Matching Responsibilities with Tactics: Administrative Controls and Modern Government

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What are the alternatives to the rule-bound means traditionally applied to the governance of public agencies? Using the case of the Department of Defense, Fred Thompson highlights four basic management control systems. Two of the systems (outlay budgets and fixed-price contracts) reflect a desire to impose "before-the-fact" controls, while the other two (responsibility budgets and flexible-price contracts) stress "after-the-fact" controls. Thompson shows that decisions regarding the choice of an appropriate control system depend on a number of factors. He notes the costliness of a mismatch between controls and agency tasks, and argues that greater attention be paid to alternative mechanisms for agency governance.

Not so long ago, the late Frederick C. Mosher (1980, pp. 545-547) observed that in the last generation government has experienced a sea change in its responsibilities and its tactics and concluded that these massive changes have rendered obsolete the traditional administrative controls inherited from our forebears. In a similar vein, Allen Schick (1978) noted that these changes have been accompanied by massive growth in the scope and content of rule-bound governance mechanisms: federal reporting requirements have multiplied; federal auditors scrutinize more closely the accounts of federal agencies, state and local governments, and contractors; and direct controls in the form of rules and regulations have proliferated. Schick concluded that we cannot afford to go on imposing direct controls over an ever widening sphere of activities—that new solutions to the problem of administrative governance must be sought. He closed his peroration with a reminder that, in many cases, individuals can be more effectively influenced to serve the citizenry "by inducements which allow them to pursue their own interests than by constraints which try to bar them from behaving as they want" (p. 518).

Remarkably, many of the participants in contemporary debates over government management and operations are unfamiliar with the alternatives to rule-bound governance mechanisms. In this article, I describe the four basic management control systems designs[1] that are available for influencing people to advance the policies and purposes of the institutions they serve: (1) outlay budgets, (2) responsibility budgets, (3) fixed-price contracts, and (4) flexible-price contracts. I show how each of these mechanisms can be executed to enforce efficiency in the delivery of services and outline the circumstances under which each has a comparative advantage over the others. I also show what happens when these designs are misused and overused.

Control Systems in General

The design and implementation of control systems is a ubiquitous problem. It is encountered by engineers, planners, and regulators as well as management controllers. The purposes of various kinds of control systems differ, as do the details of their execution, but all control system designers face the same key choices: what, where, when, and, in the case of human systems, whom to control. The choice of what and where to control is reasonably self-evident. Management control should be primarily addressed to the behavior of service suppliers (departments and agencies, other levels of government, and contractors), the efficiency with which they produce goods and services, and ultimately the efficiency with which they use the assets at their disposal.

The choice of whom to subject to controls and when to execute those controls is far less self-evident. In the abstract, a control system designer has four sets of options, comprised of two choices of subject and two of timing: (1) The subject may be either an organization or an individual; and (2) controls may be executed either before or after the subject acts.

Before-the-fact controls are intended to prevent subjects from doing undesirable things or to compel them to do desirable things and necessarily take the form of authoritative mandates, rules, or regulations that specify what the subject must do, may do, or must not do. The subjects of before-the-fact controls are held responsible for complying with these commands and the controller attempts to monitor and enforce compliance with them.

After-the-fact controls are executed after the subject acts. Either an organization or an individual decides on and carries out a course of action and, therefore, after some of the consequences of the subject's decisions are known. Because bad decisions cannot be undone after they are carried out, after-the-fact controls are intended to motivate subjects to make good decisions. Hence, subjects are made responsible for the consequences of their decisions, and the controller attempts to monitor those consequences and to see that subjects are rewarded or sanctioned accordingly.

Combining the choice of subject with that of timing, the control system designer must choose among four distinct institutional alternatives: individual responsibility (before-the-fact or after-the-fact) and organizational responsibility (before-the-fact or after-the-fact). In this article, I will try to explain the significance of this choice, its relevance to management control, and the economic logic that should guide it.

Privatization

The significance of these alternative institutional arrangements is partially reflected in the current debate over the merits of privatizing the delivery of public services. Proponents of privatization imply that we have a choice between rule-governed, often over-regulated, monopolistic public bureaucracies, and freely competing private firms. They conclude that the latter will usually be more efficient than the former. If that is the choice, it is difficult to see how privatization could be wrong, since it resolves to a simple question of monopoly or competition. Clearly, provision by competing private firms will almost always be more efficient than provision by a public monopoly except possibly where production of the good or service in question is characterized by increasing returns to scale, a high degree of lumpiness in production or consumption,[2] asset specificities, or the absence of close substitutes.

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However, the distinction drawn by proponents of privatization between provision by a public agency and provision by a private entity is inordinately simplistic. It fails to capture the full range of choices available to the management controller. It also fails to reflect all of the factors that are relevant to the choice.

First, although it is true that most goods and services purchased with public money are produced by organizations and not individuals, effective control ultimately presumes individual accountability. The distinction drawn by the proponents of privatization between public and private provision ignores the management controller's capacity to hold managers of public organizations under his jurisdiction personally responsible for their behavior and, thereby, the controller's capacity to influence directly the rewards and sanctions that accrue to those individuals such as salary and opportunities for advancement.

Controllers cannot possibly hold managers personally responsible where their relationship to the supplying organization is at arm's length, and the structure of individual responsibility is veiled by the organizational form. The only way an organization can be rewarded (or punished) is by increasing (or reducing) its revenues. An organization's revenues can affect an individual manager's welfare—but only indirectly.

The difference between holding individuals and organizations accountable or between direct, personal influence and indirect influence is quite straightforward. Take the following example: if the quality of services supplied by a public agency is grossly unsatisfactory, the controller can recommend the dismissal of the agency manager. Where government has an arm's length relationship with a service supplier and the relationship is unsatisfactory, all the controller can do is recommend termination of the relationship. The controller can punish the supplying organization but cannot punish the manager responsible for the failure, although the manager's actions might very well lead the organization's board of directors to do so! Unfortunately, punishing a monopoly (that is, any sole-source supplier) is like cutting off your nose to spite your face; rewarding one is like eating an eclair to celebrate staying on a diet. Consequently, where the supplying organization is a monopoly, the capacity to influence managers directly will have considerable utility, particularly where the controller can stimulate and exploit competition between alternative management teams.

This claim can be verified by reference to the private sector. In the private sector, most real natural monopolies make intermediate products, i.e., goods that are used to produce

consumer goods or services. Natural monopoly (decreasing costs as output increases) can usually be attributed to spreading large, lumpy investments in specialized resources—technological know-how, product-specific research and development, equipment—over additional output. Investment in specialized resources often inspires a process called vertical integration ("backward" if initiated by the consumer goods producer, "forward" if initiated by the intermediate goods producer). The new economics of organization tells us that vertical integration occurs because it permits transaction costs to be minimized, in part through the substitution of direct supervision for indirect influence (Williamson, 1985).[3]

In the jargon of transaction-cost economics, investment in specialized resources is called "asset specificity". An asset is said to be specific if it makes a necessary contribution to the provision of a good or service and has a much lower value in alternative uses. The corollary of asset specificity is bilateral monopoly, a circumstance that provides an ideal environment for opportunistic behavior on the part of both the intermediate product supplier and the customer.

For example, once an intermediate product producer has acquired a specialized asset, the customer may be able to threaten to switch suppliers to extract discounts from the producer. In that case, the supplier may find it necessary to write off a large part of his or her specialized investment. Or, if demand for the final good increases greatly, the intermediate product supplier may be able to use his or her monopoly power to extort exorbitant prices from his customer. Hence, where the relationship between the intermediate product supplier and the customer is at arm's length, the threat of opportunistic behavior may be sufficient to eliminate the incentive to make what would otherwise be cost-effective investments. Vertical integration can eliminate this threat. Indeed, where the intermediate product producer provides homogeneous goods or services (i.e., outputs that are easily monitored), total production volume is specified, and technologies are mature, vertical integration permits a bilateral monopoly to be governed satisfactorily by unbalanced or two-part transfer prices.[4]

Moreover, the proponents of privatization err in their implicit claim that responsibility can be vested in organizations if, and only if, the organization is private, and in individuals if, and only if, the organization is part of the public sector. The absurdity of this claim becomes clear as soon as it is explicitly stated; it is consistent with neither theory nor practice. For example, many state legislatures base their relationships with public entities such as universities or hospitals on arm's-length relationships that are guaranteed by self-denying ordinances, which exempt the managers of these public entities from detailed oversight and direct control (e.g., Blumenstyk, 1991). Similarly, the recurring procurement fraud cases show that the managers of private entities that supply services to the government can be held directly responsible when their behavior violates federal law.

Finally, most of the proponents of privatization implicitly presume that the services provided to or for government are homogeneous or fungible, which implies that the problem of identifying the most efficient supplying organization or management team resolves to a simple question of price search, an elementary control mechanism that reveals information about the "customer's" demand for the service. In fact, many of the organizations supplying goods or services to or for government supply bundles of more or less heterogeneous products—many of these products are hard to measure and costly to evaluate, some prohibitively so.

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Choosing Between Alternative Institutional Arrangements

The proponents of privatization do, however, make one significant, unexceptionable claim: that the choice of institutional arrangements should depend on the cost and production behavior of the good or service in question. However, they frequently fail to carry this claim to its logical conclusion. At least two factors are relevant to this choice: the ease with which the consequences of operating decisions can be monitored and the desirability of interorganizational competition.

Most management control theorists believe that, where consequences (that is, an organization or responsibility center's outputs) are easily monitored, control should focus on the consequences of the subject's decisions; where they are not, control should focus on their content (inputs). Because consequences are easily monitored where entities produce homogeneous outputs or where a responsibility center within an entity performs fungible activities, it follows that controllers should rely on after-the-fact controls where homogeneous outputs are supplied. In contrast, it follows that they should rely on before-the-fact controls where each item supplied is, from the "customer's" perspective, intrinsically unique. Furthermore, this view has been reinforced by recent findings in transactions costs economics and agency theory.

At the same time, industrial organization theory tells us that interorganizational competition is desirable only where costs are constant or increasing as quantity of output (rate or volume) increases. Where costs decrease as output is increased, monopoly supply is appropriate. Because responsibility can be effectively vested in organizations only where customers or their agents are ultimately indifferent to the survival of one or more of the supplying organizations, this line of reasoning implies that controllers should vest responsibility in organizations only where interorganizational rivalry is practical and likely to be effective—and in individuals, where it is not.

Execution of Alternative Control System Designs

These four basic sets of controls are all employed by government. But is each appropriately employed? Before I can

answer this question, I must first show how these designs are used and explain the practical logic of their implementation. My discussion will concentrate on the use of before-the-fact controls. This does not mean that I particularly like them. On the contrary, I believe that controllers should resort to before-the-fact control designs only where the cost and production behavior of the good or service in question makes their use the least objectionable alternative available.

I concentrate on the use of before-the-fact controls because it seems to me that their implementation is not well understood, especially by those who most rely on them.[5] Many participants in the policy process believe that before-the-fact controls not only safeguard against abuse but also, by reducing costs, improve mission performance. If failure occurs nevertheless, they tend to believe the solution lies in still more or better rules. One possible explanation for the persistent faith in the efficacy of before-the-fact controls is that its devotees do not understand how hard it is to execute them efficiently. For example, they appear to believe that the subjects of before-the-fact controls will comply with them simply because they are morally obligated to do so. Obviously, however, not everyone is inclined to respect moral authority, to respect the law, or to obey rules.[6] It is necessary to monitor and enforce compliance with rules and to ferret out and punish noncompliance. It is also necessary to specify the content of before-the-fact controls to tell subjects what to do and what not to do in such a way as to find and enforce efficiency, which is no easy matter.

Before-the-fact controls are similar to after-the-fact controls in their reliance on incentives and sanctions for their effectiveness. The difference is that after-the-fact management controls are incentive or demand-revealing mechanisms, whereas before-the-fact management controls are incentive or demand-concealing mechanisms. This means that opacity is an essential characteristic of before-the-fact controls. The incentive aspects of before-the-fact controls are thus less clear than are the incentive aspects of after-the-fact controls. This means that their effectiveness is hostage to the skill with which they are executed. It also means that the incentive aspects of before-the-fact controls are easily overlooked, which might help explain why they are not better understood.

After-the-Fact Control System Designs

Through demand-revealing mechanisms, customers (or their agents) declare their willingness to pay for various quantities of goods, services, or activities. Customers transparently reveal a demand schedule that fully expresses their wants and preferences to their suppliers. Then they let suppliers figure out how best to satisfy those wants and preferences. The classic demand-revealing mechanism is the competitive spot market, where customers buy from any number of anonymous firms. When many suppliers are disposed to satisfy customer wants, the customer simply chooses the best price and quantity combination offered—the one that moves him or her farthest down his or her demand schedule. In so doing the customer rewards the organization that is willing to do the most to satisfy his preferences and implicitly punishes the rest. For example, the customer might order wheat from a broker at the market price payable on delivery. In that case, there would be no formal contract. The customer would put no restrictions on the producer. In fact, the customer will probably not even know who grew the wheat. The wheat farmer is nevertheless rewarded for his or her contribution. Government relies on spot markets when, for example, it purchases electrical components off the shelf.

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After-the-Fact Controls Transparently Reward Measured Performance

The spot market is by no means the only demand-revealing mechanism that is used to govern relationships between buyers and sellers. Variations are many on the basic theme of reliance on transparent rewards. All of these variations have one common attribute: rewards are provided after operating decisions have been made by the producer, after his or her asset acquisition and use decisions have been carried out and outputs have been monitored. Because they are executed after asset acquisition and use decisions have been carried out, I refer to them as after-the-fact controls.

Closely analogous to spot markets are situations where government uses prospective price mechanisms to reimburse free-standing service providers. The system used by the Health Care Financing Administration to pay hospitals for treating patients is an example. The enrollment-driven funding formulas used by some states to compensate postsecondary institutions for teaching students is another (Jones *et al.*, 1986). In both of these instances, the subject is a free-standing organization, and the structure of authority and responsibility within the supplying organization is assumed to be a purely internal matter. The government or its agent, for example, a controller, announces a price schedule and specifies minimum service quality standards (or a process whereby these standards are to be determined) and the time period in which the price schedule will be in effect.

Under prospective pricing, all qualified organizations will be paid a stipulated per-unit price each time they perform a specified service, such as enrolling a full-time equivalent student or treating a heart attack. This means, among other things, that the government's financial liability is somewhat open ended. It depends on the quantity of service actually provided, although not directly on the costs incurred by the organizations supplying the service.

Another close relative of the spot market is the fixed-price contract.[7] The government buys from numerous suppliers held at arm's length. Frequent bidding contests are held and orders are shifted among suppliers chosen simply on price.[8] Under a fixed-price contract, government may grant a selected organization a franchise to provide a specified service for a fixed period of time (garbage collection at a military base, for example). When the contract is completed, the government again puts the franchise out to bid to all comers.

Under all of these demand-revealing mechanisms, the government relies upon interorganizational competition, combined in most instances with the profit motive, to motivate service suppliers to produce efficiently and therefore to make wise asset acquisition and use decisions. If interorganizational competition is effective, organizations that don't make wise asset acquisition and use decisions will fall by the wayside.

Demand-Revealing Mechanisms in Vertically Integrated Organizations

In some cases, even where the cost behavior of the service in question renders vertical integration and, therefore, monopoly supply appropriate, demand-revealing mechanisms or after-the-fact controls can still be effectively employed. Where the supplier is part of the same organization as the customer, the organization rewards managers who do the best jobs of satisfying their customer's preferences. This is done in businesses and businesslike public sector organizations by holding a manager responsible for optimizing a single criterion value, subject to a set of specified constraints. This control mechanism is known as responsibility budgeting (Anthony and Young, 1988, pp. 365-386; Thompson, 1991).[9] For example, under responsibility budgeting, the manager of a cost center is given the authority to make spending decisions—to acquire and use assets, subject to exogenously determined constraints on the quality and quantity of output—and is held responsible for minimizing costs. Note that, in contrast to other demand-revealing mechanisms, under responsibility budgeting an organization's financial liability will depend upon the costs actually incurred providing the service to the customer and not merely on its quantity or quality.

Under this control system design, the structure of authority and responsibility within the organization is of crucial interest to the management controller. The effectiveness of responsibility budgets depends on the elaboration of well-defined objectives, accurate and timely reporting of performance in terms of those objectives, and careful matching of spending authority and responsibility. Their effectiveness also depends on the clarity and transparency with which individual reward schedules are communicated to responsibility-center managers and the degree of competition between alternative management teams.

Before-the-Fact Control System Designs

Before-the-fact management controls are demand-concealing mechanisms. Their distinguishing attribute is that they are executed before public money is spent. That is, they govern a service supplier's acquisition and use of both short-term and long-term assets, which means that the controller retains the authority to preview these decisions. Examples of before-the-fact management control include object-of-expenditure appropriations—these govern the kind of assets that can be acquired by governmental departments and agencies; apportionments, position controls, and the fund and account controls that regulate the rate, timing, and purpose of public spending (Pitsvada, 1983; Schick, 1964 and 1978), and the similar rules and regulations that govern the behavior of private contractors (Goldberg, 1976; Kovacic, 1990).

The effectiveness of responsibility budgets depends on the elaboration of well-defined objectives, accurate and timely reporting of performance in terms of those objectives, and careful matching of spending authority and responsibility.

Readers will recognize the combination of before-the-fact controls and individual responsibility in traditional governmental budgets. Most will also recognize the combination of before-the-fact controls and organizational responsibility in the so-called cost-plus contract—the most notorious member of the administered or flexible-price contract family.[10]

Traditional governmental budgets are basically spending plans. To distinguish them from responsibility budgets, I will use the term "outlay budgets." Under outlay budgets, supplying organizations are guaranteed an allotment of funds in return for providing a service for a stipulated period. They usually receive the allotment regardless of the actual quantity or quality of services provided.

Flexible-price contracts are basically production plans. They fully specify product or service characteristics and a usually a delivery schedule. Under flexible-price contracts, supplying organizations are guaranteed reimbursement (complete or partial) for any legitimate expense incurred providing the service. Hence, the prices they are paid for providing services are determined retrospectively according to settled cost-accounting standards and the specifics of their contracts.

To say that controllers primarily focus their attention on a supplier's asset-acquisition decisions does not mean, however, that they ignore performance in executing outlay budgets or price in executing flexible-contracts. Controllers usually take account of information about the future consequences of a supplier's decisions as well as information on its current and past behavior. Their attention to performance may be tacit, as it is in the execution of traditional line-item budgets, rather than express, as in the execution of performance, program, or zero-base budgets, but the consequences of asset-acquisition decisions usually matter a great deal to controllers. What is crucial is that, under these control systems designs, attention to the performance consequences of spending decisions is necessarily prospective in nature. Controllers will not reveal a demand schedule that fully expresses customer wants and preferences to suppliers or leave it to suppliers to figure out how best to satisfy those wants and preferences.

Even under before-the-fact control systems designs, the service provider, whether a department or an outside contractor, must assume some responsibility for managing output levels and delivery schedules, service quality, or price. Nevertheless, the logic of demand-concealing oversight requires supplier discretion to be carefully restricted. This means that suppliers must be subjected to fairly extensive, fairly detailed before-the-fact controls. A bureau's outlay budget, for example, should clearly identify all the asset acquisitions that it is to

execute during the fiscal year, specify their magnitudes, and make it clear who is responsible for implementing each acquisition.

Of course, constraining managerial discretion is not the only function that before-the-fact controls perform. If it were, it would be hard to claim that they ever represented a least-objectionable alternative, let alone explain their widespread use. Rather, as I will explain, constraining managerial discretion is chiefly a means to an end, not an end in itself.

Flexible-Price Contracts

There is a difference in the role that competition plays under fixed- and flexible-price contracts. The difference is not that it takes place before the production of the service in question. (Economists refer to such a competitive regime as competition for the market, to distinguish it from competition in the market.) The recipients of fixed-price contracts often receive exclusive franchises prior to the delivery of services.

The difference between the role played by competition under fixed- and flexible-price contracts is that, under flexible-price contracts, competition cannot be relied upon to keep prices low, let alone to enforce efficiency. Once a flexible-price contract has been signed, the supplier is free to dip into the customer's pocket. Because the supplier is spending somebody else's money, the normal incentives to cost effectiveness largely disappear. Decisions that affect cost, service quality, or price (i.e., asset acquisition and use decisions) must be made during performance of the contract, but once the contract is signed, the supplier can no longer be fully trusted to make them. This conclusion holds especially where the customer ignores information regarding the performance of incumbent suppliers on earlier contracts or cannot (will not) promise to award future contracts based on good performance. Even where fixed-price contracts are concerned, the refusal to take past performance into account discourages supplier loyalty and eliminates any incentive to improve the quality of the product delivered (Kelman, 1990).

Why, then, would a customer ever sign a flexible-price contract? Why not simply write fixed-price contracts? The answer is that a fixed-price contract *is* the mechanism of choice where controllers know precisely what their principals want, and several potential service suppliers know how to meet those preferences. Under those circumstances, service quality attributes offered, promised delivery schedules, and bid price allow us to evaluate proposals satisfactorily. Regrettably, these conditions are likely to obtain only where the service supplied is fairly simple and relatively standard—garbage collection, for example.

Technological Uncertainty and Financial Risk

In other cases, neither the controller nor the service supplier will have enough knowledge of the value of product attributes or production processes prior to performance of the contract to employ a fixed-price contract. It is a simple fact of life that considerable experience is usually required to manage to a narrow range of outcomes; where specialized or unique services are involved, no organization is likely to have the required experience. Consequently, any organization that agreed to produce a unique service, according to a specified schedule, at a fixed price would incur a large financial risk. This risk can be shifted, but it cannot be eliminated.

The question is: can before-the-fact controls be used to ensure that the seller retains an interest in cost effectiveness?

Government can often bear financial risks better than supplying organizations. This is the usual case where the federal government is concerned, because of the size of the assets it commands and its ability to pool risk. Consequently, the cost to government will often be lower if it assumes a portion of the risk associated with acquisition of the service.[11] Flexible or retrospective pricing is one way for government to assume this risk. Moreover, the preferences of the government may change during performance of a contract. Under a fixed-price contract, it might not be possible to secure desired changes in service attributes if they involve increased costs for the vendor.

My point is that customers should prefer flexible-price contracts to fixed-price contracts where it is cheaper for the customer to deal with uncertainty than it is for the contractor to do so or where the customer is more concerned with the ability of the contractor to provide a product that works than with price. The question is: can before-the-fact controls be used to ensure that the seller retains an interest in cost effectiveness?

Using Before-the-Fact Controls to Enforce Efficiency under Flexible-Price Contracts

Execution of a flexible-price contract begins with a fully specified project spending plan detailing work to be performed; personnel, material, and equipment to be used; input quality standards; and scheduled milestones. This plan provides a basis for the enforcement of efficiency through bargaining and negotiations carried on during the performance of the contract.

This process can be compared to a repeated prisoner's dilemma game, in which both parties have a common interest in reaching agreement but also have antagonistic interests with respect to the content of agreements. In this game, the customer tries to get as much as he can at a given price, and the supplier tries to get the highest possible price for providing the service (Hofstede, 1967). Bargaining power in a prisoner's dilemma game depends on the information available to each party. In particular, the customer's power is greatest where the customer (or the customer's agent) knows the supplier's true cost schedule but can withhold full information as to his or her preference or demand schedule (Morgan, 1949).[12] In a repeated game, the information available to the customer (or his agent) will depend upon his ability to control the sequence of moves and counter moves that comprise the game. Public choice theorists refer to this condition as agenda control (Hammond, 1986).

Given comprehensive before-the-fact controls, under which changes can be made only with the prior approval of the

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other party or his or her agent, the party suggesting or initiating a change must necessarily reveal valuable information to the other. This can work to the advantage of the customer or the supplier, or both. For example, consider the following situation:

> [C]ontracts and specifications are drawn for...a ship and agreed to.... The contractor discovers he can do the welding of some plates less expensively by another means. About that time the client decides that some room on the ship should be larger.... The contractor can plead that he cannot easily change the room size; however, if the client will permit the altered welding, maybe a deal can be struck (Stark and Varley, 1983, p. 132).

When flexible-price contracts are appropriately employed, there is every reason to believe that most change proposals will be initiated by the service supplier. Competition for the market provides an incentive to potential service suppliers to promise more than they can deliver, because contracts are usually awarded to the service suppliers who promise the most. Consequently, very few contract winners can make good on all their promises, especially where their managerial discretion is severely restricted by a full set of before-the-fact controls. This fact will usually become evident to the service supplier during performance of the contract. The service supplier will also learn of the tradeoffs between cost, service quality, and delivery schedule available to it and will eventually want to (or in some cases have to) change promises or plans.

Under a full set of before-the-fact controls, such changes are contingent upon prior approval. To secure that approval, the service supplier must reveal information about its capabilities and tradeoff possibilities. As a result, power to enforce the preferences of the government may over time be passed to the purchasing officer, only if that officer knows what he or she is doing and how to make it happen.

Outlay Budgets

A similar logic (Wildavsky and Hammond, 1965) applies where outlay budgets have a comparative advantage—under decreasing costs to scale over an array of specialized or unique services. Outlay budgets can help to keep prices low and to encourage efficiency where large, lumpy investments in specialized resources are needed in order to provide services, where each problem, client, or task performed is in some sense unique and where the most serious problems are supposed to be dealt with first. Many organizational units in government have these attributes. They supply outputs that are heterogeneous, hard to define, and nearly impossible to measure. As a consequence,

> [s]uch bureaus seem always to be near the beginning or end of a comprehensive dismantling and restructuring since there is usually a sense that performance is not all that it might be. The performance of such bureaus can only be improved by budget augmentation. And, of course there are no guarantees in budget augmentation alone (Thompson and Zumeta, 1981, p. 43).

Under outlay budgets, the control officer retains the authority to review all significant asset acquisition and use decisions. Presumably, therefore, the officer would like to know as much as possible about alternative choices and their consequences before the manager of an administrative unit decides or acts. That is, the controller would like the service supplier to reveal a comprehensive menu of all possible actions and a price list identifying the minimum cost of performing each action under every possible contingency. But wishes are not horses. There is no way to compel the manager of an administrative unit within an organization to reveal the unit's true production function—even if the manager knows what it is (and in most cases, he or she will not know).

Consequently, the controller must usually settle for a practical approximation of this ideal. Here too, the controller's authority provides a basis for the enforcement of efficiency through bargaining carried on during the execution of the budget. If the controller is skillful, plays his or her cards right, the principals' preferences may be approximated, if not fully satisfied. That is, over time, the manager may be able to compel the supplying organization to address the "most important" problems and to address these problems at a reasonable cost.

The more pressured the unit, the faster its movement. Here too, as with flexible-contracts, the impetus for change must come from the operating manager. That is, the responsibility center manager must have an interest in increasing his or her budget. Otherwise, the manager will be indifferent to circumstances in which low-priority problems drain resources from problems that are of greater importance to his or her superiors or legislative sponsors. Furthermore, a full set of before-the-fact controls must be in place. At a minimum, this means that controllers must specify when, how, and where assets are to be employed and how much the subordinate can pay for them. In addition, money saved during the budget period from substituting less costly or more productive assets for more costly or less productive assets must revert to the treasury. Money lost in failed attempts to improve operations must be found elsewhere, and new initiatives requiring the acquisition of additional assets or reallocation of existing assets must be justified accordingly.

These constraints are necessary because they prevent the operating manager from overstating asset requirements in high-priority areas to get resources for use elsewhere, thereby creating a precedent for higher levels of support in the lower priority area. They are also necessary to force the operating manager to seek authorization to make changes in spending plans and, therefore, to reveal hidden preferences, capabilities, and tradeoff possibilities.

Where these conditions obtain, where a budget maximizer is subject to tight before-the-fact controls, the controller can enforce efficiency during the budget period by requiring affir-

mative answers to the following questions: Will a proposed change permit the same activity to be carried out at lower cost? Will higher priority activities be carried out at the same cost? Will the proposed asset acquisitions or reallocations of savings support activities that have lower priority than those presently carried out? When operating managers know and understand these criteria, the controllers will approve most changes in spending plans that the managers propose—because managers will propose only mutually advantageous changes.

Paradoxically, to say that before-the-fact controls are needed to reinforce the controller's bargaining power where outlay budgets are called for, does not mean that the controller must administer before-the-fact controls directly.[13] Under certain necessary and sufficient conditions, authority to spend money, transfer funds, and fill positions can be delegated to operating managers. The threat that direct controls might be reimposed can be sufficient to ensure that the operating managers ask the right questions of themselves and get the right answers to those questions before taking action, which should go a long way toward ensuring that the manager's behavior corresponds to the customer's preferences.

The necessary conditions are: reimposition of controls must be a credible threat; the gain to the operating manager from delegation must more than offset the associated sacrifice in bargaining power (the manager of an aging agency in the stable backwaters of public policy, for example, may have nothing to gain from relief from before-the-fact controls, if the price of such relief is a change in business as usual); and the controllers must be confident that their monitoring procedures, including postaudit, will identify violations of "trust."

The sufficient condition is that the controller and the operating manager trust each other.[14] Trust requires mutual respect and understanding and a common sense of commitment to a joint enterprise. In this context, its corollary is a willingness on the part of both the controller and the operating manager to eschew opportunistic behavior that would be costly to the long-term well-being of either the operating unit or the organization as a whole, including a willingness to forego opportunities to exploit events for personal advantage. Trust in a bargaining relationship can be poisoned by a single lapse of honesty or fair dealing; by contempt on the part of one of the parties for the abilities, judgment, or ethical standards of the other; by an excess of zeal or an overtly adversarial or confrontational approach; or by a simple lack of communication. In other words, the kind of trust that is needed to realize the best possible outcomes under a spending budget, or under a flexible-price contract for that matter, can be threatened by the very same conditions that threaten a business partnership or, more familiarly, a marriage.

All long-term buyer-seller relationships must ultimately rely on incentives, even those governed by outlay budgets and flexible-price contracts. As we have seen, the difference is that when these control system designs are employed, the incentives are deeply embedded in the process of budget or contract execution. Consequently, they are often overlooked. External observers fail to understand how they work; they also fail to understand how hard it is to make them work well. Effective execution of demand-concealing control system designs—flexible-price contracts as well as outlay budgets—

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requires a great deal of skill and savvy on the part of the controller. The skills required to execute demand-concealing control system designs properly are certainly far rarer and more remarkable than are those needed to design and execute after-the-fact controls, for which a modicum of technical expertise will suffice. It usually takes years of training and practical experience, combined with a lot of horse sense, to manage the complexities of bargaining in this context.

The Costs of Overcontrol

All long-term buyer-seller relationships rely to a degree on standards and rules. Even, where government uses prospective price mechanisms to reimburse free-standing service providers, quality standards must often be specified and enforced. Demand-concealing control-system designs require considerably higher levels of reliance on before-the-fact controls and also on monitoring and enforcing compliance with them than do demand-revealing designs. At the very least, adoption of one of these control-system designs means that controllers must take steps to ensure that suppliers fairly and accurately recognize, record, and report their expenses. This, in turn, requires careful definition of costs and specification of appropriate account structures, bookkeeping practices and internal controls, direct costing procedures, and the criteria to be used in allocating overheads.

Accurate accounts will not guarantee efficiency. Even if, as is unlikely to be the case, the service supplier's financial and operational accounts completely and accurately present every relevant fact about the operating decisions made by its managers, they will not provide a basis for evaluating the soundness of those decisions. This is because cost accounts can show only what happened, not what might have happened. They cannot show the range of asset acquisition choices and tradeoffs the supplier considered, let alone those that should have been considered but were not. As previously noted, under outlay budgets and flexible-price contracts, asset acquisition decisions must be made, but the supplier cannot be trusted to make them efficiently. Consequently, suppliers must be denied some discretion to make managerial decisions.

"How much" is a fundamental question; to what extent should government customers or their agents replace or duplicate the supplier's managerial efforts? It is necessary to pose this question because before-the-fact controls are costly, both in terms of out-of-pocket monitoring and reporting costs and in terms of opportunity costs—benefits lost owing to the customer's inability to exploit fully the supplier's managerial expertise. The government or its agent, the controller, will seldom be more competent to make asset acquisition decisions than the supplier. The answer to this fundamental question is obvious: the minimum necessary, given the motivations of the

> The *nasty consequences of micromanagement are far more frequently denounced than measured.*

service suppliers and the incentives confronting them. Sometimes, "the minimum necessary" is a great deal indeed. How much depends on circumstance and the controller's skill in exploiting the opportunities that are created by the supplier's response to institutional constraints.

The problem of figuring out how much constraint is necessary is, perhaps, best expressed in terms of minimizing the sum of the costs that arise out of opportunistic behavior on the part of suppliers (that is, to use the language of public discourse, waste, fraud, and abuse) and the costs of control, both direct and indirect. Economic theory tells us that this optimum is to be found where the marginal costs of controls equal their marginal benefits (Breton and Wintrobe, 1975).

The benefits produced by administrative controls are characterized by diminishing marginal returns. This is simply an abstract way of saying that controls that produce the greatest payoffs in terms of waste, fraud, and abuse avoided should be executed first. In contrast, the costs of control (the sum of direct and indirect cost of their execution) are characterized by increasing marginal costs. This assertion is, of course, debatable. So far, as I have been talking about the direct cost of controls—the out-of-pocket search, bargaining, monitoring, and enforcement costs that they impose on buyer and seller alike—it might be more reasonable to presume constant marginal costs. However, it seems to me that the indirect costs of control, those which take the form of stifled initiative, dulled incentives, and duplicative effort (Marcus, 1988), do probably increase at an increasing rate as the quantity of controls is increased.

These claims indicate that it almost never makes sense to try to eliminate abuse entirely. If the sum of the costs of opportunistic behavior on the part of suppliers plus the direct and indirect costs of controlling their behavior is minimized, some abuse must remain simply because it would be dreadfully uneconomical to eliminate it.[15] The point is that controls contribute nothing of positive value; their singular purpose lies in helping us to avoid waste. To the extent that they do what they are supposed to do, they can generate substantial savings. It must be recognized, however, that they are themselves very costly.

What Difference Does It Make?

How much more efficient would government be if control-system designs were carefully tailored to circumstances? Unfortunately, I do not have an unambiguous answer for this question. According to the theory outlined here, both the ease of monitoring the consequences of operating decisions and the desirability of interorganizational competition matter. Most empirical studies overlook the distinction between the subject and the timing of controls. Hence, they do not actually relate the cost of supplying services to the choice of governance mechanism. Moreover, I would distinguish the costs of mismatching controls from the costs of overcontrol or micromanagement. The nasty consequences of micromanagement are far more frequently denounced than measured. Nevertheless, the evidence suggests that mismatched controls may add 5 to 20 percent to the real cost of supplying services—overcontrol can add far more.

Some of this evidence goes to the efficiency of privatizing various services, including custodial services and building maintenance, the operation of day-care centers, fire protection services, hospitals and health care services, housing, postal services, refuse collection, security services, ship and aircraft maintenance, waste-water treatment, water supply, and weather forecasting. Because these are common, homogeneous services that do not require large, lumpy investments in extraordinary assets—indeed, most have direct commercial counterparts, the logic outlined here indicates that they are appropriate candidates for a combination of organizational responsibility and after-the-fact control.

Not surprisingly, the evidence shows that shifting from individual responsibility and before-the-fact controls to organizational responsibility and after-the-fact controls does reduce the cost of delivering these services. In his evaluation of the navy's commercial activities program, Paul Carrick (1988) of the Naval Postgraduate School found that the introduction of competition reduced service cost in 80 percent of the cases studied, with average savings of nearly 40 percent—the greater the number of competitors, the greater the average savings. Carrick also found that navy teams won over one-third of the competitions carried out under the Office of Management and Budget Circular A-76, achieving productivity improvements of 13 percent on average. In these latter instances, the only significant change in governance relations was the shift from a demand-concealing to a demand-revealing control-system design, since the winning in-house teams were usually the incumbent suppliers.

In a second relevant study, Scott Masten, James Meehan, and Edward Snyder (1991) carefully analyzed the determinants of control costs, holding production costs constant, in naval shipbuilding. Looking at 74 components (43 "make" items and 31 "buy" items, classified using benchmarks similar to those outlined here) they determined that control costs represented about 14 percent of total costs (about 13 percent for make components and 17 percent for buy components). They also determined that the proper choice of governance mechanism permitted control costs to be substantially reduced. Making the right decisions resulted in control costs that were a third less than if all components had been made internally and half what they would have been if all components had been contracted out.

Several analysts have found that, where appropriate, the substitution of after-the-fact for before-the-fact controls produces similar productivity gains. David J. Harr, for example, reports that replacing standard outlay budgets with responsibility budgets in Defense Logistics Agency depots was associated with efficiency increases of 10 to 25 percent (Harr, 1990, p. 36; Harr and Godfrey, 1991, pp. 68-69). Other analysts make even stronger claims about the significance of the nature and timing of controls. Gordon Chase, for example, asserts that "wherever the product of a public organization has not been monitored in a way that ties performance to reward, the introduction of an effective monitoring system will yield a 50

percent improvement in the product in the short run." (Allison, 1983, p. 16). Productivity increases of this size are not, in fact, unheard of. One frequently cited example of such an increase is the central repair garage of the New York Sanitation Department, which replaced its standard municipal outlay budget with a well-designed responsibility budget. Robert Anthony claims that this reform increased productivity by nearly 70 percent—from a high of 143 percent in the machine repair center to a low of 19 percent in the motor room (Anthony and Young, 1988, pp. 356-357).

William Turcotte's classic matched comparison of two state liquor agencies reports even larger productivity differences caused by the substitution of after-the-fact for before-the-fact controls (Turcotte, 1974). The organizations studied by Turcotte ran sizable statewide programs featuring large numbers of local retail sales outlets. Furthermore, both defined their missions in identical terms—maximization of profits from the sale of alcoholic beverages to the public. According to the theory outlined here, this situation called for the use of a rather simple, straightforward responsibility budget to govern local retail sales outlets. One of the states (Turcotte refers to it as state B) did in fact adopt this approach to governance—treating each outlet as a profit center, holding the outlet's manger responsible for meeting a profit target and granting the operational discretion needed to meet it. The other state (Turcotte refers to it as state A) relied on standard outlay budgets and a comprehensive set of before-the-fact controls. Turcotte reports that one consequence of the difference in the control strategies used by the two states is that direct control costs were *20* times higher in state A than in state B. The indirect costs of control were somewhat less disproportionate but absolutely far greater in state A than in state B. Furthermore, individual stores in state B were twice as productive as stores in state A. Operating expenses for each dollar of sales in state A were 150 percent higher than in state B, administrative expenses were 300 percent higher, and inventory costs 400 percent higher.

However, both Anthony and Turcotte appear to conflate the choice of governance arrangements with their intensity. New York's garages and State A's liquor stores were subject not only to the wrong kinds of controls but probably also to an excess of controls. One of the more melancholy properties of before-the-fact controls is their propensity to proliferate—excess controls cause failures, which leads to more controls and then more failure. I would not be surprised if two-thirds of the productivity differences reported here were due to overcontrol.

The evidence also shows some goods are unworthy candidates for after-the-fact controls. The case that has been given the greatest amount of attention by industrial-organization economists is where customers artificially maintain rival suppliers where a single supplier could more efficiently supply the entire market (Anton and Yao, 1990). There is, however, a more interesting case. Consider what can happen when rivals are invited to bid on a fixed-price contract to supply an advanced and, therefore, highly risky or uncertain technology. They will likely respond to such an invitation in one of two ways:

1. If they bid at all, they will bid high to protect themselves against the risk of failure. This means that the price of the service to the customer will be excessively high; or, even worse,
2. One or more of the bidders will underestimate the difficulty of the contract (or overestimate his or her capacity to meet its terms). He or she will often be the low bidder, of course, and win the contract. If the low bidder is not very lucky, the victory will be a curse. When he or she fails to deliver, as mostly happens, or threatens to slide into bankruptcy, the customer may have to step in to rescue project and, in some cases, the contractor as well.

Several analysts have found that, where appropriate, the substitution of after-the-fact for before-the-fact controls produces... productivity gains.

Alas, open-bidding contests tend to select suppliers for their optimism (or their desperation), since the bidder with the most optimistic view of a project's feasibility will usually win the contract. Unfortunately, the most optimistic (or most desperate) bidder is unlikely to have the best understanding of the contract's technical feasibility and may overestimate its feasibility precisely because of his or her incompetence to carry it out! This likelihood probably does not matter very much where all of the bidders have the experience needed to manage to a narrow range of outcomes. In that case, either comparative advantage will trump optimism or, if not, the advantage will usually be borderline. This likelihood is crucial where bidders lack the experience needed to manage to a narrow range of outcomes—as will usually be the case where advanced and, therefore, highly risky technologies are concerned.

Indeed, where a product or service is highly specialized, a single organization is often uniquely qualified to produce it. Identifying the right supplier is, therefore, frequently the key to getting the best product on time and at a reasonable price. In the private sector, this process is often fairly informal. Firms tend to rely on experience and reputation to pick suppliers. A decision to invite a proposal is usually tantamount to a promise to do business. Proposals are more often than not jointly developed.

In the public sector, the process tends to be more formal. Potential suppliers must appear on a list of qualified vendors. Customers must usually request proposals from more than one organization. Requests for proposals (RFP) are supposed to provide detailed explanations of what proposals should include and how they will be evaluated. Evaluations tend to be highly ritualized, with each section of a proposal assigned an explicit numerical score and its overall evaluation based upon the weighted sum of these scores. Only after evaluators have identified the best proposal will the government's representatives engage in *ex parte* conversations with the vendor to work out contractual details and nail down a best and final offer.

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Nevertheless, these processes have similar aims and, I believe, more often than not produce similar outcomes.[16] Doubtless, these sham battles are wasteful and add to the costs of executing before-the-fact controls, but the waste is less than when the contract is awarded solely on the basis of price and the winning contractor turns out to be incompetent.

Unfortunately, this happens sometimes. It is generally acknowledged, for example, that the worst defense procurement fiasco in recent memory, Lockheed's default on the C-5A program and the subsequent Department of Defense bailout, occurred because Lockheed misread the difficulty of designing and building the C-5A. Consequently, Lockheed submitted a bid on a fixed-price, total-package procurement contract to design and deliver 150 C-5s that was 50 percent less than Boeing's, the next highest bid. Evidently, even if Lockheed had known what it was doing, which as it turned out it did not, its bid would have been half-again too low. By the time the Department of Defense and Lockheed discovered the magnitude of their error, they were in too deep to get out (Gregory, 1989, pp. 107-117). Something similar happened recently with the navy's A-12 program. Fortunately, when the A-12 development team got into trouble, the Department of Defense decided the A-12 was expendable and canceled the contract, thereby avoiding the worst aspects of the C-5A case. Nevertheless, this was evidently a near-run thing. In the mid-1980s, Boeing took a bath on a series of fixed-price development contracts that it sought and won despite lack of expertise. Again, fortunately for Boeing and ultimately for the taxpayer, Boeing's civilian profits were sufficient to make good its military losses.

The lesson suggested by the example of the C-5A is that the total costs arising from mismatched controls are asymmetrical in their composition: if other things were equal, it would probably be far more prohibitive to rely on after-the-fact controls where before-the-fact controls are called for than vice versa. This lesson is reinforced by Masten, Meehan, and Snyder's (1991) finding that, although making "buy" components would have caused control costs to be about 70 percent higher than they actually were, contracting out "make" items would have caused control costs to increase even more—nearly 200 percent, from 13 percent of the total value of the items to over 30 percent! But other things are not all equal. Not only are after-the-fact controls easier to use, they are also self-limiting. Where the purchaser relies on demand-revealing controls, overcontrol produces negative feedback in the form of higher prices or reduced output that causes controls to be cut back. Before-the-fact controls often produce positive feedback that leads to their multiplication. Hence, their costs are subject to no natural limits.

Carrying Legitimate and Necessary Controls to Self-Defeating Extremes

Organization theorists have long understood that failure induces certain predictable responses and that these responses, in turn, produce certain equally predictable consequences. Pradip N. Khandwalla (1978), for example, observes that threatening situations always generate pressures for direct controls: standardization of procedures, institution of rules and regulations, and centralization of authority. Michael Crozier (1964) argues that failures to meet expectations almost inevitably produces a cycle of rule making, more failure, and then more rules. Anthony and Young (1988) claim that detailed rules result from encrustation: an abuse occurs, someone decides that "there ought to be a law," and a rule is promulgated to avoid the abuse in the future; but such rules often continue after the need for them has passed. No one who has the power to rescind the rule may ever consider "whether the likelihood and seriousness of error is great enough to warrant continuation of the rule" (p. 562). Jack H. Knott and Gary J. Miller observe that stricter rules and tighter oversight often produces positive short-term results, but that they also exacerbate the factors that cause organizational failure. Furthermore, extra supervisors giving more orders and monitoring effort more closely may make subordinates "even more resentful of their status than before, which may make subordinates even more unwilling to trust or cooperate with management. Which leads to more stringent rules, greater reliance on hierarchy, and more hostility on the part of subordinates and on and on" (1987, p. 257). Robert Merton (1957; also Marcus, 1988) concludes that reliance on rules and regulations reflects a concern with error prevention, and an emphasis on error prevention, rather than measured performance, tends to result in organizational rigidity and ultimately total ineffectiveness.

In other words, the inclination to respond to abuses with calls for more and better rules is normal, as is responding to repeated failure with calls for ever more inflexible and comprehensive rules, greater oversight, and closer supervision.

The propensity to devise inflexible and comprehensive rules is, perhaps, nowhere more irresistible than where military procurement is concerned. Consequently, military procurement generates more than 250 million hours of paperwork a year, 90 percent of the federal government's procurement paperwork (Weidenbaum, 1992, p. 153), and the Department of Defense employs 100,000 men and women, uniformed and civilian, and spends between 5 and 10 billion dollars each year to buy (not to pay for) the weapons, materials, and supplies it uses. Nearly 50,000 of these employees (including 26,000 auditors) are paid to monitor and enforce compliance with before-the-fact controls. As an example of this propensity to devise inflexible and comprehensive standards, consider the MIL-F-1499 (fruitcake), 250 tons of which were recently purchased by the army. To preclude abuses on the part of unscrupulous bakers, to make sure some candied fruits and nuts really were in the fruitcake, to guarantee adequate shelf-life and resistance to handling, and to insure palatability in all the far-flung places of the world where the American Army celebrates Christmas, the specifications for the MIL-F-1499 (fruitcake) were 18 pages long. Plastic whistles take 16 pages of specifications; olives, 17; hot chocolate, 20; chewing gum, 15; condoms, 13; and so on (Adelman and Augustine, 1990, pp. 126-127).

This level of detail may be ludicrous, but it is not evidence of overcontrol. Evidence of overcontrol requires information on the benefits as well as the costs of control.[17] What about the benefits of control? Well, one agency, the Defense Contract Audit Agency, proudly claims that it saved the American taxpayer about $7 billion in 1988 and cost only $1 billion. Its criminal investigations generated an additional $300 million in fines and penalties and cost only $84 million (Dunnigan and Nofi, 1990, p. 368). This sounds like a pretty good deal, even if one allows for the source of the claims. However, it is a generally accepted rule of thumb that monitoring and enforcing regulations imposes private costs of about $20 for every dollar spent by the government (Weidenbaum and DeFina, 1978). Because these costs are ultimately borne primarily by the regulated firm's customers and because in this instance the customer is the Department of Defense, this multiplier implies that Defense Contract Audit Agency regulation imposed costs of $21 billion to save $7 billion, in the first instance, and $1.76 billion to save $300 million in the second—in other words, it cost an average of $3 and $6, respectively, to save $1, which is consistent with marginal costs of $6 and $12! Evidence that marginal costs are greater than marginal benefits, let alone 12 times greater, is prima facie evidence of overcontrol.[18]

There is also evidence that the marginal benefits produced by some before-the-fact controls are actually negative. Alfred A. Marcus, for example, shows that increasing the number of safety rules governing the operation of nuclear power plants, together with greater oversight and closer supervision, actually had the effect of degrading reactor safety (Marcus, 1988). Anecdotal evidence suggests that this is often the case where procurement is concerned, especially where demand-concealing governance mechanisms are called for, but where a plethora of rules deny the controller the authority to trade off costs, schedules, and performance (Weidenbaum, 1992).

Finally, excessive reliance on rules often produces organizations that are simultaneously overcontrolled and out of control. Turcotte (1974, p. 69), for example, found that the managers of retail stores in state A were subject to many more rules and far stricter executive and legislative oversight than their counterparts in state B, but, even so, were far less responsive to the wishes of their political masters. Evidently, the managers of retail stores in state A were subject to so many rules that none of them mattered very much. Consequently, overcontrol led straightaway to loss of control.

Conclusion

Steven Kelman (1991, p. 196) argues that one reason for government's excessive reliance on before-the-fact controls is an intellectual failure to understand their high costs, especially the cost they exact in terms of mission performance.[19] If Kelman is correct, then the situation is happy indeed. Intellectual failures are fairly easy to fix. Kelman's diagnosis is also an indictment of many of us in public administration. It implies that, in our research, our literature, and our teaching, we have failed to show the need for alternatives to traditional controls. The simple fact is that we have not developed governance mechanisms—especially fresh and innovative administrative controls—to match contemporary government's tactics and responsibilities. Many do not even understand that this task should be central to our enterprise.

Fortunately, public administration is changing, albeit slowly. Most students of public administration have accepted Mosher's challenge to look outward more, inward less—to understand a wide variety of institutional arrangements: regulation, incentives in the form of loans and taxes, contracting, and quasi-governmental enterprises. Despite their efforts, however, much of our knowledge remains equivocal. What is the reason for our uncertain progress? Since we have a satisfactory framework for institutional analysis, I believe that it is due largely to an inability to look beyond superficial institutional dissimilarities to their common structural elements—an inability to see that the entire spectrum of institutional arrangements is put together from a common set of materials and that, to design effective institutions, the materials used must fit together harmoniously. This article neither promises nor provides a complete answer to the question of how institutions should be put together, let alone a complete parts list. It is, I hope, a step in the right direction.

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Notes

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1. Several readers have objected to the term "management control," reminding me that managing and controlling are definitely not the same activity (Landau and Stout, 1979). Consequently, I considered using other terms for the organizing concept of this article: direction, governance, and, especially, accountability. These seemed too broad for my purposes, however. For example, the entire discipline of accounting is concerned with the functioning of accountability relationships (Ijiri, 1975, p. ix); the branch of accounting that is concerned with influencing subordinate behavior is management (or administrative) control (Anthony and Young, 1988). The field of management control like some main currents of public administration traces its intellectual lineage through Chester I. Barnard (1938) back to Mary Parker Follett's rule of anticipated reactions (1927 and 1937). Hence, this article joins in a debate present at the creation of PAR. I align myself with here with Follett's disciples, such as C.J. Friedrich, who believed that "no mere reliance on some traditional device can be counted upon to render the vast public services of a modern government responsible, responsibility will remain fragmentary because of the indistinct voice of the principal whose [expert] agents the officials are supposed to be" (Friedrich, 1940, p. 20) and against those like Herman Finer (1941), who placed full confidence in rule-bound governance mechanisms, which is consistent with the thrust of Martin Landau's seminal works, albeit not his terminology (Landau, 1969 and 1973).
2. Normal goods have continuous and twice-differentiable supply schedules. In contrast, supply of a lumpy good is discrete, perhaps even a single point on the supply schedule. An appendectomy illustrates the concept of lumpiness. A second appendectomy would be useless; half an appendectomy, worse than useless (Thompson, 1987).
3. In this article, I use the terms transaction cost and control cost interchangeably. Frankly, I prefer the latter. Controls have costs even where transactions fail to occur. The rules governing the disposition of federal lands to private commercial interests provide an example. These rules were intended to protect the public patrimony by making it impossible for corrupt or fraudulent real-estate speculators to profit at the public's expense. They have been proficient in carrying out their purpose. Furthermore, they have done so with little or no direct compliance costs, either to government or to business. This is the case because they are so sweeping that they have prevented almost all transfers of public property to private owners. Consequently, the federal government has not expended resources negotiating property transfers or in monitoring and enforcing compliance with the rules governing these transactions. Neither have business expended resources to comply with these rules.

   However, the failure to transfer federal property to private owners has given rise to substantial indirect or opportunity costs. For example, it is well known that the United States military base structure is millions of acres too large. Yet the rules governing the disposition of federal lands has prevented the transfer of defense facilities to better or higher private uses. Opportunity costs are always somewhat conjectural, but, in this case, they are unquestionably large. It has been estimated that the 5 percent of the existing military base structure with the highest market value would be worth at least $35 billion and perhaps as much as $90 billion in their best alternative economic uses (Thompson, 1988).

   Those who wish to understand better the relevance of transaction cost economics to public administration should see Maser (1986); Vining and Weimer (1990); and Ferris and Graddy (1991), as well as Friedman (1981) and Borcherding (1988).
4. Vertical integration is, of course, only one way to deal with asset specificity. Some firms invest in specialized resources and own design-specific assets, which they provide to their suppliers. This is called quasivertical integration. It is common in both the automobile and the aerospace industries, and, of course, it is standard procedure for the Department of Defense to provide and own the equipment, dies, and designs that defense firms use to supply it with weapons systems and the like (Monteverde and Teece, 1982). Other firms that rely on a small number of suppliers or a small number of distributors write contracts that constrain the opportunistic behavior of those with whom they deal. A well-executed contract can approximate the outcome from vertical integration (although such contracts are often very hard to write and, where one of the parties is inclined to exploit the other, prohibitively costly to enforce) without incurring the very real costs of vertical integration. In other cases, desired outcomes can be realized through alliances based on the exchange of hostages (e.g., surety bonds, exchange of debt or equity positions) or just plain old-fashioned trust based on long-term mutual dependence. In Japan, for example, buyer-seller relationships tend to be based on mutual confidence. Toyota relies on a few suppliers that it nurtures and supports. It maintains tight working links between its manufacturing and engineering departments and its suppliers and explicitly eschews opportunistic behavior in the interest of maintaining long-term relationships (Anon., 1986).

   Nevertheless, in one study of vertical integration in the U.S. aerospace industry, Scott Masten (1984) unambiguously demonstrated that asset specificity and, therefore, decreasing cost is basic to the make-or-buy decision. Where intermediate products were both complex and highly specialized (used only by the buyer), there was a 92 percent probability that it would be produced internally; even 31 percent of all simple, specialized components were produced internally. The probability dropped to less than 2 percent if the component was not specialized, regardless of its complexity.
5. There is an alternative point of view: political authorities, especially legislators, know exactly what they are doing. They favor administrative controls that are ineffective by design. Friends of this view claim that legislators shun serious policy control and, instead, seek "particularized" control. According to Terry M. Moe (1990, p. 140, and 1989), this perspective's most eloquent booster, legislators "want to be able to intervene quickly, inexpensively, and in ad hoc ways to protect or advance the interests of particular clients in particular matters." Detailed rules that impose rigid limits on an agency's discretion and its procedures help to satisfy this appetite. Moe's logic implies that detailed object-of-expenditure budgets exist, for example, not for historical reasons, but because they are ideally suited to the needs of momentary governing coalitions, which are likely to be far more concerned with who gets public money and where it goes, than with what it buys for the public at large. Perhaps, but I am not convinced—that, however, is another story (Jones and Thompson, 1981; Thompson, 1988).
6. Moreover, many of those who believe in the potency of before-the-fact controls fail to understand that moral authority is all too easily eroded by an oversupply of rules. Moral authority, respect for the law, the inclination to obey rules are of critical importance to the stability and the efficacy of social arrangements. I believe that they are far too important to be frittered away where other mechanisms of social control will suffice. Rather, they ought to be carefully husbanded so that they will be available when and where they are really needed (Tyler, 1990).
7. Under a fixed-price contract, the price to the customer should not be affected by the supplier's actual costs of providing a service; under a flexible-price contract, those costs are shared with the customer. The limit is reached in the case of a cost-plus fixed-fee contract, where the customer assumes full responsibility for all legitimate, measured costs.
8. In practice, these price schedules entail all sorts of complex arrangements, including rate, volume, and mix adjustments as well as inflation adjustments and sometimes default penalties.

9. In the public sector, responsibility budgeting is often called output budgeting. I prefer the former term because it is more widely used in the American management-control literature and also to distinguish it from output-oriented approaches to budget formulation (as opposed to budget execution, which is the focus of administrative control), such as performance budgeting, PPBS, and ZBB. Examples of governments that have experimented with responsibility budgeting as the term is used here include New Zealand (Schick, 1990; Goldman and Brashares, 1991) and the City of Fairfield, California (Bellone, 1988).
10. I generally prefer the term "flexible-price contract," because I am concerned primarily with distinguishing these contracts from fixed-price contracts. Flexible-price contracts comprehend a variety of incentive and cost-sharing contract designs as well as the classic cost-plus contract. In turn, flexible-price contracts are included in the broader category of administered contracts (Goldberg, 1976).
11. The indifference of government to financial risk is easily exaggerated. Government is not immune to financial risk, otherwise it would never make economic sense for it to rely on outlay budgets (Carlton and Perloff, 1990, p. 503). Moreover, while it may be true that doing business with government is risky, the risk is mostly unsystematic, and may, therefore, be diversified away. This is especially the case with respect to major defense contractors, whose financial statistics typically exhibit two distinctive characteristics: low price-earnings ratios and even lower betas. According to the capital-asset pricing model, such firms should be far less averse to financial uncertainty than average.
12. This is simply a more formal way of saying that strategic advantage accrues to the party that can best look ahead and reason back. To do so, one must be able to put oneself squarely in the other party's shoes (i.e., one must know the other party's costs under a variety of contingencies). This is one purpose of "should-cost" models. It is also one of the purposes behind selecting agents who have walked in the other party's shoes (promoting trust is another)—purchasing agents in manufacturing plants, for example, are usually recruited from the ranks of industrial salespeople and process engineers and vice versa. The federal government's revolving-door laws enjoin this kind of personnel exchange, however. These laws probably increase the government's power to set an agenda but undoubtedly reduce its ability to understand or use the information which that power confers.
13. This is obviously also the case where flexible-contracts are appropriate. For example, the Department of Defense has a program that designates exemplary production facilities and exempts them from direct oversight.
14. Of course, these conditions also apply where contractual relationships are concerned. According the nearly legendary original manager of Lockheed's Skunk Works, Clarence "Kelly" Johnson, there are 14 rules for running a successful systems-development project, including complete control of the program, small military project offices, specifications agreed to in advance, timely funding, and minimal inspections and reports, but the most important is: "mutual trust between the military project officer and the contractor" (Kitfield, 1989, p. 28). The significance of trust in bilateral organizational relationships is brilliantly outlined by A. Breton and R. Wintrobe (1982); see also the insightful discussion of these issues by W.T. Gormley (1989).
15. See also Williamson (1985); Williamson largely ignores, however, the particular institutional arrangements, including those outlined here, that actually drive costs, see Masten, Meehan and Snyder (1991), Harr (1990), Harr and Godfrey (1991).
16. Where the customer is authorized to use RFP rather than ITB procedures, the formality described here is probably more apparent than real. Indeed, where a single supplier has an acknowledged technological lead, the law permits the request of a single proposal and a sole-source contract. Even where that is not the case, the purchasing officer probably has a pretty good idea of the identity of the most qualified supplier. The RFP cannot but reflect the purchasing officer's subjective judgments about the importance of various product attributes and the competence of alternative vendors to deliver on their promises. The formality with which proposals are evaluated also serves to insulate him from the consequences of choice and, therefore, to protect him from the complaints of rebuffed vendors - this is especially important when, as happens in the best of circumstance, things go wrong.

    I sympathize with procedures that work to minimize criticism and keep hard-working contracting officers out of trouble. Unfortunately, there is a tendency for the RFP process to swell out of control, particularly where major projects are concerned. These RFPs tend to be very detailed, in-response proposals expand to carload size, and armies of evaluators are needed to score them. This is clearly wasteful. It is also unnecessary. The RFP for the LWF program—the fighter that became the F-16—was only 25 pages long (McNaugher, 1989, p. 77).
17. The Department of Defense paid $1.50 a pound for the fruitcake, about half the price in civilian markets (Dunnigan and Nofi, 1990, p. 360).
18. These estimates may seem high, but they are trivial compared to those claimed by William H. Gregory (1989, p. 3). According to Gregory, overcontrol—he uses the term micromanagement, defined as the extension of legitimate and necessary supervision to a self-defeating extreme—increases the cost of military hardware by at least a third and, in some cases, more than doubles it. Unfortunately, he does not explain how he arrived at this conclusion, let alone document it.
19. A great deal of attention has been paid to the congressional predisposition to overcontrol (in this vein, one of the very best analyses remains Ackerman and Hassler [1980]). Indeed, the belief that the best way to attack an abuse or to do good is to make a rule prohibiting or requiring some behavior seems to be especially robust on Capitol Hill, perhaps because so many of its denizens are lawyers, who are accustomed by training and professional experience to dealing in mandates. Nevertheless, while I do not deny that Congress too often fails to consider alternatives to before-the-fact controls or that its concern with the details of administration often leads to overcontrol, I would also stress that Congress is not alone in this. These are recurring problems in most organizations. Superiors are nearly everywhere more confident of their own competence than they are of their subordinates'. Most are also far more cognizant of their own decisionmaking abilities, responsibilities, and prerogatives than they are of their ignorance of the nitty-gritty ramifications of their choices or of the massive paperwork burden that management by fiat imposes upon an organization. One of the major aims of managerial training is overcoming this bias. I hope this article will be read in that spirit and not simply as another case of Congress bashing.

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