet conventional and strategic weapons rivals that of the U.S. weapons, and where it does not, Soviet designers have been clever in designing around their technological weaknesses. The general quality of defense goods is much closer to world standards than that of civilian goods. Innovations in Soviet weapons systems come with considerable regularity. The question is why, and whether the organization of the defense industries might offer ideas for a reform of civilian industry.

In many ways the formal system controlling the operation of the defense industries resembles that on the civilian side of the economy. The ministerial system and its links to parallel party and government institutions are essentially the same, except that here there is a Military-Industrial Commission with apparently considerable power over the nine defense machinebuilding ministries. As in the remainder of the system, ministries that oversee defense industries strive for self-suffi-

110. Julian Cooper ("The Civilian Production of the Soviet Defence Industry," pp. 44-45) suggests that the culture of production in defense industries carries over into their production of consumer goods, where, even though military quality control inspectors are not operating, the quality of output is regularly higher than the norm for the system as a whole.

ciency, fight for investment resources, and enjoy the protection of the safety net covering the remainder of the system. There is no similar commission on the civilian side, although the MBMW *biuro* created in 1985 may eventually evolve into a similar organization.

Each Soviet defense factory has senior military representatives (who are paid by the military) acting as quality control inspectors. These inspectors have no visible vested interest in the plant's fulfillment of plan indicators, and their career prospects depend on quality control.¹¹¹ This is an enormous improvement over the civilian side, where quality control is in the hands of factory employees who are judged by the same criteria as their director.

The arrangement for research and development is different in a way that favors innovation. Design bureaus are attached directly to production plants in defense and have experimental shops at their disposal.¹¹² This makes the entire R&D cycle much easier to complete than is the case in civilian industry, where design bureaus, prototype plants, and the serial plants are frequently separated by thousands of miles and considerable bureaucratic red tape.

Defense differs from other sectors in two additional important ways. First, the United States provides a constant and tough competitor that the Soviet military cannot ignore. Unlike civilian enterprises in the USSR, defense enterprises cannot continue to produce the same old goods and pretend they are better. Simulated battlefield tests are used by the military to verify the claims for the product and its capability against U.S. counterparts; and the resulting feedback keeps the innovative process going.

Second, the defense industries are the clearest example of the beneficial effects of a long-term high priority. It conveys a sense of urgency and importance to the work of the entire sector, clothed in an aura of patriotism, which is absent from the civilian sector. With that comes high priority in procurement of materials, investment, and access to talented labor.

As a result, the military industries, unlike their civilian counterparts, have the wherewithal and the incentive to produce high-quality products and to constantly search for ways to improve them. Whether or not this means that the defense industries are a useful model for a reformed Soviet economy depends on what proportion of the military success

111. Amann and Cooper, eds., *Industrial Innovation*, p. 35.

112. *Ibid.*, p. 16.

Machine building and metal working

arises from the organizational differences with the civilian economy, as opposed to the high level of attention and priority accorded the sector. To the extent that the last two factors play a role, they are scarce goods that can only be used effectively in the civilian economy if the priority of the military is reduced. It is possible, for example, to revamp civilian quality control by relying on inspectors who are paid by Gosstandart, as Mikhail Gorbachev has begun to do. But is the state willing to accept in the civilian economy a high level of rejects, and the cost associated with those?

Mikhail Gorbachev has decided that there is much to learn from the defense industries, so the issue is now very much alive. I return to it in later chapters.

CHAPTER FIVE

Khrushchev to Brezhnev: Previous Efforts at Economic Reform

IN THE post-Stalin era Soviet leaders have never been even close to fully satisfied with the performance of the economic system. The chronic tendency toward imbalance, unwillingness of enterprises to innovate, pervasive inefficiencies, and systemwide indifference to customers—all of these characteristics are constants that have nagged at Soviet leaders, and served as a continuous pressure for change. There is no year in which some change in the Soviet system is not introduced, some new experiment not begun that anticipates possible future changes. Reform in the USSR is a continuous process, which in the 1970s took on an almost routinized character as Soviet leaders sought “further perfection” (*dalneishee sovershenstvovanie*) of the economic system.

This constant tinkering with the system has never had the desired effect. As a result, the leadership has gone for a new reform package at fairly regular intervals, taking many elements from previous reforms and experiments, but possibly some new ideas also. These bursts of new reform activity, or waves, make up the peaks of the reform cycles that have characterized the post-Stalin economic history of the USSR and of Eastern Europe.

In the Soviet case there have been five identifiable peaks (dated according to the appearance of the key decree or decrees, not according to the period during which there were serious efforts to implement the reforms): (1) Khrushchev's 1957 *sovnarkhoz* reforms; (2) the Brezhnev-