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CORRUPTION IN A SOVIET-TYPE ECONOMY:
THEORETICAL CONSIDERATIONS

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CORRUPTION IN A SOVIET-TYPE ECONOMY: THEORETICAL CONSIDERATIONS

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I. The Basic Framework

A. Introduction

Theoretical work on corruption has so far been grounded in the political-economic environment of Western capitalist societies^{1/} or underdeveloped countries.^{2/} Papers discussing corruption in the Soviet Union and Eastern Europe are mainly descriptive and lack both a well-developed theoretical structure and a comparison with Western experience.^{3/} This paper attempts to organize the material available on corruption in Soviet-type economies and to develop theoretical principles capable of explaining the behavior of corrupt agents in these systems.

We first identify a few of the most salient characteristics of Soviet-type economies. This exercise permits us to isolate corrupt incentives that may lead people to break the law or to violate the rules laid down by their organizational superiors. We speculate on the efficiency of corrupt transactions and consider how modifications in the rules might deter such behavior. The evidence we supply is anecdotal and is used merely to illustrate our points.^{4/} The comparisons we make with corruption in market-oriented economies are meant only to set in relief the particular modes of behavior we think are more likely to be encountered in centrally administered Soviet-type economies.

In our stylized Soviet-type economy the bulk of economic activity is carried on by individuals, called agents, organized in a complete hierarchy (CH).^{5/} The economic activities, legal or illegal, that go on outside CH are ignored except insofar as they help explain the incidence of corruption in the CH.

The head of the CH (the Politbureau) and its deputies issue commands to lower-level agents telling them what and how much to produce, what inputs to use, and how to allocate the finished output. Certain sub-hierarchies of the CH, called enterprises, buy and sell goods and services at prices set by central authorities. They must meet their expenses from their sales receipts and planned losses (if any). The CH sets rules that tie the incomes of enterprise managers to their fulfillment or overfulfillment of plan targets. All other agents in CH receive fixed salaries set by their superiors.^{6/}

In any country where political and economic power is organized in a CH, the activities of the organizations belonging to the hierarchy are imperfectly coordinated and the incentives facing agents are not fully compatible with the interests of the central authorities. Imperfect coordination occurs for several reasons. 1) Much information is lost and distorted as it travels up the hierarchy. 2) It is costly and time consuming to process the information at higher levels. 3) Subordinates responding to a variety of moral, career, and material incentives, are only imperfectly controlled by their superiors. 4) Lower-level agents may have several superiors if they must carry out closely related activities organized along different hierarchic lines.^{7/} 5) The orders, in the form of "plans" specifying the productions, consumption, and investment activities of lower-level organizations during a forthcoming period, normally make no allowance for alternative "states of the environment" - circumstances beyond the organizations' control that may

affect their ability to fulfill the plan, (Powell, 1977, 54). Plans issued in the form of "strategies" specifying alternative actions for alternative states of the environment cannot be fully carried out without changing many orders already in the process of being implemented. Making these changes while maintaining coordination would be an organizationally insuperable task.

The following features of a CH are of critical importance to the analysis of corruption and are generally believed to be characteristic of Soviet-type economies (cf. Koopmans and Montias (1975) and Powell (1977)). First, there exists a surplus demand for most producer goods as well as for many consumer goods at established prices.^{8/} This is the result of the imperfect coordination of interdependent decisions, of the central agents' macroeconomic policies, and of the system's rules for setting prices and distributing goods. Second, low-level organizations can fairly easily conceal the illicit activities of their members. Because close monitoring and field inspections are expensive (and frequently wasteful), some lower-level agents are able to use the relative autonomy they enjoy to engage in self-seeking actions that violate system rules. Third, agents capable of managing subhierarchies (ministries, chief administrations, enterprises) and of exercising initiative are scarce. Therefore, they cannot be dismissed or imprisoned without causing some loss to the organization to which they belong. Even if replacements can be found with the same intelligence and human capital as those dismissed, they first have to build up a knowledge of the network of CH relations before they can function effectively in the system. Their scarcity, therefore, gives subordinates some bargaining power vis à vis their superiors in the economic hierarchy.

This third characteristic, which is less evident and empirically more controversial than the other two, has implications for the control of low-level illicit activity. Illicit activity is controlled not only by the risk of detection but also by the severity of the punishment meted out to those who are caught. Acts violating codified rules or laws are punished by the criminal justice system - a subhierarchy dominated by the Communist party in the USSR but with only weak link to the economic subhierarchies (Lipson, 1958, 1959, 1961). In contrast, in the USSR, a person who violates the rules of an industrial ministry is generally penalized only by his immediate superiors. If those superiors have difficulty replacing key subordinates, then the subordinate who violates a rule may escape with only a minor reprimand.

B. Corruption in a Complete Hierarchy

1. Individual and Organizational Corruption

We now define a corrupt transactions between an agent i of the CH and an individual j , who may or may not belong to CH, as follows: Agent i accepts a gratuity or a favor from individual j in return for making a decision that violates either his superior's orders or the rules of the organization to which he belongs (CH or component subhierarchy).^{9/} The gratuity or favor may benefit i as an individual or the subhierarchy to which he belongs (though not necessarily the larger hierarchy in which this subhierarchy is embedded). Similarly i 's decision may be advantageous to j or to j 's organization. When agents either pay bribes or violate rules or orders in exchange for gratuities or favors benefiting them personally, they are said to engage in "individual corruption". When the organization to which they belong benefits, they carry out "organizational corruption."^{10/} If corrupt individuals share in the additional bonuses or other legal payoffs that result from corrupt transactions, then the incentive system

rewarding enterprises for their achievements provides the link between individual and organizational corruption.^{11/} The incentives for organizational corruption will be high: 1) if the success of the enterprise depends on the favors corrupters can bestow; 2) if the bonuses shared by agents in the enterprise depend on its success as judged by superiors, and 3) if the share of the bonus accruing to the transgressing agent is large.

Agents who set the level of production or who allocate goods in surplus demand are potential targets of corrupt offers by consumers or by agents of enterprises (or sub-hierarchies) that use these goods as inputs. If an agent is guilty of individual corruption in supplying such goods, he is liable to prosecution under the criminal laws. If he does the same thing in a way that benefits his enterprise (or the larger sub-hierarchy of which it generally is a part), he will receive only administrative sanctions from his superiors. For example, a buyer may offer a scarce producer good to an enterprise in return for an extra allotment of inputs produced by the enterprise. The scarce producer good may now permit the enterprise manager to increase output above plan and earn a high bonus. Superiors aware of this organizational corruption may impose negligible sanctions or even reward the initiative of the transgressor. They are more likely to do this if their own promotion possibilities and security of tenure depend on the success of their subordinate enterprises. Moreover, if they choose to impose severe punishments, they will risk losing the services of the transgressors with their scarce skills and detailed knowledge of enterprise operations.

These illicit barter arrangements benefit both transacting enterprises, but they will frequently impose costs on the rest of the economy. Clearly, transactions which deflect inputs from one enterprise to another have

different efficiency properties from those exchanges that, without depriving any users of their "rightful shares," make everyone better off. When two enterprises trade surplus products,^{12/} the exchange normally enhances efficiency in production. In a broad class of cases, however, organizational corruption is likely to reduce rather than to enhance productive efficiency. Suppose, for instance, that an enterprise with 2,000 tons of product X on hand is slated to deliver 1,000 tons of the product to each of two enterprises producing Y with identical production functions. But the X-producer makes a special deal with one of the Y-producers. In exchange for supplying it with 1,500 tons of X, the X-producer receives a larger quantity of Y than its plan called for, at the expense of deliveries to a second, identical X-producer. The second producer of Y receives only the quantity of X left over, or 500 tons. Then if the production functions of both X and Y producers are strictly concave, the total output of X and Y by the four enterprises concerned must be smaller if the special deal goes through than if the planned quantities had been delivered.^{13/} Implicit here is the assumption that identical, or even similar, enterprises will normally be allotted the same amounts of input by their superiors. In general, illegal deals at the expense of third parties will be more detrimental to efficiency, the closer the initial allocation came to equating the marginal rates of technical substitution of the materials allotted to different enterprises. We conjecture that the "tauter" the output plan imposed from above, the more likely it is that the marginal rates of substitution will differ. So long as the producer with the highest marginal product from using the input is also the one who corrupts the supplier, special deals of this sort may then promote efficiency. This possibility contrasts with the above example where the planners' efficient initial allocation was undermined by corruption.^{14/}

Not all agents who seek extra-legal allotments of scarce inputs have control over materials and resources that suppliers need. If a two-way barter is not possible, bribers can try to work out multilateral exchanges by bringing other enterprises into their schemes. However, the high transaction costs of illicit operations (as well as their substantial informational costs) complicate multilateral deals and restrict their potential scope. Moreover, industries producing mainly for final consumption may have no producer goods to give in return for favors from any suppliers. Such enterprises may bribe supplying agents directly. If they happen to produce finished consumer goods, they can proffer better-quality merchandise or scarce items to obtain the materials they require. Suppliers accepting such quid-pro-quo deals are, of course, guilty of individual corruption.

Other kinds of corrupt deals, however, may increase bonuses at the same time as they increase an official's illegal income. Thus bribes are sometimes paid in order to induce an enterprise official to work harder and produce more than the planned output. The payment provides an individual benefit to the official and also produces an organizational benefit. A ruble of bribe money is usually less valuable to the recipient than a ruble of bonus money, however, because of the risk of detection and punishment. Nevertheless, it seems plausible to assume that the state will not spend many of its scarce enforcement resources in seeking to prevent corruption that leads to high levels of output.

Unfortunately, it will usually be difficult to disentangle the ultimate efficiency effects of a particular corrupt arrangement. In general, output will increase and planned output will be diverted from one enterprise to another.

2. High and Low-Level Individual Corruption

Many opportunities for individual corruption exist in a CH. We wish merely to point out two distinctive varieties: one that involves high-level officials, and the other that is apparently pervasive among low-level officials in the Soviet Union.

First, individuals sometimes resort to individual corruption to obtain positions in the CH that permit them either to amass a large illicit incomes or to obtain legal benefits and privileges. Thus, in the Soviet Union, individuals compete for high-status jobs on the nomenklatura, a sort of civil list of all significant positions that must be approved by the Communist Party. This list creates a class of individuals who are not only materially privileged vis à vis the rest of the population but who are not subject to the same sanctions when they break the rules. Illicit access to the nomenklatura through bribery amounts to super-corruption since it gives the briber access to all sorts of ordinary corruption that would not otherwise be within his power.^{15/}

Second, even quite low-level agents may have the power to extract bribes. Thus "gatekeepers" or custodians of scarce products can use their institutional position for private gain. The low remuneration of custodians and the fact they they do not share significantly in their organization's payoff (at least licitly) makes them particularly open to individual corruption.^{16/} In the Soviet Union even a legitimate representative of a state-owned enterprise or collective farm equipped with a properly endorsed distribution order may be unable to obtain a scarce producer good unless the individual in charge of a depot or other supply point is willing to release it. Custodians or "gatekeepers" do not necessarily accept money for the favors they bestow: instead, they may illegally barter goods or services.^{17/} This reduces the risk of detection when compared to money bribes, and probably also lowers the penalty when the transaction is detected.

The distribution of consumer goods in short supply provides special opportunities for low-level individual corruption in a CH. In the USSR some commodities and services sold to individuals are formally rationed (e.g., state-owned housing, coal, automobiles); others are informally rationed (any goods in "short supply"). In the smaller towns of the Soviet Union and particularly in villages in the country, almost all goods are formally or informally rationed (Kaiser, 1976, 33-92). These non-market forms of rationing become the means by which people who hold a very low place in the hierarchy (shopkeepers, stockroom clerks, railroad dispatchers) can nonetheless elicit corrupt payments (cf. Smith, 1976, Ch 3; Simis 1979, 51 and Katsenelinboigen, 1975, 188).

II. Comparisons with Market Economies

A. Introduction

This section compares the corrupt incentives in a Soviet-style complete hierarchy (CH) with those in a capitalist economy containing large business firms and government bureaucracies. The capitalist economy has many individual large organizations, including business firms, government agencies, and private universities, but each one has a certain autonomy and independent power. In a Soviet-type economy organizations not only are large taken by themselves but are also much more closely integrated, through the CH, with other parts of the political-economic system. As we shall see, this aspect of a planned economy helps determine the level of corrupt incentives even in areas where payoffs also occur in the West.

There are two important categories of activities: (1) actions by agents that are illegal in both societies, e.g., paying a bribe to obtain a job or to prevent a policeman from reporting a traffic violation, and (2) actions that require illicit behavior in the USSR but that are legal in the West, e.g., opening a private atelier to manufacture sweaters.^{/18} A third category of actions--those that are illegal in the West but legal in the USSR--is probably very small. Finally, we should recognize that certain kinds of corrupt opportunities open to Westerners simply do not exist in the Soviet Union.^{/19.}

B. Corrupt Acts that are Illegal in Both Systems

1. Parallels and Contrasts

Beginning with the first type of corrupt acts, there are many striking parallels between the USSR and the United States. Corruption occurs in both societies in law enforcement,^{/20} in inspections,^{/21} in the choosing of qualified applicants,^{/22} in the allocation of scarce state produced services^{/23} and in government contracting.^{/24} Although these similarities are important to any assessment of illicit actions in the USSR, we shall argue that their incidence and impact will be quite different in the two societies even when the basic cause of corrupt payments is similar.

We have already argued that imperfect monitoring and information loss in a bureaucracy give low-level officials monopoly power that can be used to extract bribes. This phenomenon is common to both Western and Soviet bureaucracies and is not our concern here. Instead we consider how corruption in a complete hierarchy differs from corruption in a system with many independent loci of power. The basic differences are the restricted number of options available to bribers and bribees and the lack of independent "whistleblowers" in a Soviet-style system.

2. Options and Bribes

The more alternatives available to a potential briber, the smaller the bribe he is willing to pay to a particular agent. A firm that can sell all it wants in the private sector will pay little to obtain a government contract.^{25/} A college applicant who is accepted by Princeton will not be tempted to pay a bribe to Yale. A person who fails to obtain a liquor license in New York may be able to open a tavern in Connecticut instead of bribing New York state officials. A vigorous private sector means that there are alternatives to government sales. An independent private educational sector implies that admission criteria vary so that no single "gatekeeper" has the right to deny a person access to higher education. A federal system of government combined with free movement of people and capital implies that no single low-level government has much monopoly power.

In contrast, high levels of bribes can be expected in both the USSR and the West when options are costly or simply unavailable. For example, the incentive to pay a bribe is high if someone is selling a special purpose product to government, needs a zoning variance for a particular piece of land that he owns, or can only qualify for a public program if he does not move to a new location.^{26/} Furthermore, people who are legally unqualified to receive a benefit or who want to escape the consequences of illegal actions (drug dealing, gambling, prostitution) have a restricted range of options. They can only obtain aid from corrupt officials. If some officials are honest, the monopoly power of a corrupt official will be higher when the briber has also done something illegal.^{27/} In a complete hierarchy where

most people have no options, the person seeking a legal benefit is on almost the same footing as someone seeking an illegal benefit. The monopoly power of each official is much greater and, therefore, the supply of bribes to any individual is likely to be higher if the expected punishments are similar in both societies. Poor communication among the various components of the CH, however, is likely to diminish the monopoly power of individual agents. A dissident whose son has been barred from entering university in Moscow stands a good chance of registering him in Tashkent where he is unknown. Lacking a computerized all-Union system of centralized information, blacklisting is sufficiently sloppy and inefficient to allow some people to squeeze through the interstices of the system without resorting to bribery.

3. The Probability of Detection

In the West an important deterrent to corruption appears to be the permeability of many bureaucratic procedures. Any journalist, scholar or concerned citizen can try to find out how a particular bureaucracy operates and may in the process stumble across corruption. In contrast, in an idealized Complete Hierarchy and in portions of Western society, like the defense and intelligence establishments^{28/} and some aspects of private business behavior, outsiders are unable to examine what is going on.

Recognizing that a monolithic political-economic structure will deter "whistleblowers", the Soviet Union has structured its society so that several overlapping hierarchies exist with the potential to check up on

each other. In addition to direct monitoring through the economic hierarchy, the USSR can control behavior through both the Communist Party and the police and courts. The Party is structured regionally rather than functionally, and the highest government officials are subordinate to the highest party officials. Most government officials are also party members and are subject to "party discipline." They must comply with the directives of properly constituted party authorities.²⁹ There are also two police forces which fight corruption. The OBKhSS, subordinate to the Ministry of Internal Affairs, is charged with preventing the theft of socialist property. The KGB, or national security police, seeks to control high-level corruption that may involve national security problems. Finally, the state controls the mass media and the educational establishment and can use them to expose scandals and to try to persuade the young to avoid all forms of speculation.

These overlapping organizational structures may be relatively ineffective, however, since none appears to be truly independent of the others. All of them are organized as component sub-hierarchies of the CH that manages the political and economic life of the country. Therefore, none of these organizations has the juridical or administrative independence that allows it to "muckrake," irrespective of consequences.³⁰ Journalists, state inspectors, and other potential discoverers of wrongdoing in low and high places, generally exercise self-censorship to avoid trouble.³¹ The courts take directions from the party and are apparently among the least independent organs.³² The OBKhSS and the KGB have sufficient autonomy to exercise independent initiative because their reports are made on a confidential

basis to higher ups, who may, nevertheless, refuse to act for "political" reasons.^{/33} Thus, although multiple enforcement possibilities exist, they may be less effective checks on corruption than a system with many uncoordinated loci of power.^{/34} When everyone depends in a complex way on everyone else, no one may be willing to expose others for fear that he will only end up harming himself. This is particularly likely to be true for corrupt behavior where there are no impartial observers, and the only witnesses to the breaking of rules are the briber and the bribee.

Furthermore, if potential wrongdoers face a fairly predictable pattern of official controls and methods of detection, then it may be relatively easy for them to structure corrupt deals so that they will not be noticed. Unknown outsiders may be in a better position to check corruption if they are sufficiently numerous and if their methods of operation are unpredictable. Stable, certain behavior by enforcement officials facilitates corruption.

The stability of these patterns may be one reason why successful practitioners of "individual corruption" in the USSR (and sometimes also of "organizational corruption" as well) need and are often able to form, fairly large coalitions to achieve their ends. They must enlist in their conspiracy one or more local party members, perhaps an inspector or an auditor, a KGB man, and even, in certain cases, a journalist or another outsider who could expose the scheme to public scrutiny. The expense of cutting in potential "spoilers" increases the costs and lowers the benefits of corruption. But once the set-up costs are paid, these "family circles"

of solidary interests may acquire a certain permanence. The authorities often find it hard to expose and break them up. Such circles are particularly easy to form among minority nationals speaking a common language, frequently bound by extended-family ties and resentful of Great Russian domination. Ethnic and family ties usually antedate and are often stronger than the organizational links imposed by the state. These organizational short-circuits weaken the ability of the various hierarchies to ferret out corruption at the regional level.^{/35} It often takes an outsider--a Russian or Ukrainian official working in Soviet Asia or in the Caucasus--to expose the conspiracy.^{/36}

4. Punishment and Risk

As in the West, the risk of a corrupt action depends both upon one's institutional position and upon the options available to a person convicted of corruption. Those in high positions with the most to lose from a public trial may, in fact, face the smallest expected costs. In both systems, the very severity of the long-term sanctions may protect a bribe taker from being reported or prosecuted. If the likely sentence is very high, a person may be reluctant to report the corruption of a colleague to the police.^{/37} Prosecutors may be unwilling to try such cases, and there will be great pressure to settle incidents informally. A party member may be shielded by other party members,^{/38} and top authorities may be reluctant to punish highly placed party members or government officials openly for fear of undermining the legitimacy of the party or the government itself.

Nevertheless, although high-level officials in both the West and the USSR frequently try to protect corrupt associates, this attempt does not always succeed.³⁹ When a high official is brought to trial, a corruption conviction probably has a more serious impact on one's future career in the Soviet Union than in the West. A high-level Soviet official is unlikely to be able to reestablish himself anywhere in the CH at a position or earnings level comparable to his previous position. In contrast, in the West it is easier for even high-level white collar criminals to begin again. They cannot usually return to the organization they left, but they can engage in legal entrepreneurial activities such as writing a book, giving lectures, starting a new business, or going to work for the firm that made payoffs. Since these options are generally unavailable in the USSR, high-level corruption could be more effectively deterred in the Soviet Union if only the tradition of protecting high-level offenders could be broken.

Low status bribe payers are in a different position from high-level corrupt officials. Lacking the protection of the Party or their hierarical superiors, the deterrent effects of a monolithic system may be particularly strong. Two factors, however, work against this conclusion. First of all, evenwith internal passports and restrictions on movement, the sheer size of the Soviet economy may lower the risks for low-status people. People convicted of crime in one part of the USSR appear to be able to reestablish themselves in another region although often in less attractive jobs.⁴⁰ In a large, unwieldly society like the USA or the USSR, corruption and crime in general may be less risky for an individual because an accused person may have a better chance of disappearing in the cracks of the

system than in a smaller, more easily managed one (like, say, Hungary or Czechoslovakia). Second, in the USSR risk-prone individuals may seek positions that permit them to pay or receive bribes. In the West such individuals are unlikely to be bureaucrats. In the USSR almost everyone becomes a member of the CH irrespective of his attitude toward risk. Many adventurous people may end up as frustrated bureaucrats, who find that corruption is one of the few ways of taking chances. In other societies these people might be successful entrepreneurs; in the USSR they may become corrupt or set up illegal private businesses outside the CH. If the society systematically discourages risk taking, then risk lovers are likely to be people with low status who have little to lose from a black mark on their records.

C. Acts That Are Illicit Only in the USSR

The previous section concentrated on the corrupt incentives in those bureaucratic transactions that are similar in the USSR and in the West. We now return to corrupt incentives that depend upon the special characteristics of a planned economy. In the USSR many goods and services that are legally sold to the highest bidder in the West are rationed or sold at prices that are too low.^{/41} We can then ask whether bribe-prices will be close to the free market prices of such goods.^{/42} Comparisons are, of course, difficult because the underlying supply and demand conditions are very different in the two societies. Nevertheless, several observations are possible.

Suppose that there are two towns each with one shoe store and that the people in each town must buy shoes from its single store. In the first town the monopoly seller can order shoes from a supplier and set prices to maximize profits. In the second, the state sets a low price for shoes and allocates a certain number of pairs per month to the store with the result that demand exceeds supply at the fixed price. Whenever shoes arrive customers line up to buy them. Suppose, first, that the state gives the store exactly the same number of shoes that would be ordered by a monopolist. Corruption, however, will not produce either the monopolist's profit-maximizing price or the same distribution of shoes to customers. The illegality of paying a bribe will affect the way a corrupt system operates. First the corrupt shopkeeper may be able to price-discriminate. Since the level of bribes is not published, he or she can charge people different "bribe-prices" and be fairly sure they will not communicate with each other. Secondly, customers are not only engaged in buying shoes; they are also using up time waiting in line. A person's opportunity cost of time will affect his willingness to bribe, especially if the queue cannot be entirely eliminated without arousing the suspicions of the authorities. Thus individuals who would have been willing to pay the monopolist's price must waste valuable time waiting in line. Thus corruption cannot entirely eliminate the wastes of queuing.⁴³ Thirdly, the illegality of bribes affects people's willingness to pay. The distribution of shoes across the two populations then will reflect not only

the willingness of customers to pay for shoes but also their willingness to break the law. In short, when supplies are identical, a corrupt system will produce different distributional consequences, and unless it can eliminate all queuing, will generally be less efficient than a monopoly seller.

Of course, a monopolistic outlet would not be efficient either since it would sell an inefficiently small number of shoes. A planner might conceivably give the state-run shop more shoes than were sold by the monopolist. Yet bribery could still occur in the planned system if the official price continued to be too low. But this corrupt system might now be more efficient than the monopolistic one. This is the result, however, not of corruption per se, which still suffers from the difficulties noted above, but rather of the possible superiority of a planned system over a monopolized one. The advantage would evaporate if we permitted entry in the monopolized town so that several shoe stores were allowed to co-exist, each selling at marginal cost.^{44/}

III. Possibilities of Reform

Taking as given the existence of a socialist, centrally planned economic system, we can ask what might be done to control the corruption that now exists. We distinguish between two types of actions: (1) short-run policies, and (2) more fundamental, long-run changes in the system.

A. Short-run Policies

1. Selective Enforcement of the Laws

The simplest short-run policy is to ignore "organizational corruption" if it is consistent with "social objectives" (e.g., with plan fulfillment) and punish it in the contrary case (if the plan is not fulfilled). If managers are risk averse, however, this may deter both kinds of corruption. Managers who risk falling below the plan's target may not pay off suppliers to increase their chance of overfulfillment if the chance of underfulfillment is still substantial. Yet it is just in these borderline cases that corruption is most helpful to top authorities. An enterprise manager who pays a bribe when he is already over the planned target is likely to be diverting supplies from a firm that is struggling to fulfill its goal.^{45/}

2. Reducing Market Pressures

Bribery is frequently a response to market pressures. Thus even a planned economy might deal with corruption by modifying the conditions that produce an imbalance between supply and demand. One way to do this is to permit a more flexible price system so that prices can rise when supplies are short. Alternatively, the authorities might develop a distribution system that permits people who are willing to pay for a particular good to obtain it without elaborate negotiations and payoffs. This might be especially effective in the countryside--which suffers acutely from the shortcomings of the distribution system. These reforms would not only reduce corruption but also the time spent standing in line. Reducing both the "tautness" of the Soviet plan and the pressure to overfill an enterprise's target output, could help limit organizational corruption. "Taut plans", especially when they give rise to directives that cannot possibly be fulfilled, can lead to illicit responses as

managers struggle to obtain scarce supplies and to try to ensure that next year's target output will not be too large. There is some evidence that Soviet planning in recent years has been less taut than in the past, (see Granick, 1979), but there is little or no information on the consequences of this shift on the level or the efficiency consequences of corruption.

3. Changing Agents' Incentives

The above proposals, however, are hardly a complete response to the problem of payoffs. Instead of changing the way laws are enforced or plans are designed, top officials might restructure the incentive system. We approach this question by relating recent theoretical work on incentive compatible reward systems to the control of bribery. Past work has sought to define reward systems that induce agents to maximize total surplus or lead them to provide accurate information to the principal,⁴⁶ but none of this research has taken account of the possibility that agents might accept or receive bribes.

We first construct a Groves-type incentive-compatible scheme and then analyze bribery in this context. We discuss two kinds of corrupt regimes. In the first, the supplier provides planned inputs to firms without a bribe but will accept a bribe in return for giving a customer a larger share of total production. In the second, "extortionary", system no inputs are released unless a bribe is paid.

Consider a simple hierarchy with only two industries S and I. A single firm in S produces a known output x of the good X used as an input by the n_I firms in I. An allotment of X to firm i in I is denoted x_i ($i=1, \dots, n_I$). Firm i produces y_i of good Y, and its production function, using this unique variable input, is $y_i(x_i)$. This production function is

known only to firm i . The production function communicated by i to the supervisor in charge of allocating input X is written $\hat{y}_i(x_i)$. The supervisor knows only X and $\hat{y}_i(x_i)$ for i in I . Each firm i knows the reported production function, $\hat{y}_j(x_j)$, for every other firm j in I , $j \neq i$.

The supervisor maximizes $\sum_{i=1}^{n_I} \hat{y}_i(x_i)$ over all possible allocations (x_1, \dots, x_{n_I}) satisfying $\sum_{i=1}^{n_I} x_i \leq x$. An incentive-compatible bonus

scheme is one that will induce each firm's bonus-maximizing manager to report his firm's actual production function (i.e. $\hat{y}_i(x_i) = y_i(x_i)$ for each firm i). It has been proved^{/47} that a bonus scheme giving each firm i a fraction α of $[y_i(x_i) + \sum_{j \neq i} \hat{y}_j(x_j)]$ is incentive-compatible. The allocation of X that maximizes the supervisor's objective function when i reports its actual production function, also maximizes the bonus function for i .

Such a bonus scheme would also dissuade any firms in I from bribing the supplier of X to obtain a larger allotment at the expense of the other firms. For as long as the total available amount of input X is given, an allocation that fails to maximize the supervisor's objective function cannot increase the firm's expected bonus. Any resources spent on the bribe will be wasted. It is not in a manager's interest to undermine the system either ex ante by providing false data or ex post by corrupting suppliers.

Suppose, however, that the supplying enterprise has somewhat more extortionary power than we assumed above. The supplier can refuse to release X to firm i until its manager has paid a bribe b_i per unit of X . A unit of Y produced by another firm may now be more valuable to firm i (via $\sum_{i \neq j} \hat{y}_j(x_j)$) than a unit produced by itself that requires a bribe. Therefore, each enterprise i has an incentive to understate its production possibilities when it reports $\hat{y}_i(x_i)$ to the I -ministry. Corruption is now likely to distort the assignment of X to firms.^{/48}

Even when suppliers do not actively seek bribes, corruption in this stylized system can occur if the output of X is not taken as fixed by enterprises in industry I. It may also be worthwhile in this case for a manager to bribe the supplier. The increased bonus received from the increased output of Y may more than offset the cost of the bribe. Suppose there is no penalty imposed on a manager whose bribery is discovered. Then if his bonus is a positive fraction α of the expected output of the industry, or $\alpha p_y [y_i + \sum_{i \neq j} \hat{y}_j(x_j)]$, and if a bribe leaves the other allotments, x_j , unchanged, the maximum bribe i will pay for an increment of x_i is $\alpha p_y \frac{dy_i}{dx_i}$ or α times the marginal value product of x_i .

4. Detection and Punishment

Since bonuses tied to industrywide performance are unlikely to be able to eliminate corruption completely, we should also consider the use of penalties levied on those caught paying or receiving bribes. A stylized deterrence strategy has two parts: the probability of detection and the penalties imposed after detection on bribers and bribees. Standard theoretical treatments of the economics of crime can be usefully applied if we take account of a distinctive feature of the Soviet case.^{49/} In Soviet practice there appears to be an inverse relationship between the probability of detection and the extent of plan over-fulfillment. For obvious reasons, central authorities are likely to be less concerned with corruption if it helps distribute a surplus than when it diverts a planned allocation from one firm to another. Secondly, the probability of detection appears to be independent of the size of the bribe.

Imagine a simplified situation where the supplying enterprises' officials can increase X above the plan at some personal cost to themselves, and managers earn bonuses if they meet or exceed the target output. There is only one supplier of the input X and one consumer who wishes to induce the supplier to produce larger amounts of the input.

Given these conditions, let $f(x)$ be the probability of detection if x is produced. The probability of detection is lower the larger is x , but we assume that $f'(x)$ is discontinuous at \bar{x} , the level of planned output. We seek to capture the central authorities' deterrence strategy by assuming that in the neighborhood of \bar{x} , $f'(x)$ falls off more rapidly for $x > \bar{x}$ than for $x < \bar{x}$. Thus letting $f(x) = f_1(x)$ for $x < \bar{x}$ and $f(x) = f_2(x)$ for $x > \bar{x}$, we have $|f_1'(\bar{x})| < |f_2'(\bar{x})|$. Enforcement activity declines rapidly once the manager has reached the targeted level of output. For large x , $f(x)$ approaches zero.

Let $\gamma(x)$ be the penalty levied per dollar of bribe received, and $G(x)$ be the net benefit to the manager of producing x if bribes are zero. Thus $G(x)$ is the manager's bonus and other income if x is produced minus the dollar value of the manager's reduced leisure, and any other psychological disutility that he incurs in producing x . As x becomes large, $G(x)$ eventually becomes negative so that $G'(x) < 0$ and $G''(x) < 0$. Thus if the supplier is risk-neutral, he will accept a total bribe, $B(x)$, in return for producing x if,

$$R(x) = (1-f(x)) B(x) - f(x) \gamma(x) B(x) + G(x) > 0,$$

and if he earns more from accepting a bribe than from producing x with no illicit payoff, i.e. if $R(x) > G(x)$ or $1 > f(x) (1+\gamma(x))$.

Then $R(x) = 0$ if

$$B(x) + G(x) = B(x) f(x) (1+\gamma(x)).$$

R reaches extreme values where

$$\frac{dR}{dx} = B'(x) + G'(x) - \frac{1}{x} B(x) f(x) (1+\gamma(x)) \left[\eta_B + \eta_f + \eta_{(1+\gamma)} \right] = 0,$$

where η_k is the elasticity of k with respect to x.

Let \hat{x} and $\hat{\bar{x}}$ be the output levels where returns are maximized for $x < \bar{x}$ and $x > \bar{x}$ respectively. Let x_i^* , and x_j^{**} be the points where $R=0$ for $x < \bar{x}$ and $x > \bar{x}$ respectively. In order to derive explicit results we must make some specific assumptions about the form of $B(x)$, $f(x)$, $G(x)$ and $\gamma(x)$. We do this in an appendix. In the cases we consider, two general types of results occur. On the one hand, the state's deterrence strategy may deter large bribes but not small ones. On the other hand, different assumptions about $R(x)$ can produce cases where bribes that require output to be close to or just under the planned target are turned down, but some lower and higher bribes are accepted. The situation that prevails depends upon the position of \bar{x} relative to \hat{x} and $\hat{\bar{x}}$ and x_i^* and x_j^{**} . The link between the bonus function, $G(x)$, and the returns to corruption is complex. High legal bonuses may either make bribery not worth the risk or else increase the returns from bribery.

Any official penalty strategy, however, will not be fully effective if prosecutions for bribery and similar illicit behavior are politicized. At present, Soviet officials frequently use the corruption statutes for purposes other than reducing bribery.^{50/} Even where penalties are high,^{51/} they may not be effective in reducing corruption if most of the people prosecuted are politically untrustworthy, are members of minority religious or ethnic groups, or are involved in personal feuds with their accusers. Ordinary citizens who are not vulnerable to this discriminatory enforcement strategy, will believe that they will not be punished severely whatever the legal penalties.

B. Changes in the System.

1. Legalizing Private Initiatives

Corruption might also be reduced by more fundamental changes in the way the system is organized. Thus goods and services now sold in what Katsenelinboigen (1978,165-170) calls the "gray" or "brown" markets, especially repair and personal services, could be legally sold by private individuals. The market that currently exists in such goods and services would become more public and more efficient. Entry would be easier, prices would fall, and consumers would be better able to compare the quality of goods and services supplied by different suppliers. ^{/52}

2. Decentralization

If we take the basic planned structure as given, however, this first systemic solution can only be applied to activities that require little capital accumulation. The next step in an agenda of reform would be to modify the state's economic organization to reduce corruption. One way to do this would be to alter the balance between centralization and decentralization of decisionmaking in a complete hierarchy. As we pointed out above, excessive centralization with poor information is likely to aggravate the mismatch between supply and demand and create opportunities for both corruption and illicit private production. Decentralization, however, may make custodians more secure and enable them to trade on their gate-keeping powers more easily and with less risk of exposure. A compromise must be struck between these conflicting effects. The state may (a) vary the degree of centralization according to the branch of industry and the

opportunities for corruption,^{/53} and (b) couple decentralization in certain industries with increased material incentives for managers.

It may also be possible to organize parts of the system so that clients are not limited to a single supplier. Several officials could be given independent authority to issue a license or permit. This would work well if it is easy to see if an unqualified person has obtained the benefit. Otherwise, competition among officials for bribes may lower the level of payoffs but also increase the number of unqualified clients obtaining the benefit. This strategy will also be more effective if the overall supply of services is not limited. If it is, some central figure must control the overall level of allocations, and that person is an obvious candidate for a bribe.^{/54}

More dramatically, the central authorities could break up large state enterprises into smaller units and let them compete to supply inputs to other enterprises.^{/55} This would, of course, be incompatible with the planning system as the Soviet party authorities envisage it at present. One difficulty in embarking on such a scheme is that enterprise managers presently lack incentives to compete with each other for business. Merely creating multiple suppliers will not work if no one has a reason to fill orders promptly. If incentives are not reformed in step with changes in the production and distribution system, kickbacks will continue to be used to give managers inducements to perform well.

Strategies that increase the options open to potential bribers within the CH may not only be politically difficult but also bureaucratically complicated for Soviet authorities to carry out. They would require both giving more authority to low-level officials and creating more of them. Thus this proposed reform increases the task of control so long as planners are not willing to let market-like discipline substitute for their own directives. Although these proposals have a surface plausibility, they are likely to be unacceptable to the USSR's top officials.

3. Raising the Costs of Coalition Formation

Instead of trying to increase options for potential bribers, the state may try to make it more difficult for officials to organize a corrupt coalition. One way in which this is frequently done in the Soviet Union and Eastern Europe is to divide up a given task into many pieces in order to multiply the number of "checkpoints" at which corruption can be detected. This strategy, however, will not necessarily reduce the level or impact of corruption. The anti-corruption possibilities of this approach depend upon the model of bureaucratic organization through which controls are exercised: fragmented, sequential, or hierarchical (Rose-Ackerman, 1978, 169-171). In the fragmented model a person must have each of several parts of an "application" approved, but each approval procedure is independent of the others, and the applicant can have the portions approved in any order. For example, officials from three different ministries may have to approve an application to change foreign currency. The sequential model is identical to the fragmented except that applicants must have the portions approved

in a particular order. No bureaucrat in the sequence, however, reviews the choices made by those who have already acted. Finally, a hierarchical model is a traditional bureaucracy where the behavior of low-level officials can be reviewed by higher-level ones.

The Soviet Union is organized hierarchically, but an individual favor seeker may need to approach officials in several different ministries who have no formal connection except at the level of the Republic or the Union. Therefore, the fragmented or sequential models may best describe the experience of those who deal with the state or Party apparatus. Requiring a person to approach officials in different ministries is likely to make it difficult for bureaucrats to form cliques or "family circles", but these organizational strategies may do little to prevent corruption and are likely to increase delay. In the fragmented case some officials may wait until others act and then try to extort a large portion of the client's surplus. In situations where a holdout can make large corrupt gains, moreover, each official may try to be the last one to give approval. Alternatively, in the sequential case a single corrupt official is all that is needed to produce a situation in which a high proportion of the program's benefits to the applicant can be appropriated by bureaucrats.

Stronger hierarchical control will obviously only effectively deter corruption if the top official is honest and if he can monitor the behavior of subordinates.⁵⁶ Therefore, the "height" of the hierarchy has no clearcut implications for the control of corruption. When the top official is honest, a short hierarchy is likely to be best because it makes monitoring

easier. When the top official can be corrupted, a tall hierarchy can deter corruption but only under certain circumstances. If the top official is simply choosing a legally qualified contractor, ordering police officers to give extra care to a construction site, or admitting a qualified applicant to a university, then he can ask his inferiors to carry out orders without fear of blackmail. Thus if the act done in return for a bribe is not itself illegal, a tall hierarchy will do nothing to prevent corruption^{/57} since the briber need only pay off the superior official. Suppose, alternatively that agents at all levels must be given payoffs in return for performing illegal actions. In that case, the probability of detection may be greater, the more people are involved in the conspiracy. Furthermore, the greater the risks faced by officials, the higher the payoff each one requires. Therefore, the more people are who are involved, the higher the minimum total payment. The required payoff may then be so large that the potential briber is unwilling to meet the officials' demands. Thus when these conditions hold, a tall hierarchy deters some payoffs, but when bribery does occur, it involves a large scale transfer of funds.

4. Raising Real Wages

Finally, since corruption is frequently blamed on the low incomes of those accepting bribes, a strategy of raising the real wages of the population and especially of people in "sensitive" positions could reduce corruption. In the Soviet case, however, prices are not set at market clearing levels and the distribution system is poor. Therefore,

an increase in income may be less effective in raising consumer satisfaction than in the West. Moreover, this strategy may increase the supply of bribes at the same time as it may reduce the demand for them. With higher incomes people may demand more of those scarce goods that are now most subject to corruption.^{/58} It would not be sufficient, however, simply to increase the supply of automobiles and houses. The production of complementary goods (gasoline and furniture) would have to be increased as well.^{/59} In short, a shift toward higher consumer incomes would have to be accompanied by a general reassessment of planning priorities if corruption is to be reduced by this strategy. Otherwise, corruption may increase as new shortages are created.

IV. Conclusions

Soviet anti-corruption campaigns generally ignore the systemic roots of corruption and illicit private activity. Instead corruption is viewed in official pronouncements as the most flagrant form of self-seeking activity and as an especially pernicious survival of the capitalist mentality.^{60 /} Nevertheless, the Soviet leaders' attitude toward "organizational corruption" is obviously complicated by the fact that in many instances it helps enterprises fulfill planned targets by overcoming frictions in the official distribution system. This indicates the way corruption is bound up with the entire system. The USSR is apparently in a sort of institutional equilibrium, no part of which can

be substantially altered without forcing basic changes in other parts.^{61/}
The problem with permitting corruption in beneficial cases, however, is that it may be difficult to control in other situations where it causes deviations from the plan or leads to a distribution of goods judged undesirable by Communist ideology.^{62/}

If the supply of bribes falls as the number of options available to bribers increases, then a reduction in payoffs may require fundamental changes in the way the Soviet system operates. These changes, however, might have other negative results for the Soviet leaders. An increased range of choices in one area of life might lead to pressures for more choices in other politically sensitive areas. The alternative to increasing options and using market-like incentives more widely is stricter hierarchical control from the center. This, too, appears to be unacceptable to Soviet leaders since it could lead to a revival of Stalinist repression. The decentralized administration of the Soviet system with its toleration of a certain amount of waste, theft and corruption is probably one reason Soviet citizens do not appear to be in a revolutionary mood. The leaders maintain some measure of public support or, at least, indifference by not pushing their power to its limits.^{63/}

Appendix

In the text we presented a model where $R(x) = 0$ if

$$B(x) + G(x) = B(x) f(x) (1+\gamma(x)).$$

R reaches extreme values where

$$\frac{dR}{dx} = B'(x) + G'(x) - \frac{1}{x} B(x) f(x) (1+\gamma(x)) \left[\eta_B + \eta_f + \eta_{(1+\gamma)} \right] = 0,$$

where η_k is the elasticity of k with respect to x .

We make some simple assumptions about the form of $f(x)$, $B(x)$,

$G(x)$ and $\gamma(x)$. Thus suppose that

$$f_1(x) = s, \quad s \text{ a constant } 0 < s < 1, \text{ for } 0 < x \leq \bar{x}.$$

$$f_2(x) = \frac{a}{x}, \quad a \text{ a constant, } a > 0, \text{ for } x \geq \bar{x},$$

Thus $s\bar{x} = a$. Suppose further that the customer's willingness to bribe is proportional to the level of x he obtains, $B(x) = bx$, that $\gamma(x)$ is a constant, $\gamma^* > 0$, and that $G_1(x) = -\frac{\theta}{2} x^2$, $\theta > 0$, $x < \bar{x}$,

$$G_2(x) = g + r(x - \bar{x}) - \frac{\theta}{2} x^2, \quad g > 0, \quad x \geq \bar{x}.$$

Thus the manager receives a single lump-sum bonus when he just fulfills the plan and earns r rubles per extra unit of x . Let $g > \frac{\theta}{2} \bar{x}^2$ so that if $B(x) = 0$ the manager produces at least \bar{x} . When $B(x) = 0$

he will maximize his returns at $\hat{x} = \frac{r}{\theta}$, and returns are zero at

$$x_0 = \frac{r}{\theta} + \frac{1}{\theta} \sqrt{r^2 - 2\theta(r\bar{x} - g)}$$

If $B(x) > 0$ and $0 < x \leq \bar{x}$, $R=0$ at

$$x^* = \frac{2b}{\theta} (1-s(1+\gamma^*)),$$

and $\frac{dR}{dx} = 0$ at

$$\hat{x} = \frac{b}{\theta} [1-s(1+\gamma^*)],$$

so long as $1 > s(1+\gamma^*)$ and $0 < \hat{x} < x^* < \bar{x}$. \hat{x} is a maximum since $\frac{d^2R}{dx^2} = -\theta < 0$.

If $x \geq \bar{x}$, $R=0$ at,

$$x_1^{**} = \frac{(b+r)}{\theta} - \frac{1}{\theta} \sqrt{(b+r)^2 - 2\theta [ab(1+\gamma^*) - g + r\bar{x}] < \frac{(b+r)}{\theta},$$

$$x_2^{**} = \frac{b+r}{\theta} + \frac{1}{\theta} \sqrt{(b+r)^2 - 2\theta [ab(1+\gamma^*) - g + r\bar{x}] > \frac{(b+r)}{\theta},$$

so long as $x_1^{**} \geq \bar{x}$ and $(b+r)^2 + 2\theta g > 2\theta ab(1+\gamma^*) + 2\theta r\bar{x}$.

Since $\eta_f = -1$ when $x > \bar{x}$, $\frac{dR}{dx} = 0$ at $\hat{x} = \frac{(b+r)}{\theta}$ so long as $\hat{x} \geq \bar{x}$.

This is a maximum since $\frac{d^2R}{dx^2} < 0$. If x_2^{**} exists, then $R_2(\hat{x}) > 0$.

Therefore, bribery raises the manager's maximum expected return from $\frac{r}{\theta}$ to $\frac{b+r}{\theta}$. Net corrupt returns might be negative at the planned output. Even though $g - \frac{\theta\bar{x}^2}{2} > 0$, it is possible for $R(x) = b\bar{x}(1-s(1+\gamma^*)) + g - \frac{\theta}{2}\bar{x}^2 < 0$ if the expected penalty per dollar ($s\gamma^*$) is sufficiently large.

The values of x for which $R(x) > 0$ then depend upon the size of \bar{x} . The five cases are: (a) $\bar{x} < \hat{x}$, (b) $\hat{x} < \bar{x} < x^*$, (c) $\hat{x} < x^* < \bar{x}$ and $R < 0$ for all $x > \bar{x}$, (d) $\hat{x} < x^* < \bar{x} < x_1^{**} < \hat{x} < x_2^{**}$ and (e) $\hat{x} < x^* < \bar{x} < \hat{x} < x_2^{**}$ and $x_1^{**} < \bar{x}$ with $R(\bar{x}) > 0$ when $G_2(\bar{x})$ holds, and $R(x) < 0$ when $G_1(x)$ holds and $x \rightarrow \bar{x}$. In the first three cases, if $R(x) > 0$, bribes that require x to be less than some critical x^* or x^{**} will be accepted, and higher bribes will be refused.

The last two cases are the most interesting and are illustrated in Figures 1a and 1b. In (d), so long as $1 > s(1+\gamma^*)$, bribes that require the manager to produce close to plan are turned down, but small bribes less than bx^* , and those between bx_1^{**} and bx_2^{**} are accepted. This case occurs if and only if

$$x^* < \bar{x} < x_1^{**}.$$

In our example this condition reduces to:

$$-\frac{\theta}{2} \bar{x}^2 + b(1-s(1+\gamma^*)) \bar{x} + g < 0.$$

Case (e) occurs when $1 > s(1+\gamma^*)$, $x^* < \bar{x} < \hat{x}$, $x_1^{**} < \bar{x}$, and $R(\bar{x}) > 0$,

or,

$$-\frac{\theta}{2} \bar{x}^2 + b(1-s(1+\gamma^*)) \bar{x} + g > 0,$$

$$\text{and } \frac{2b}{\theta} (1-s(1+\gamma^*)) < \bar{x}.$$

Figure 1a

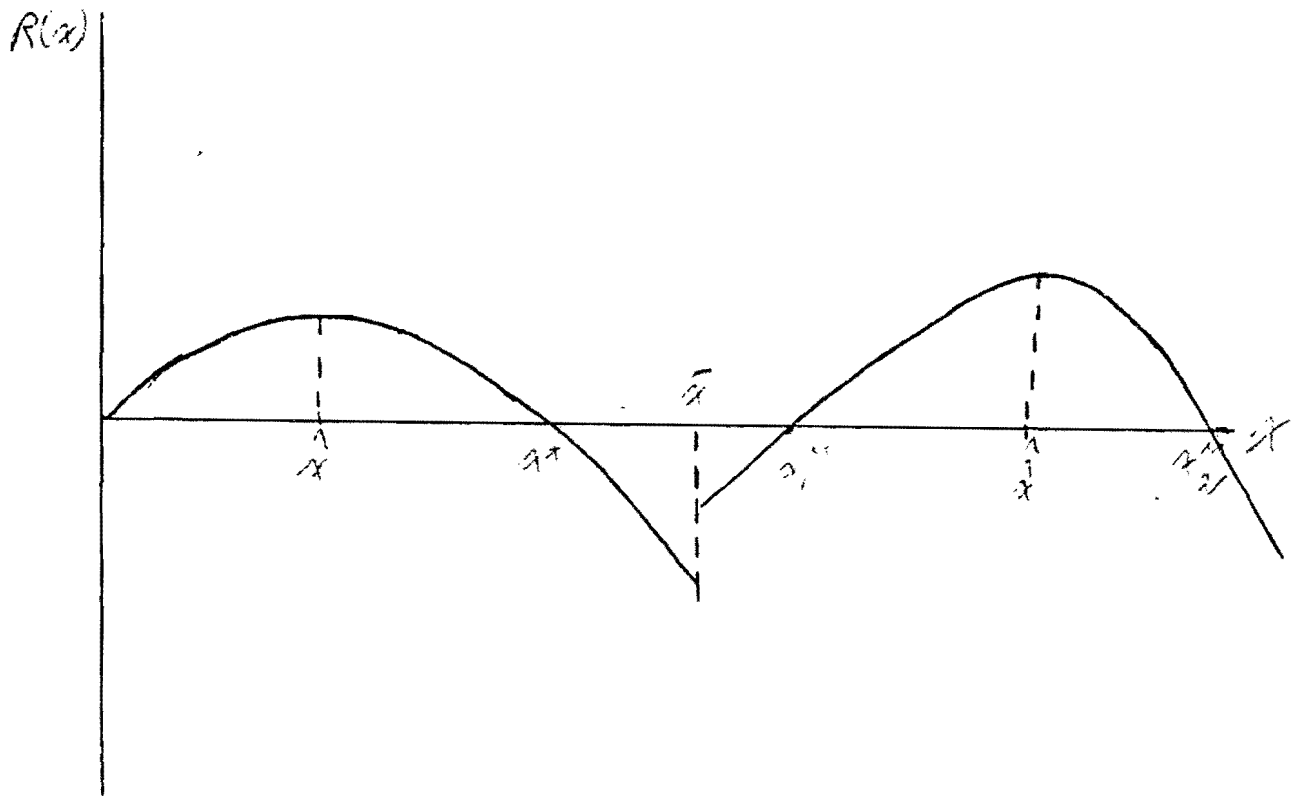
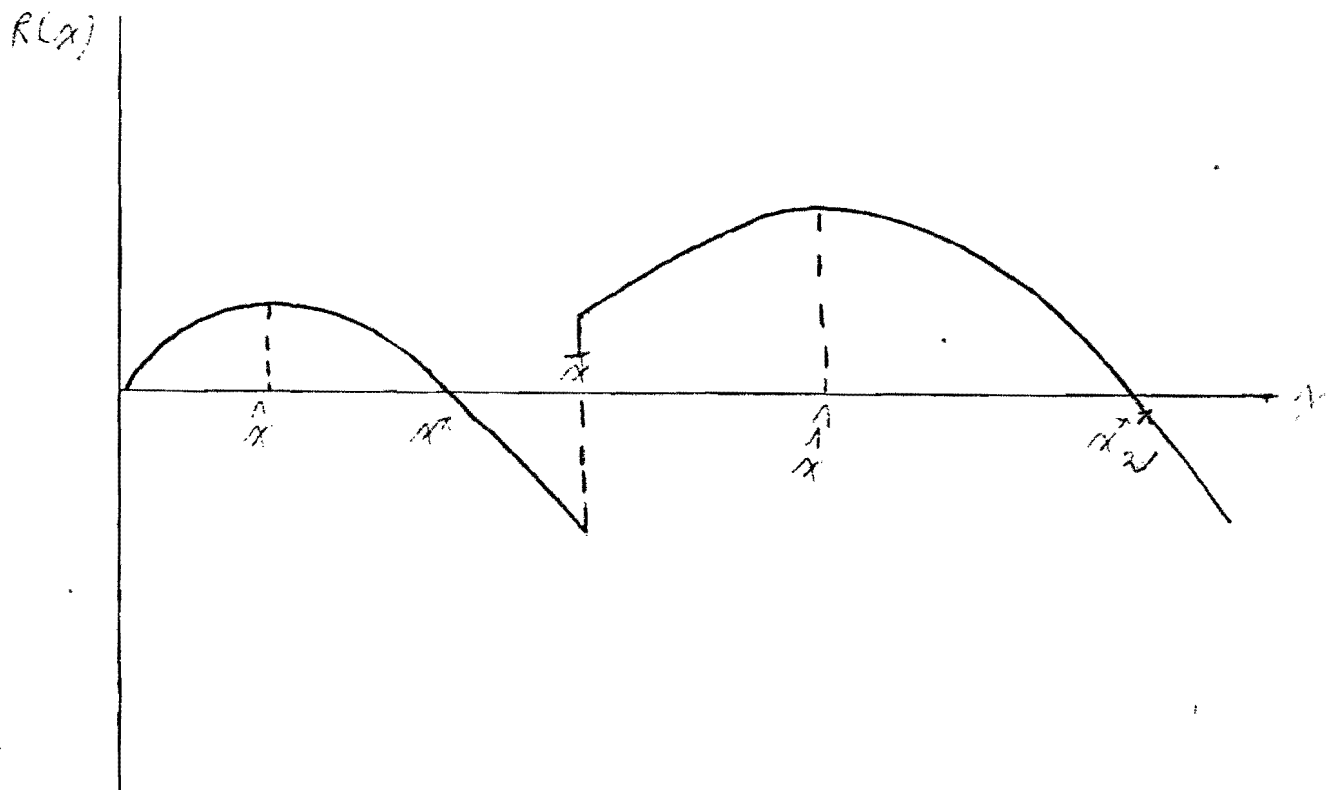


Figure 1b



FOOTNOTES

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1/ e.g. Becker and Stigler (1974), Rose-Ackerman (1978).

2/ e.g. Johnson (1975), Krueger (1974), Scott (1972).

3/ See Grossman (1977), Katsenelinboigen (1978), Kramer (1977), Simis (1979).

4/ There are, of course, no accurate statistics on the level of illicit payments in the USSR or the proportion of the population involved. Grossman (1977, 27-28) believes in it as a "commonplace, everyday phenomena" and cites Soviet journalism, emigré reports and recent books by two Western correspondents (Kaiser, 1976 and Smith, 1976).

5/ The concept of a complete hierarchy is developed in Koopmans and Montias (1975). A classic study of the Soviet planning system is Bergson (1964). General descriptions of the entire Soviet system are found in Gregory and Stuart (1974) and Hough (1979). In this paper the collective farm sector is considered to be part of the CH.

6/ We do not consider the more complex case where the rewards of agents in "associations" of enterprises depend upon the performance of their subordinate enterprises.

7/ One of the Workshop participants, Vladimir Treml, stressed the corrupt incentives inherent in a system that combines decentralization with overlapping authority. He argued that most Soviet managers report to several superiors in different ministries and can use this division of authority to gain room for corrupt maneuvering.

8/ A good deal of the discussion in the Workshop centered on the question of why the Soviets do not set prices at market clearing levels thus eliminating one payoff opportunity. Abram Bergsen suggested that the Soviets still have a residual hostility to using prices to allocate goods and noted that it may be politically costly to leaders to raise the official prices of important products. Several others suggested that Soviet-style economies set wages first and then use price schedules as a tool for affecting the income distribution. Low-wage people pay for necessities with a combination of time and money prices.

9/ The definition is somewhat broader than that in Rose-Ackerman (1978, 6-7).

10/ The distinction is similar to Kramer's (1977, 214) who contrasts (1) corruption for private gain and (2) corruption for bureaucratic gain. Katsenelinboigen (1978, 165-169) identifies "gray" and "brown" markets. Gray markets are ones that "give the authorities a chance to boost their target functions" (169). "Brown" markets, in contrast, are illegal market responses to scarcity that have "considerable negative consequences" for the authorities (169).

11/ Compare Grossman (1977, 30).

12/ For an analysis of such direct and indirect exchanges in a Soviet-type economy see Powell (1977)

13/ Let $y = f(x)$, where y , the output of Y , is a strictly concave function of the output x of X . Let $f(x)$ be the output function of each Y -producer, keeping all other inputs constant. If planned allocations are realized, the output of Y is $2f(1000)$. If the special deal goes through, y equals $f(500) + f(1500)$, which is less than $2f(1000)$ by the assumed concavity of f . By the same reasoning, the output of X must also decline (provided the planned allotments of the two producers of X were equal to begin with).

14/ Kramer (1977, 217) and Simis (1979, 50) both mention the "tautness" of plans as one reason why managers engage in corruption.

15/ It is impossible to know if this practice is widespread. Simis (1979, 42), however, cites examples from eight of the Soviet Republics.

16/ Grossman (1977, 30) writes that "in an economy with pervasive goods shortages such as exist in the Soviet Union, physical or administrative control over goods often confers both the power and the opportunity for economic gain to the individual, be he or she ever so humble in the formal hierarchy."

17/ For example, government officials purchased meat directly from the collective farm chairman in Tambov province and in return the farm was not inconvenienced by audits and inspections (Izvestia, August 15, 1974 reported the Current Digest of the Soviet Press, Sept. 11, 1974, vol. 26, no. 33, p. 33). In another example the secretary of the extension course division of a university obtained an apartment with the help of a housing inspector. In return the secretary faked the inspector's university grades (Chalidze, 1977, 156).

18/ This occurred in Georgia in the USSR (Grossman, 1977, 31; Kaiser, 1976, 111-113).

19/ For example, given the shortages prevalent in the USSR, firms do not need to pay bribes to obtain sales.

20/ Simis (1979, 37,40) contends that the local militia are frequently given free meals and gifts of food by restaurants and grocery stores. They accept bribes in return for overlooking traffic violations and have been involved in illegal currency speculation. These offenses will sound familiar to any student of police corruption in the United States. See Knapp Commission (1974), Kornblum (1976), and Pennsylvania Crime Commission (1974).

21/ According to Simis (1979, 40), the militia demand bribes in return for issuing driving licenses, and permitting vehicles to pass inspections. Auditors and inspectors of industrial plants are also bribed (Simis, 1979, 51). Pravda (Nov. 27, 1974) reports the case of an auditor who was bribed not to report the existence of surplus goods (reprinted in Current Digest of the Soviet Press (December 25, 1974), vol. 26, no. 48, p. 21). In the United States the bribery of inspectors of buildings, grain, meat and restaurants has been uncovered in recent scandals. (The cases are cited in Rose-Ackerman, 1978).

22/ Pravda (April 11, 1974) reported the case of an inspector in the Social Security Department who forged documents in return for bribes authorizing the payments of pensions or increasing their amounts (reprinted in the Current Digest of the Soviet Press, May 8, 1974, vol. 26, no. 15, p. 20). In the USSR the university admissions process is apparently quite corrupt. See Chalidze (1977, 156); Kramer (1977, 216); Simis (1979, 42).

In the United States bribes have been paid by people seeking civil service jobs in some cities and states. See "6 Top Aides in New Britain Held in Corruption Inquiry". New York Times, August 3, 1979, and McNeill (1966) for a discussion of kickbacks in Indiana.

23/ In the USSR corruption in obtaining apartments and automobiles is apparently widespread (Grossman, 1977; Kramer, 1977, 214-216). In the United States people have paid bribes to be admitted to public housing (New Haven Register, April 1, 1976) and to obtain special protection from policemen (Knapp, 1974) and Pennsylvania Crime Commission (1974).

24/ For Soviet examples see Kramer, (1977, 216-7); Simis (1979,50). See Amick (1976) and Jacoby, Nehemkis and Eels (1977) for cases involving American business.

25/ If the firm is in a competitive industry and if there are no cost advantages in selling to the government, bribes will be zero unless the government will pay more than the prevailing market price. Many government contracts, however, are for special purpose equipment, permit scale economies to be realized, or are made with firms in oligopolistic industries. In any of these cases corruption is possible. For a discussion of corruption in government contracting see Rose-Ackerman (1978, 109-135).

26/ Cases of corruption in local land use regulation in the U.S. are detailed in Gardiner and Lyman (1978).

27/ This conclusion must be qualified if law enforcement officials have overlapping authority. No one will pay much to a corrupt policeman if he expects to be arrested by someone else a few hours later. For a discussion see Rose-Ackerman (1978, 159-163.).

28/ Wilensky (1967) provides a critical analysis of the costs of secrecy in defense and intelligence.

29/ The organization of the Communist Party in the USSR is described in many standard sources (e.g Hough, 1979). The role of the Party at the local level is described in Hough (1969).

30/ Kaiser (1976, 217-224).

31/ Kaiser (1976, 230-232).

32/ In a series of articles in Problems of Communism, Lipson (1958, 1959, 1961) emphasizes the lack of independence from Party control of both the judiciary and the rest of the law enforcement apparatus. Simis (1979, 43) writes that "despite the principle of an independent judiciary enshrined in the Constitution, the Soviet courts are an integral part of the state apparatus, which, like any other sector of the state system, is itself, subordinate to the Party apparatus."

33/ For example, Simis (1979, 46-50).

34/ Kramer (1977, 220-2) reports that the chance of detection and severe punishment are small in spite of harsh laws and a good deal of public high-level official concern.

35/ The interdependence of all facets of Soviet society is emphasized by Kramer (1977, 222) and Simis (1979, 36).

36/ Illegal entrepreneurial activity has flourished in Georgia because of such "family circles." An illegal entrepreneur sentenced in 1973 was reported to be in partnership with the wife of the First Secretary of the Communist Party. In the shakeup that followed this scandal numerous top officials were arrested or dismissed (Kaiser, 1976, 111-112).

37/ Chalidze (1977, 148-9) observes that one cannot tell if the harsh Soviet law against bribery "reduces the incidence of bribery or only the number of prosecutions." The severity of punishment may deter potential plaintiffs: "not everyone wants to see the death penalty or a long term of imprisonment inflicted on someone, who, like many others, accepts a reward for helping individuals to settle their affairs."

38/ Simis (1979, 46-50) lists several corruption scandals involving high party officials and notes that, in general, high level officials were not severely punished.

39/ For example, widespread corruption in the Azerbaidjan Party and state hierarchy was exposed in 1969 (Simis, 1979, 47-48).

40/ Kushev (1975, 2) gives several examples of people with no official job or with official jobs that they do not perform.

41/ Almost all activities labeled "speculation" by authorities in the USSR are legal in the West. In addition, illicit production of repair services, housing, and consumer goods apparently occurs frequently (Grossman, 1977, 31; Kaiser, 1976, 341-343; Kramer, 1977, 214-6).

42/ Prices are apparently high on the "gray and brown" markets in the USSR (Katsenelinboigen, 1978). For example, a garage built privately cost 65% more than if "regular" workers supplied by the hierarchy had been used. (Current Digest, vol. 28, no. 36, 6 Oct. 1976).

43/ This is demonstrated in Rose-Ackerman (1978, 93-106).

44/ A similar type of illicit activity is the private manufacture of scarce goods or the private sale of services in short supply. Once again, however, the illegality of the activity itself affects its efficiency. First, some inputs may be stolen (see Grossman, 1977, 26, 29-30; Kramer, 1977; Connor, 1972, 265-6), and work on the illicit products may be carried out during

regular working hours. Second, capital accumulation is difficult since fixed investments are hard to keep hidden from the authorities. Third, what would be a fairly routine investment decision in the West involves substantial risks in the USSR. Fifth, illegal entrepreneurs have difficulty "laundering" their earnings. They cannot easily become respectable in their old age and legally pass on a fortune to their children. Nevertheless, some illegal entrepreneurs have apparently been able to transmit some of their gains to their children by purchasing them university admission or jobs in the official hierarchy.

45/ Similarly, if we assume that planners care about the welfare of ordinary citizens, they could ignore some kinds of illicit activities without changing the formal legal status of the transactions. All sorts of transactions that are now illicit--like, say, chauffeurs of official cars picking up paying customers on the way to an assignment--(Kaiser, 1976, 342, Katsenelenboigen 1978, 189) yield substantial benefits to the transactors and have fairly small ideological costs for the authorities. The authorities could simply signal that certain laws will not be enforced.

46/ Bergson (1978), Holdstrom (1979) and Shavell (1979) are concerned with inducing agents to maximize total surplus. Bonin (1975) and Weitzman (1976) design schemes that produce accurate information.

47/ Conn (1979), Groves (1973), Loeb and Magat (1978).

48/ In the following example, there are two firms with actual production functions. $y_1 = \sqrt{x_1}$ and $y_2 = \sqrt{x_2}$.

Suppose that the supplier requires firm 1 to pay a bribe equal to 0.1 units of bonus money per unit of X. Firm 2 pays no bribe. The expected bonus of firm 1 equals $\alpha(x_1 + x_2) - .1 x_1$. Let firm 1 transmit the production function $\hat{y}_1 = .9\sqrt{x_1}$, thereby underestimating its potential. There are 8 units of X to be allocated. The allocation that maximizes $(.9\sqrt{x_1} + \sqrt{x_2})$ is $(x_1 = 3.58, x_2 = 4.42)$. Firm 1's bonus equals $3.9994\alpha - .358$. If firm 1 had transmitted its actual production function, the optimal allocation would have been $(x_1 = 4, x_2 = 4)$, and the bonus of firm 1 would have been $4\alpha - .4$, which is less than $3.994\alpha - .358$ for all $0 \leq \alpha \leq 1$. It is therefore advantageous for the firm to understate its production potential. (The firm will further increase its bonus by reducing the coefficient of $\sqrt{x_1}$ in \hat{y}_1 down to ~ 0.7 below which its expected bonus will decline.) Note, more generally, that the bonus function of firm 1 net of the bribe is not a member of the class of incentive compatible schemes, which includes all linear transformations $\beta(\sqrt{x_1} + \sqrt{x_2}) + A$, for positive β , provided β and A are independent of the reported production function $\hat{y}_1(x_1)$ (Conn, 1979, p. 265).

49/ In the formal discussion, we ignore the problem of proving guilt and the possibility of a false accusation. The basic framework is drawn from work on the economics of crime (Becker (1968), Stigler (1970)), and of corruption (Becker and Stiger, 1974, Rose-Ackerman, 1978, 109-136).

50/ The case of Dr. Mikhail Stern (1977) is apparently an example of the Soviets' use of corruption charges for political purposes. After his sons applied to emigrate to Israel, Dr. Stern was accused of accepting gifts or bribes from patients (a common practice in the Soviet Union).

51/ Formal legal penalties are high in the USSR. See Chalidze (1977, 148).

52/ Grossman (1977, 40) makes a similar suggestion. This has been done to some extent in Hungary. See "Hungary Tries a Bit of Capitalism to Cure Some Communist Ills," Wall Street Journal, June 6, 1979.

53/ According to Grossman (1977, 33-34) and Kramer (1977, 214-6) the industries most subject to corruption are farming, housing, transportation (including private cars), the production of vodka, and foreign trade.

54/ This case is analyzed in Rose-Ackerman (1978, 137-151).

55/ A recent study has shown that enterprises in Eastern Europe and the USSR are large relative to those in Western Europe (Pryor, 1973).

56/ Katsenelinboigen (1978, 188) reports that, in retailing, corruption generally involves several hierarchical layers. He states that "even if a young clerk is honest, she is forced to do these things by the department head to whom she must give part of her income. The latter, in turn, must give part of his income to the store manager" and so forth.

57/ Rose-Ackerman, (1978, 178-179).

58/ This point is made by Grossman (1977, 36) who notes the growing liquidity of Soviet consumers.

59/ The Soviet Union has frequently neglected to produce complements, especially repair services and spare parts. This leads to the development of a black market and corruption. See Grossman (1977), Katsenelinboigen (1978), and Radio Liberty Research: "The Dawn of the Automobile Era Gives Boost to the Black Market" (RL 132/75).

60/ Kramer reports (1977, 213) that Soviet commentators "traditionally have associated political corruption with public officials in decadent capitalist systems... Such commentators generally attribute instances

of corruption among Soviet officials today to 'vestiges of the past' that will wither away as the Socialist system becomes even more firmly established." Katsenelinguoigen (1978, 165-6) notes that "for a long time the attempt was made to explain human vices in the USSR as remnants of capitalism in people's minds."

61/ This is probably a realistic concern. Connor (1972, 255-6) reports that many people in the USSR justify minor illegalities on the ground that everyone else does it, including Party leaders and enterprise managers.

62/ Several authors have pointed out that corruption may serve some of the interests of the Soviet leaders. In particular, it may "add significantly to their control of subordinate hierarchies" since almost everyone can be threatened with prosecution (Grossman, 1977, 37). See also Kramer (1977, 223).

63/ At the same time, the risks connected with illicit private activity are large enough that most risk-neutral or risk-averse people will not produce illegal services unless the expected gains are very large. The high risk to the supplier leaves the field open to risk-prone "adventurers" and "parasites," socially deviant types that the state would wish to curb irrespective of the activities they engaged in. This makes the authorities more apt to repress semi-licit behavior than they might otherwise, thereby further raising the risk involved. The poor reputations of the "speculators," which makes ordinary citizens willing to denounce them to the police and increases the costs of illicit activities, appears to be one of many elements that maintain the system in institutional equilibrium.

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