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TECHNICAL REPORT

Funding Ammunition Ports

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Summary

The U.S. Army's Surface Deployment and Distribution Command (SDDC) asked RAND Arroyo Center to assess the mechanisms by which SDDC funds its two ammunition ports, Military Ocean Terminal Concord (MOTCO) and Military Ocean Terminal Sunny Point (MOTSU). With a legacy of different histories, the two ports currently have different funding approaches and accounting systems. With both now managed by SDDC, consolidation to a single approach would seem desirable. The central question of this research inquiry is what the most appropriate financial structure would be.

MOTSU currently has an arrangement in which Army appropriations are expected to fund 76 percent of the port's base operating and support (BASOPS) expenditures. The rest of BASOPS is funded by the Transportation Working Capital Fund (TWCF) with revenue generated from prices charged TWCF customers, e.g., the military services that want to ship ammunition into or out of the country. The TWCF additionally pays for contracted stevedore services at both MOTCO and MOTSU. At MOTCO, Army appropriations fund virtually all BASOPS costs; there is no 76-24 BASOPS cost division as seen at MOTSU. In total, we estimate that in recent years the TWCF has funded about 60 percent of MOTSU annual outlays versus about 30 percent of MOTCO annual outlays.¹

To assess the desirability of changing one or both ports' financial arrangements, the RAND Arroyo Center study team interviewed subject matter experts at SDDC and Transportation Command (TRANSCOM), Scott Air Force Base, Illinois; at Army Materiel Command headquarters at the Redstone Arsenal, Alabama; as well as at both MOTSU and MOTCO. We reviewed the literature on working capital fund pricing policies and also reviewed Department of Defense (DoD) financial regulations. We analyzed the ports' recent workload and cost data and then briefed interim results to SDDC leaders and received extensive and valuable feedback from SDDC and port personnel.

MOTCO's and MOTSU's Workload and Finances

In recent years, MOTSU has consistently handled more workload than MOTCO has, but MOTCO's trend is up. MOTSU is in considerably better physical condition than MOTCO is.

MOTSU has had higher annual outlays than MOTCO, but MOTSU's outlays per measurement ton have been consistently lower than MOTCO's. There appear to be economies of

¹ Annual outlays, as we use the term, excludes one-time appropriations such as military construction projects. However, we include both cargo movement costs, such as stevedores, as well as the costs of managing and operating the ports.

scale in port operation, so putting more workload into a port reduces outlays per measurement ton.

Prospective Port Funding Arrangements

We set forth criteria to evaluate prospective port funding arrangements.

One criterion we espouse is *non-distortion*, i.e., the chosen funding mechanism should encourage efficient usage of the ports. Efficiency, in this context, means that ports are used if and only if the marginal benefit to the DoD of using the ports exceeds the marginal costs of doing so.

A second criterion we espouse is *funding stability*. If the DoD has a long-run need for the capability to load and unload ships carrying ammunition, it creates a difficult management challenge if funding for these ports varies sharply over time.

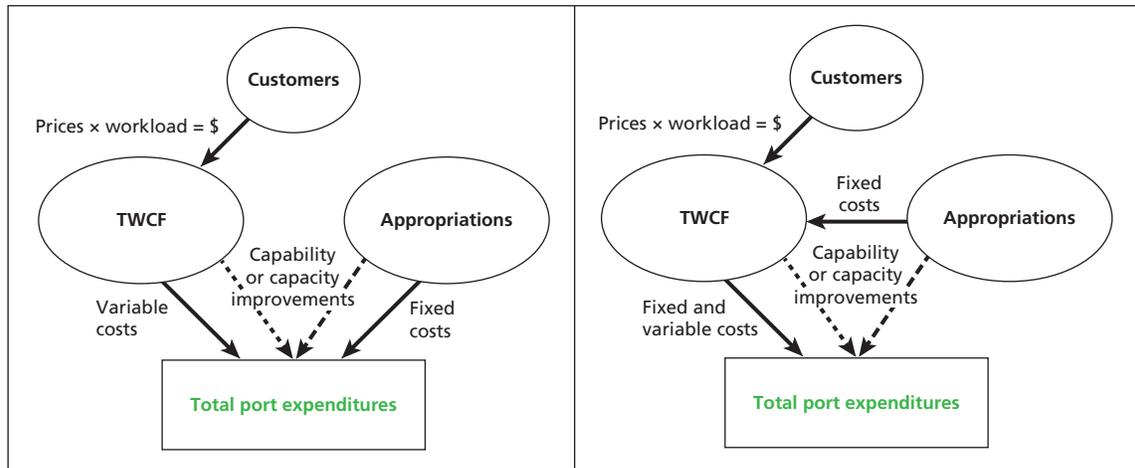
Another criterion espoused by experts we interviewed is *simplicity*, i.e., the chosen funding mechanism should use existing (or easily obtained) financial data to the maximum extent possible to minimize recurring and one-time accounting and other management costs. Consolidating the ports on a single funding approach would intrinsically increase simplicity.

An additional criterion one could consider is *fairness*. We were told that roughly 20 percent of MOTSU's and MOTCO's workload in recent years has come from the Air Force and the Marine Corps. To the extent that Army appropriations provide more of the ports' funding, the Air Force and the Marine Corps benefit at the expense of the Army, though this may not be a concern to the DoD or taxpayers.

Figure S.1 presents two variations of an ammunition port funding policy that we feel rate highly with respect to the asserted criteria.

We think that expenditures used to maintain a port's existing capabilities and capacities should be funded by appropriation. The majority of these expenditures are fixed costs, i.e., they do not vary with the port's annual output level. It would be desirable for the budgetary process

Figure S.1
Two Proposed Variations of Ports' Financial Structure



to explicitly acknowledge the fixed, output-invariant costs associated with having ammunition port capabilities available. Paying for such costs through appropriation makes clear the DoD's fundamental decision on the level of ammunition port capability and capacity it wishes to fund. Reliance on price-generated revenue obscures the fundamental decision with the related, but different, decision of how much workload to put through a given port in a year. Since ammunition ports most centrally exist for infrequent, high-intensity deployments, the level of annual workload may be poorly correlated with the underlying requirement.

As opposed to fixed costs, variable costs are those that vary with a port's annual workload level. We think that variable costs should be funded by customers through revenue from TWCF prices. We further recommend that capacity and capability improvements be funded by whoever demands the improvement, e.g., the TWCF, operating commands.

Although the precise division of fixed costs, variable costs, and capacity/capability improvements has some grey areas, we show that most ammunition port costs in MOTSU's accounting data can be logically inserted into one of these categories.

Our two funding policy variations differ in that the variation on the left of Figure S.1 has appropriations directly pay for fixed costs, whereas in the variation on the right of Figure S.1, appropriations would 100 percent reimburse the TWCF that would actually make the fixed cost expenditures. Under the latter variation, the port's management would have more discretion and flexibility but less chain-of-command oversight.

A strength of either proposed variation is that customers, through TWCF prices, would face marginal costs when deciding how much workload to put through a port. Efficiency is enhanced when customers make decisions based on marginal, not average, costs. Funding would be more stable than under arrangements with higher TWCF prices. Current MOTSU financial data can be used to implement either variation. Increased reliance on appropriations could benefit other military services, but at the expense of the Army.

The ports' current funding arrangements do not perform badly against our stated criteria. In that the TWCF pays for more fixed costs at MOTSU than at MOTCO, there is more behavior distortion from excessive prices at MOTSU. However, there is little evidence at observed price levels that ammunition-shipping customers respond to prices, i.e., ports' locations and capabilities are more important than their prices in customer decisionmaking. We were told that military services choose which port to use on the basis of geography, ship and port availability, and port capability, with TWCF prices being of little importance. Of course, at some price level, customers' ammunition port decisions would be altered.

The current funding arrangements rate less well against the funding stability criterion. When workload changes, revenue from customers likely changes more than costs. A fairness concern with the current funding arrangements is that MOTCO's greater reliance on appropriations benefits other services more than MOTSU's current arrangement.

Our data analyses suggest that TWCF expenditures at MOTSU have exceeded the port's variable cost levels in recent years, i.e., under our policy variations, appropriations would be responsible for more funding at MOTSU and the TWCF responsible for less than has been the case.

Conclusions

Table S.1 summarizes our evaluations of how different prospective ammunition port funding arrangements rate with respect to the criteria we developed. We color cells to encapsulate our evaluation, with dark green being most favorable and yellow most concerning. (We do not rate any cells so adversely as to color them red.)

With the exception of complete reliance on working capital funding, we believe that a range of ammunition port funding approaches could work acceptably well for MOTCO and MOTSU. The key mitigating characteristic for ammunition ports is the apparently limited price elasticity of demand for the ports' services. When customers have greater demand elasticity, e.g., they can repair items themselves rather than sending them to government depots, pricing decisions and hence the chosen funding approach are of greater importance.

Table S.1
A Summary of Evaluations of Alternative Policies for Funding Ammunition Ports

Prospective Funding Approach	Nondistortion?	Funding Stability?	Simplicity?	Fairness?	Comment
Appropriation	Free issue can be abused though a behavior distortion seems unlikely for ammunition ports	Stability is dependent on political decisions	Canonical approach to governmental finance	Tenants, non-host customers can free-ride	Probably an acceptable approach for ammunition ports given apparent inelasticity of demand, though there would need to be a mechanism to fund unanticipated variable costs
Current MOTCO	Stevadore costs are appropriately included in TWCF prices	MOTCO funding has been argued to be inadequate	MOTCO has both appropriation and working capital fund accounting	Comparatively greater reliance on appropriations benefits other services	MOTCO has historically been underfunded, but this underfunding is a separate issue from its financial structure
Our Proposed Variations	Customers pay the marginal costs generated by their workload	Would the political process routinely fund ports' considerable fixed costs?	We illustrate how it could be implemented with MOTSU's current financial data	Other services cover their marginal costs, but do not pay any fixed costs	The choice between our two proposed variations depends on one's view of the management discretion versus oversight tradeoff
Current MOTSU	Customers' prices include a proration of largely fixed BASOPS costs	MOTSU has been adroit at harvesting additional funding opportunities	Current financial system provides more descriptive data than MOTCO's but BASOPS reimbursement is hard to identify	Non-Army customers pay for some of MOTSU's fixed costs	The 76 percent BASOPS reimbursement is a historical artifact with no apparent basis relative to any other specific BASOPS reimbursement proportion
Working Capital Fund	Working capital fund prices include fixed costs, discouraging workload	Potentially volatile if workload varies while prices are fixed	Needs revenue-oriented accounting different from traditional governmental accounting	All costs are allocated across customers in proportion to workload	This approach seems inappropriate as ammunition ports primarily exist to fulfill wartime mobilization requirements

NOTE: Dark green denotes most favorable, yellow denotes least favorable.