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PART III

Institutional Structures and Defense Spending

The Market Mechanism in the Defense Department

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Although the use of internal or transfer prices among the subordinate units of a large organization (e.g., the divisionalized firm), to simulate the market mechanism's incentives to efficiency, has received considerable attention from economic theorists,[1] the application of this idea to a government organization such as the Defense Department raises difficult questions that remain largely unanswered. The most thorough review of the problems involved was Breckner's, which emphasized the fallibility of superficial measures of the success of organizations created.[2] Breckner pointed out, among other things, that unless performance by an organization is measurable and is readily checked, the market device is unlikely to be a useful management tool. More broadly, we can say that its usefulness surely depends on a proper arrangement of incentives so as to harmonize the interests of each organization with those of the Defense Department and of the nation.

However, we should recognize that many of the questions and difficulties that attract discussion in connection with the notion of decentralized organization are merely disregarded in discussions of centralized organization. Problems relating to mischievous incentives and to the measurement of performance are no less problems of centralized organization (in the private sector of the economy as well) than of a decentralized corporate or government organization. In the latter case, how-

[1] See Jack Hirshleifer, "On the Economics of Transfer Pricing," *Journal of Business*, 1956, p. 172, and "Economics of the Divisionalized Firms," *ibid.*, 1957, p. 96.

[2] Norman V. Breckner, "Government Efficiency and the Military 'Buyer-Seller' Device," *Journal of Political Economy*, 1960, p. 469.

ever, they become an explicit subject of study and so attract notice. It is therefore misleading to suppose that they stand in the way of the use of decentralization as a management tool. Rather the resolution of these problems can contribute to better management and to better performance in both types of organization.

This paper addresses itself to a series of questions relating to the use of the market mechanism: What present institutional arrangements in the Defense Department involve a simulation of the market mechanism, and what is their scope and aggregate importance? What degree of freedom of action is available to the sellers and to the buyers in these arrangements, and how does this freedom affect the usefulness of the device? In what ways could these arrangements be changed, and possibly extended, to increase their value; in what new areas might it be appropriate to introduce the market mechanism? What problems limit the effectiveness of the market mechanism? What can be done to make it more effective? In what ways do these questions relate to the problems of over-all good management and efficiency in the Defense Department? And finally, how is the effectiveness of the market mechanism in producing efficiencies likely to affect the size of the defense budget? The most significant of these questions is that relating to possible extension of the market mechanism, and I shall meet it squarely. The present revolving-fund enterprises in the Defense Department, now responsible only for current operations in peacetime, should be made responsible for capital-budgeting of the assets they operate.

As a preliminary, I would like to inject a brief historical note. The earliest example of the market mechanism in defense, at least used by any organization that still exists, was that of the Navy Stock Fund, founded in 1893. It functions as a wholesale and retail organization both for items purchased for personal use by Navy personnel and for items used by the Navy; parallel organizations now exist for the other services, for the Marines, and for the Department of Defense as a whole. There was no significant example of another such organization prior to 1950. The majority of the present organizations, of which there are more than ten, came into existence in the years 1950–53, having been authorized by the National Security Act of 1947, the same act that created the Department of Defense. Besides the five stock funds, there are four industrial funds, so named because they produce goods and services, two or more management funds, whose activities are highly

miscellaneous but emphasize travel bureau and freight-forwarding types of activities, and the Civil Defense Procurement Fund, which in effect is the sixth stock fund.

Under McNamara and Hitch the scope of these activities increased, with special emphasis on defensewide funds, one of which was newly created and one renamed. There was also a renewal of interest in their functioning and in measures of their success.

Now consider a couple of these questions relating to the over-all management problem, in the context of which the market mechanism should be viewed. Defense is the archetype of a public good, a good that is most suitable for outright production by the national government, and neither left entirely to private enterprise nor merely bought under contract from the private sector, like highways and other public works. Moreover, unlike most other activities, the success in shaping defense forces is judged in almost inverse relationship to the extent that these forces actually have to be used, so that a good defense program must be evaluated largely in analytical and conjectural terms, rather than by the test of performance. (It might appear that in the actual conduct of a war performance by the military commanders is readily observable and even measurable, so that there would be more chance to employ market mechanisms than in peacetime; but this proposition has an academic flavor, inasmuch as in practice social policy moves toward less rather than more use of market devices with the onset of a war, both in the operation of the military establishment itself and in the management of the economy as a whole.)

The context within which the over-all defense program must be appraised consists of the perceived potential threats to the nation's vital interests, and the national military objectives we might pursue should any of these threats materialize and provoke us to action. Within this context, the nation's armed services offer alternative actual and hypothetical capabilities, such that a larger well managed budget provides the means to pursue more ambitious objectives than does a smaller one. The main responsibility of the nation's civilian leadership in defense-programming is to weigh the threats and possible objectives against the resource costs of alternative broad capabilities, and to make the choice among those capabilities.

The history of these choices since the Second World War suggests considerable stability for long periods in the size of the military budget,

which is revised mainly when the perceived external threat changes. First, in 1945–47, there was a brief return to the near-disarmament of the 1920's and 1930's. Then, in the period 1947–50, the political leadership took the position that this nation could afford something under 15 billion dollars for defense, in view of the expansionism of the USSR. The Korean War raised the figure to around $45 billions, where it stayed throughout the 1950's while ballistic missiles replaced conventional armies as the main weapon of our armed forces. In the early sixties the present Secretary of Defense set the figure at $51 billions, before the current fiscal year, and reintroduced strong conventional forces because of a more pessimistic appraisal of the threat of guerilla and Korea-type wars than had prevailed previously.

This capsule history suggests that the use of the market mechanism in the Defense Department, other things being equal, will make no difference at all in the size of the defense budget. The political leadership makes a rough judgment of the appropriate budget level in the light of its view of the external threats; and improvements in efficiency will to a first approximation be translated into increased military capablities. That is, the elasticity of demand for military capabilities is approximately minus one.

A necessary condition for efficiency in this over-all context is that the objectives selected by the national leadership be transmitted effectively to the lower levels of decision-making, in such a way that lower-level decisions will be consistent with the larger objectives. In particular, the leadership must specify clearly what threats are taken seriously and what broad capabilities are desired to cope with them. To the extent that the devices of decentralized decision-making play a role in the process, the objectives of the decentralized units in the system must be reconciled with each other and with those of the higher leadership. Thus it is insufficient to set budgets for the decentralized units or to make their expenditures dependent on their receipts in a quasi-commercial operation; it is also necessary to verify that their activities serve the appropriate objectives. If criteria of performance are clear-cut and enforced, it is reasonable to expect that decentralized decision-makers will be motivated to operate economically and to seek expansion of the activities for which they are responsible. In view of the over-all unit elasticity of demand for defense capabilities, it is reasonable to suppose that in most cases the demand for subordinate defense activities will be

elastic; besides sharing the over-all unit elasticity, they may substitute for other competing defense activities if they achieve unexpectedly low costs for particular capabilities. This prospect offers considerable scope for something resembling the profit motive in decentralized defense management.

Decentralization requires that the Congress and the national leadership delegate a measure of control over individual line-item appropriations to lower decision levels, giving those lower levels appropriate discretion over the use of the funds, subject to the objectives just discussed. Budgets must be appropriated for broad expenditure-categories reflecting over-all objectives, and the details of how the money is spent left to the lower levels. The best current example of this is the appropriations class for operations and maintenance expenses, and there are many others. (Of course, there may also be a decentralized process through which the *requests* for line-item appropriations are developed, and this is probably the more promising line for further development of decentralized management devices.) Where lower-level discretion exists, it may be used in dealings either with internal or with external markets. Internally, resource costs can be translated into prices that one decentralized unit charges another, and the latter may weigh these prices against those of alternative means of serving the same objectives.

The measurement problems in appraising the performance of decentralized units in the defense context, the limitations of the decentralized system, and the ways it might be extended are the subjects of a chapter I have written for Enke's forthcoming book,[3] and I shall comment only briefly on them here. In its most important decisions and characteristics the defense organization must be centralized. Some direct supervision of the choice between weapons systems, and of provision for their support, deployment capability, and so on, is necessary for the pursuit of a rational set of national objectives. The national leadership must decide on the allocation of resources among major military capabilities, and must determine strategic objectives, tactical matters with political implications, and operational constraints. The President and his advisers can more easily delegate to the services and to their suborganizations some of the less important, "unglamorous" matters of resource management, which ought not to take up the time of key people at the

[3] Stephen Enke, ed., *Defense Management,* New York, 1967.

highest levels. These matters include strategic mobility, logistics, and supply: areas already subject to a degree of decentralized decision-making in routine peacetime operations, using an internal market mechanism. Here the measurement of performance can be relatively straightforward, because the systems involved can be tested and exercised routinely under a close approximation to emergency conditions; such testing occurs perforce whenever an international crisis blows up that stops short of war.

These considerations apply also to programming support forces for war emergencies; a logical way to extend the market mechanism in the Defense Department would be to make the present quasi-commercial enterprises responsible for the planning of their capital equipment, and to include it in their pricing mechanisms. The procedures by which this suggestion might be implemented are spelled out in the cited chapter. The key element of these procedures is that the military services should bear the cost of this equipment in their budgets in proportion to their expected emergency demands on it; for example, the Army should pay the Military Air Transport Service for the latter's commitment to airlift army personnel, equipment, and supplies to potential theaters of hostilities on an agreed delivery schedule. The Army's airlift requirement would be set by national policy for such situations, and by a comparison of the costs of alternative modes of meeting its deployment requirement as measured by the internal prices for airlift, sealift, and forward-basing and stockage. The MATS capital plan would be the least-cost one for meeting the combined requirements of this type of all the military services. Similar procedures would apply to capital equipment and emergency reserve stocks managed by the other revolving-fund enterprises in the Defense Department. This procedure contrasts sharply with their present procedures and responsibilities.

The revolving-fund enterprises, representing a conscious attempt to use the market mechanism within the Defense Department, currently have revenues on the order of $12 billion annually, and working capital whose book value is about the same figure. However, these numbers omit important resources employed by these enterprises. The current account has no entry for depreciation nor any for the pay and allowances of military personnel, and the capital account has no entry for major equipment and facilities, such as transport aircraft, ships, and military bases. If these items were included using conventional book-

keeping, these enterprises would account for more than 20 per cent of annual Defense resource use. The largest such enterprises are the Military Air Transport Service, the Military Sea Transport Service, the Naval Shipyards, the Defense Supply Agency, and the separate service supply enterprises.

A discussion of the characteristics of some of these enterprises will help to highlight their strengths and weaknesses.

The Military Air Transport Service (MATS) plays little or no role in determining the quantity of military airlift procured by the Defense Department nor the size of its support base in men and equipment. In the operations of this airlift in peacetime, however, MATS has virtually unlimited discretion in the purchase of fuel and spare parts, and of whatever contractor maintenance it may require over and above the maintenance provided by Air Force facilities. It also has virtually unlimited discretion in setting up its route structure and in assigning particular equipment to these routes. Thus it has some scope for attaining efficient operations; and such study as there has been of this matter suggests that MATS has done a good job with this discretion. However, there is less reason for optimism about its dealings with its customers. It charges a complicated form of average-cost prices, which differ spectacularly from marginal costs on the back-haul direction of most routes. Its direct customers, for their part, are subject to centralized direction on the selection of items for air versus other forms of transport; they have some incentive to make good use of whatever discretion is left to them if savings remain under their control, as is true if something like O-and-M funds are involved, but very little incentive otherwise.

This situation contrasts with that of the Naval shipyards. Manpower and equipment levels are set by Congress, with no recognizable relationship to emergency or wartime requirements. There is no resort to private contractor maintenance or construction comparable to that for aircraft. Whatever scope or incentive for economical resource use they may have is hard to identify or describe. Where construction is involved, the same observation applies to the customer, the Navy Bureau of Ships. In the case of repairs, however, something approaching rational incentives prevail for the customer. The maintenance and condition of the ships of each type (e.g., destroyers) is the responsibility of the "type commander," who receives a definite budget for this purpose. He in turn allocates a budget to each ship as its turn comes for repairs. Although the yard's

cost estimates for different repair and maintenance jobs may have little relationship to rational pricing, the ship's commanding officer is clearly obliged to sort out his priorities in an orderly manner. This officer would not like his record to show either that he required unusually large sums to keep his ship in good condition nor that it was in poor condition when he relinquished command to another officer.[4]

These comments give some idea of the variety of possible consequences of attempts to simulate the market mechanism in the Defense Department. In some cases, such as the government operated ordnance factories, resource use is politically determined and the simulation of the market mechanism is entirely nominal. In other cases, typically where O-and-M funds are involved, and where there may be resort to private firms, the incentives to orderly, efficient resource use may bear comparison with those in the private sector.

The current receipts of these organizations appear in Table 1, for fiscal 1966. The numbers give a fair idea of the comparative importance of the different organizations, so far as current operations are concerned. The largest by this measure is the Army Stock Fund, with expected receipts of $2.28 billions in this fiscal year; the smallest is the Civil Defense Procurement Fund, with expected receipts of $20,000. However, all except this smallest one run in the hundreds of millions. The Naval shipyards just discussed are included in the Navy Industrial Fund, which also includes the Military Sea Transport Service, Naval ordnance factories, and other activities. The Military Air Transport Service is part of the Air Force Industrial Fund.

The proposal that these organizations should be responsible for programming their capital equipment, reserve stocks, etc.; that they should determine the structure and emergency scheduling of these capital goods which most efficiently meet the demands of the military services, and should price them at marginal cost to the military services; implies a dramatic broadening of their scope and authority. It would definitely mean less central decision-making than is now the case for the capital goods under consideration, which are programmed through a bargaining process among the services, the Joint Chiefs of Staff, and the Office of the Secretary of Defense; the Budget Bureau and the Congress also

[4] These comments on MATS and on Naval shipyards are partly based on unpublished work at IDA by Stanley Besen and John Haldi, respectively.

TABLE 1

Revolving Funds
Current Receipts in Fiscal 1966
($ million)

Type	Organization					
	Army	Navy	Marine Corps	Air Force	Civil Defense	Department of Defense
Industrial	690	197		430		280
Stock	2280	120	130	138	[a]	180
Management	290	162				

[a]$20,000.

play a significant role. Although the present system purports to aim at the most economical collection of capital goods to do the job, few of the parties involved have any incentive to push in the right direction. The Army tends to demand almost unlimited airlift, for example, because the budgetary costs of airlift are likely to cost a smaller reduction in the Army's active forces than would the use of forward stockage. The Air Force resisted the airlift program until it was faced with a large prospective supply of unemployed pilots due to the phasing-out of manned bombers. With pressures like those at work, it is difficult for a centralized system to come anywhere near the most economical decision.

Because of the very large sums involved in airlift, sealift, and forward-stockage, amounting to several billion dollars over the next few years, these activities are the most interesting area in which to test the idea of devolving the responsibility for capital budgeting on the industrial funds that operate them. These activities are also particularly interesting because of their critical support role in an emergency situation. It is true that the same procedures can and should be applied to the emergency reserve stocks controlled by the stock funds, but the sums involved are relatively small and the uneconomical errors in programming probably slight by comparison. Service-owned shipyards and or-

nance factories could be closed down with great advantage to the country and their activities turned over to the private sector of the economy entirely, following the example set by the Air Force; and few tears would be shed for them. Emergency reserve capacity should of course be contracted for, after the manner of the emergency troop lift contracted for in the Civil Reserve Air Fleet; such arrangements are the analogue in the private sector of the proposed arrangements for programming of the capital goods operated by the industrial and stock funds.

The tantalizing question remains whether the market mechanism could also be employed within the Defense Department as part of the process of programming the major weapons and combat forces of the armed services—bombers, ships-of-war, tanks, and troops? This was Lerner's celebrated proposal, although he presented it as a way to operate after the shooting starts; here I would prefer to consider it in relation to long-range defense planning. The analogue of Lerner's proposal in this context would be to allocate a budget to each of the unified commanders in the theaters where we have unified commands, and let him allocate it among different types of weapons and forces, support, deployment capability, paying prices set at true marginal costs. By contrast with the approximately 20 per cent of defense resource use covered by the type of thing I have previously discussed, this proposal would put virtually the entire defense budget within the scope of the internal market mechanism.

My earlier remarks about objectives point up an aspect of the problem that Lerner's proposal, as reported, did not touch on.[5] For such an arrangement to be tolerable, the President would have to specify unambiguously his position on threats, national objectives, and constraints in each area of the world. For example, for a hypothetical Korean or Southeast Asian war he would have to specify whether the use of nuclear weapons on Chinese cities and installations would be part of acceptable war plans for programming purposes. (He might also direct force-planning to be based on the several possible ways such wars might be fought.) He would also have to specify his choices between de-

[5] Extensive quotations from Lerner's paper appear in Hitch and McKean, *The Economics of Defense in the Nuclear Age*, Cambridge, Mass., 1960, pp. 222–23.

ploying small forces quickly or larger forces more slowly, to satisfy the same over-all objectives, when alternative choices along these lines imply different numbers of casualties, different amounts of temporarily lost territory, different damage to the country defended, and different peacetime budgets for our Defense Department. Theater commanders always comply with such directives of course, although not always with enthusiasm. Satisfactory compliance is a key element of performance that would have to be monitored thoroughly if such a system were to be made workable.

In addition, it would have to be verified that each commander was in fact buying the over-all capabilities as directed by the President. A theater commander who happened to be an admiral might see little need for any forces other than carrier task forces, even though these have little capability to fight a land war; one who happened to be an Air Force general might wish to win every war with land-based airpower alone, although this strategy suffers from essentially the same defect. A similar problem can be involved in the intraservice choice between one weapon and another, such as the choice that had to be made between the battleship and the carrier, and the more recent one between the manned long-range bomber and the ballistic missile. The necessary measuring of performance in this context would be hard to distinguish from centralized control.

Nevertheless one can imagine the use of budgets and the market mechanism as a framework for achieving more orderly defense programming in which military experience and judgment could make its maximum contribution. It would require the development of new skills in the military services, such as the calculation of marginal-cost prices for their systems, whose complexity would compare with that of the combination of a multiple-product firm and a public utility. In this and other matters it would require a way of approaching problems that would no doubt be regarded as unmilitary. We might well regard these attributes of the use of the market mechanism as the main arguments in its favor, however.

These remarks are intended to highlight both the merits and the problems of the market mechanism in the Defense Department, both as it now operates and as it might be extended. The feature of the problem of defense management that differs most from the private sector is

the necessarily centralized character of the final decisions about national objectives, which must be transmitted as commands or directives. The success of a lower-level organization in satisfying these directives can be comparatively easily measured in some cases, but not in others. This measurement difficulty is probably our best indicator of the likelihood of any further extensions of the use of the market mechanism in defense.