Aligning Incentives in the Transportation Working Capital Fund

Cost Recovery While Retaining Readiness in Military Transportation

Kathryn Connor, Michael Vasseur, Laura H. Baldwin

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Preface

As its mission, the U.S. Transportation Command (USTRANSCOM), through the Defense Transportation System (DTS), is responsible for moving units, people, equipment, and households by ship, aircraft, rail, and truck for the Department of Defense during wartime and peacetime. USTRANSCOM recovers the vast majority of its costs through the Transportation Working Capital Fund (TWCF), in which customers pay for movement services through rates. When customers observe that the TWCF rates are higher than equivalent rates of other transportation providers, they may seek alternative options and thus shift movements outside the DTS, which could affect readiness. Peacetime movements contribute to USTRANSCOM's ability to be ready for its wartime mission, so shifting these movements outside the DTS can increase overall costs to the Department of Defense when other readiness activities must be funded. This report considers TWCF cost-recovery approaches that incentivize USTRANSCOM's customers to make transportation decisions that support USTRANSCOM's ability to meet wartime requirements. The analysis took place from December 2016 through August 2017 and reflects our team's understanding of USTRANSCOM processes at that time.

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Summary

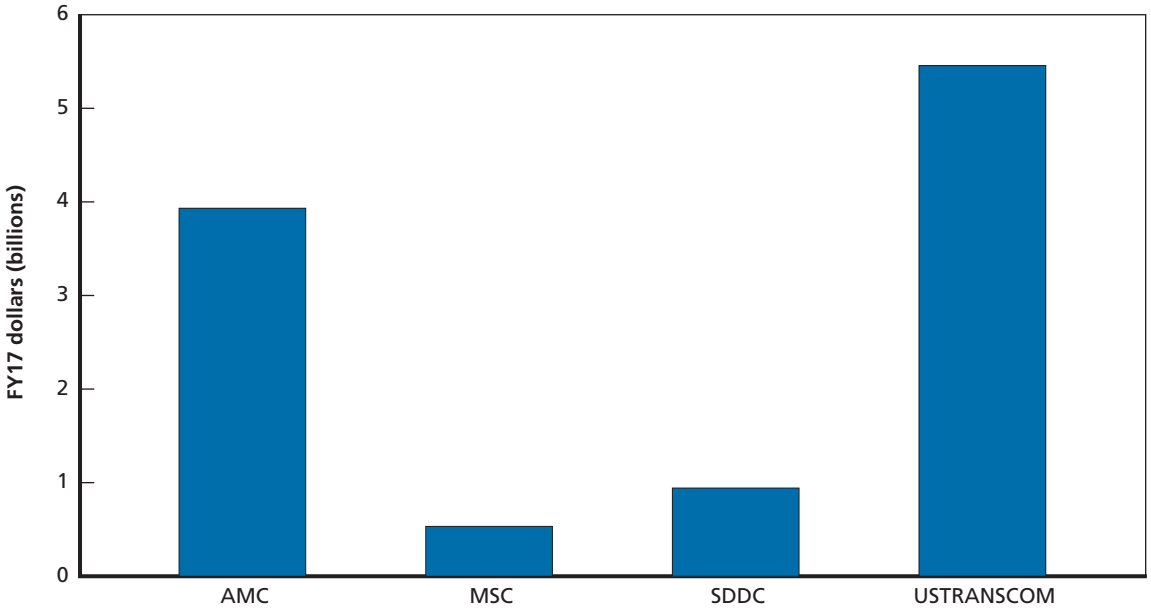
The U.S. Transportation Command (USTRANSCOM) manages the Defense Transportation System (DTS) and has an official mission that includes both wartime and peacetime operations: "USTRANSCOM provides full-spectrum global mobility solutions and related enabling capabilities for supported customers' requirements in peace and war" (USTRANSCOM, undated-a). In other words, USTRANSCOM's responsibility is to move units, people, equipment, and households by ship, aircraft, rail, and truck for the Department of Defense (DoD). In addition, the aforementioned language of wartime and peacetime may emphasize a dichotomy that is better seen as a continuum between peacetime and wartime. Since late 2001, contingency requirements have helped illustrate the potential surge that will be key to larger future demands. USTRANSCOM plays a critical transportation role through its integrated multimodal distribution network that crosses the U.S. Air Force's Air Mobility Command (AMC), the U.S. Navy's Military Sealift Command (MSC), and the U.S. Army's Surface Deployment and Distribution Command (SDDC). AMC provides a range of airlift services, including channel passenger movements and unit moves.[1] SDDC provides port-handling services, liner movements on cargo ships, rail transport, multimodal transportation, trucking, and personal vehicle transportation. MSC provides both organic and commercial ship charters.

More broadly, USTRANSCOM offers a range of important enabling services in support of movements. These include coordination of complex movements across multiple modes to meet required timelines, adjudication of scarce transportation resources during peacetime and wartime, strategic management of relevant industrial bases, strategic management of a network of ports around the globe to support contingency plans, and information assurance across USTRANSCOM's broad and complex supply chain. USTRANSCOM employed 4,129 civilians and 12,085 military personnel in fiscal year (FY) 2017. In addition, USTRANSCOM revenues in FY17 were over $5 billion. Figure S.1 separates this revenue by component command.

Although customers see the services directly associated with their shipments, they are often not aware of the broader capabilities provided by USTRANSCOM in support of movements and mission readiness. The peacetime and wartime movements are interrelated, because many, but not all, customer movements in peacetime are crucial for preparing USTRANSCOM and its components for future wartime requirements. For instance, unit moves by AMC's chartered aircraft for joint exercises prepare crews to load and transport equipment for future contingency operations. Similarly, loading the Army's tracked and wheeled vehicles onto railcars requires experience in peacetime to ensure that the vehicles arrive undamaged at their destinations in wartime. Other movements are less beneficial to USTRANSCOM readiness; for instance, the

[1] Unit moves are when an entire military unit moves with much of its equipment for an exercise, special operation, or contingency operation overseas.

Figure S.1
USTRANSCOM FY17 Total Revenue, by Component



SOURCE: Component FY17 IF-12s (Excel spreadsheets provided by USTRANSCOM).
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100th time that spare parts are sent to a Western European port or the movement of personal vehicles—though important for other reasons, such as personnel readiness—do not necessarily help USTRANSCOM prepare for wartime operations. There are diminishing returns to readiness for some activities. During war, the supply chain visibility provided by centralized transportation within USTRANSCOM assets and contracts is key for planning.

USTRANSCOM utilizes a hybrid working-capital fund (WCF) approach to recover its costs, which goes by the name Transportation Working Capital Fund (TWCF). USTRANSCOM charges rates to customers for specific services, such as moving a container by surface transportation or chartering an aircraft to move personnel; these rates include some fixed costs. How these rates are determined varies by the service provided. USTRANSCOM receives revenue from other sources to cover additional costs; these include Service Level Bills for USTRANSCOM services, such as traffic management, and the Air Force's Airlift Readiness Account, which are paid for by appropriations from the services. We refer to these sources collectively as *non-rate revenue*. USTRANSCOM does not generally receive any appropriations, instead relying on the TWCF to fund its activities.

Recent efforts by a USTRANSCOM working group on DTS viability found that customers perceive the cost of movements as being too high (USTRANSCOM, 2016b). Specifically, they perceive that USTRANSCOM is recovering costs unrelated to their movements through rates. Further, some customers have transportation options outside the DTS,[2] and these customers make decisions based on relative prices among options. Because customer peacetime movements help ensure that USTRANSCOM is ready to execute required move-

[2] For instance, the Defense Commissary Agency can use carriers outside the DTS. Also, programs that select contractor logistics support bypass DTS movements and contracts.

ments in wartime, USTRANSCOM is concerned that the current structure of rates creates customer incentives that are misaligned with its wartime mission. USTRANSCOM asked the RAND Corporation to make recommendations for changes to TWCF cost recovery to better align customer peacetime decisions with the wartime mission.

To recommend a cost-recovery approach that meets this objective and improves transparency, we reviewed literature on commercial WCF best practices, analyzed budget and cost data provided by USTRANSCOM Program Analysis and Financial Management, and interviewed stakeholders at USTRANSCOM's three service components (SDDC, AMC, and MSC). We applied lessons learned in these analyses to recommend changes to TWCF cost recovery; then we examined these changes in the context of five deep-dive case studies. Four of the case studies were proposed by USTRANSCOM prior to the project kickoff. The fifth is the result of discussions with USTRANSCOM leadership about how commercial supply chains may or may not integrate with USTRANSCOM during surge operations.

Best Practices from the WCF Theory

For organizations with distributed decisionmaking among internal customers and for supply organizations, WCF systems help align incentives across the organizations, which should result in decisions that are good for the entire enterprise. The relevant business literature on transfer pricing between internal components of a larger enterprise, the commercial analog to a WCF, indicates clear best practices for making cost-effective decisions that help the organization maximize profits. Prices should be transparent and reflect only the costs that customers directly impose on the WCF (i.e., variable costs). Fixed costs of the internal supply organization, which exist independent of customer demand, should be recovered through fees or other non-price mechanisms. This cost-recovery structure provides incentives for customers to use the internal supplier when it is cost-effective to do so and to choose an external supplier when this lowers overall costs to the enterprise. If there is no work for the internal organization, then it should be closed.

Tailoring Best Practices to the TWCF

Today, the TWCF rates include some portion of fixed costs. As we develop recommendations to refine the TWCF cost-recovery approach, it is important to consider that USTRANSCOM's goals are more complex than those typically found in industry, because USTRANSCOM must accomplish its mission at a wide range of operational tempo. And many types of peacetime movements help USTRANSCOM prepare for the needed wartime capability. Keeping these types of movements within the DTS can contribute to overall readiness. Therefore, unlike private industry, it is undesirable for an internal service such as USTRANSCOM to close if there is small demand for its services, because it is critical for wartime operations. Also, although USTRANSCOM is not concerned with maximizing profits, as is private industry, it needs to break even and can still benefit from cost-minimization and cost-efficiency.

Thus, customers need to be encouraged to use these internal services, either through mandates to use the services in DoD regulations or through financial subsidies. A centralized regulatory approach would need to support compliance through audits and penalties. Then the WCF would help smooth the fiscal effects of differences in actual versus projected workload

and any midyear cost changes. If customers are unwilling to work within a regulatory framework, they may push to change the regulations. Alternatively, DoD can continue with a decentralized decisionmaking approach with subsidization of the rates to align customer incentives with desired actions. This is the approach that USTRANSCOM asked RAND to pursue in this analysis. This approach allows customers to continue making choices about how much materiel they want to move and the mode of the movements.

Although eliminating charges to customers for movements and recovering costs through more-traditional funding mechanisms might eliminate the problem of customers shifting movements that contribute to readiness outside the DTS, this measure is likely to create other challenges. Customers make decisions about characteristics of movements that drive costs—such as how much cargo they need to ship and how fast they require it to arrive. If there were no cost implications of shipping more materiel than might be needed and using the fastest delivery time, customers would do so to reduce their risk of not having what they need when they need it. However, USTRANSCOM has limited resources to meet customers' needs in peacetime and wartime. Therefore, it needs a mechanism to help prioritize customer requirements. The TWCF can be used to serve this role when prices are structured transparently to incentivize customers to make wise choices about their transportation needs.

Recommendations

Based on the characteristics of USTRANSCOM, we recommend two general principles to guide changes to the existing TWCF cost-recovery structure to better align customer incentives with what USTRANSCOM needs to support its wartime mission.

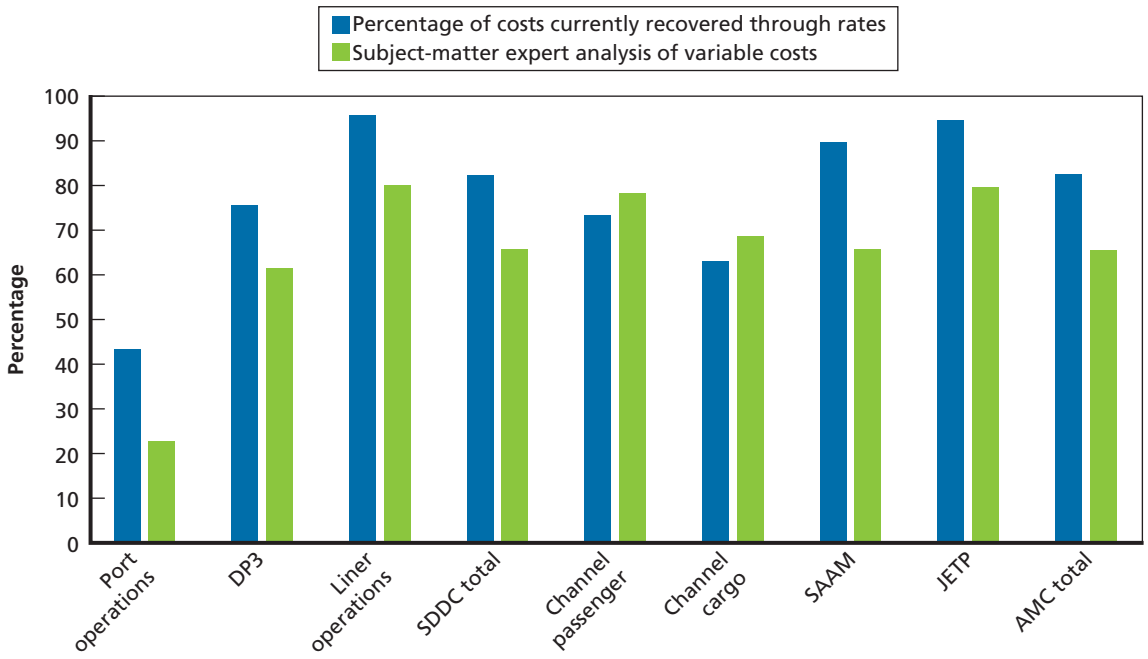
1. Recover fixed costs through non-rate mechanisms, rather than through rates.
2. Adjust rates to reflect activities' effects on USTRANSCOM readiness.

Our first recommendation is for USTRANSCOM to recover fixed costs through non-rate mechanisms to better align rates with the additional workload that customers place on the system. In this analysis, we assess what portion of USTRANSCOM costs are fixed with respect to customer peacetime movements and find that the overall percentage varies by business line, as shown in Figure S.2. For all business lines, other than passenger and cargo airlift, the amount recovered through the rates exceeds the estimated variable costs. Thus, the percentage of costs that we recommend moving from rate to non-rate revenue varies by business line.

For instance, liner operations within SDDC recover 97 percent of costs through the rates, but the analysis of variable costs suggests that it should be closer to 80 percent. Similarly, Special Assignment Airlift Mission (SAAM) and exercise movements within AMC recover more than they would if rates were solely based on variable costs. These findings suggest that many of the rates could be lowered to improve efficiency. Our analysis also led to recommendations for selecting among alternative non-rate cost-recovery mechanisms.

Our second recommendation is that rates be structured to encourage customers to keep movements that contribute to USTRANSCOM readiness within the DTS and to encourage customers to make cost-effective decisions for other movements. When customers have alternative transportation options, we recommend that rates reflect the lesser of the variable cost of providing the movement within the DTS or the rate customers would pay using alternative transportation, to provide an incentive for customers to keep these desirable movements in the DTS. For instance, if there are shipments to a strategically valuable but infrequently used

Figure S.2
SDDC and AMC Business-Line Costs, Rates Versus Percentage Variable



SOURCE: FY16 IF-12s (Excel spreadsheets provided by USTRANSCOM).
NOTE: DP3 = Defense Personal Property Program; JETP = Joint Exercise Training Program.
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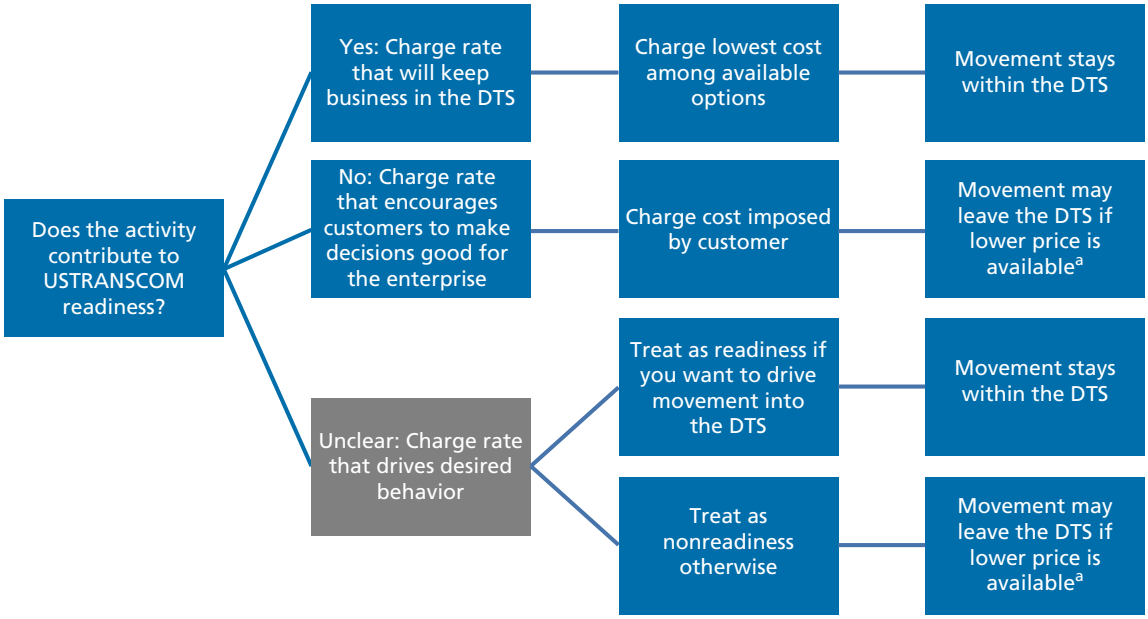
location when USTRANSCOM is not surging, then USTRANSCOM should set its price to match commercial options. Costs beyond the DTS variable cost would need to be recovered through non-rate mechanisms. When no alternative option exists, customers should pay the variable cost of the movement using the DTS. This pricing strategy ensures that movements that contribute to USTRANSCOM readiness will stay within the DTS. Movements that do not contribute to USTRANSCOM readiness may leave the DTS if customers find cheaper alternatives. For example, if the equipment being moved is not novel and if the location is commonly used, then the movement contributes little to readiness and USTRANSCOM should recoup its variable costs. Activities that fall in the gray area for readiness will require careful consideration by USTRANSCOM readiness and financial-management stakeholders. For instance, if movements in a particular business line are too low to exercise a capability, then a movement that may normally not support readiness may be valuable to keep within the DTS. Therefore, we recommend developing rates based on whether it is desirable to keep the movement in the DTS. In addition, shifting thinking to whether a mission builds readiness may clarify which missions USTRANSCOM should retain and when it may want to exit a line of business. Figure S.3 shows these options.

To implement the structure in Figure S.3, USTRANSCOM will need to work on understanding the right level of activity to exercise the assets, personnel, and facilities, similar to how individual units measure how much to train for sufficient readiness. We recognize that moving toward best practices requires important changes to regulations, transparency, processes, and data systems and that these can take considerable time and resources. We recommend taking these intermediary steps because they set the stage for transparency in rates, rather than prioritizing rate changes in one component before another. There are manageable

Figure S.3
Proposed USTRANSCOM Rate Structure Flowchart



[a] Many movements (such as hazardous material) can only be done by an organic aircraft by regulation; thus, those would need to stay within the DTS.

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steps that USTRANSCOM Program Analysis and Financial Management can take in the near term to begin implementation.

For example, in the port operations business line, we recognize the efforts to remove fixed costs from the rates today and recommend that the effort continue with rates recovering about 33 percent of costs to better reflect the variable costs imposed by the customer. In addition, we recommend further study into rates that shippers charge for port operations. Customers have a choice in how port operations are provided, and that should affect the rates USTRANSCOM charges the customers that improve readiness.

In the SAAM and JETP business lines, we find that customers are being given worst-case-scenario cost estimates that may discourage some customer movements that would support readiness. There is significant variation in positioning and depositioning costs on organic movements; this variation falls outside of customer control and cannot be predicted in advance. Thus, we recommend charging the average positioning and depositioning costs (which are all variable costs) as a percentage of the number of flying hours for the main mission, rather than charging actual flying hours for positioning and depositioning legs.

In liner operations, our analysis indicates that approximately 86 percent of the FY16 costs are variable with customer workload, with the remaining 14 percent of costs being fixed. Therefore, approximately 9 percent of costs that are currently recovered through rates do not appear to vary with customer workload. We would recommend recovering these costs through non-rate mechanisms. In this case, we recommend the establishment of a Service Level Bill to fund business systems, general and administrative expenses, and other fixed costs. Establishing a Service Level Bill tied to recovering fixed liner costs would give USTRANSCOM, through SDDC, an opportunity to negotiate with services about what they provide in the liner business area and make transparent to customers what they are paying for in the rates.

Acknowledgments

Robert Folen of U.S. Transportation Command Program Analysis and Financial Management Directorate (J8) served ably as this project's client point of contact. We appreciate the assistance from his colleagues Lori Tucker, John Tetzner, Pat Davis, Lauri Pierson, Tim Landvogt, Jessica Krisch, and Ryane Chatman. In addition, we received invaluable insight from Air Mobility Command, Surface Deployment and Distribution Command, Military Sealift Command, and Fusion Center stakeholders. We also appreciate the insights provided by Bruce Busler and his team at the Joint Distribution Process Analysis Center. Additionally, we appreciate the strategic guidance provided by Lieutenant General Stephen R. Lyons throughout the project's inception and analysis phases.

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Abbreviations

ADPE	Automatic Data Processing Equipment
AMC	Air Mobility Command
AOR	accumulated operating result
ARA	Airlift Readiness Account
CRAF	Civil Reserve Air Fleet
DeCA	Defense Commissary Agency
DFAS	Defense Financial and Accounting Services
DLA	Defense Logistics Agency
DoD	Department of Defense
DP3	Defense Personal Property Program
DPS	Defense Personal Property System
DTS	Defense Transportation System
DWCF	Defense Working Capital Fund
FMR	Financial Management Regulation
FY	fiscal year
G&A	general and administrative
IT	information technology
J8	Program Analysis and Financial Management Directorate
JETP	Joint Exercise Training Program
MARAD	Maritime Administration
MOGAS	mobility gasoline
MSC	Military Sealift Command
POL	petroleum, oil, and lubricants
ROS	reduced operating status

SAAM	Special Assignment Airlift Mission
SDDC	Surface Deployment and Distribution Command
SLB	Service Level Bill
SME	subject-matter expert
TWCF	Transportation Working Capital Fund
USCENTCOM	U.S. Central Command
USTRANSCOM	United States Transportation Command
VISA	Voluntary Intermodal Sealift Agreement
WCF	working-capital fund

CHAPTER ONE

Introduction

The U.S. Transportation Command (USTRANSCOM) exists to manage the Defense Transportation System (DTS), which provides full-spectrum peacetime transport for Department of Defense (DoD) customers and maintains a surge capacity required for wartime needs. USTRANSCOM's official vision is to be "[t]he transportation and enabling capability provider of choice" (USTRANSCOM, undated-a).

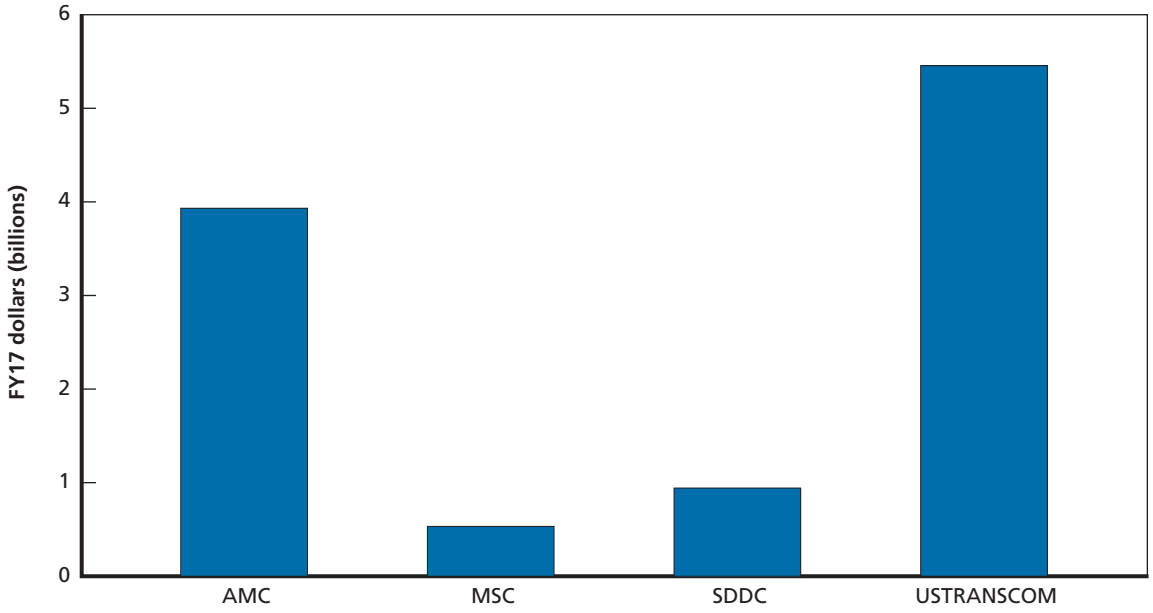
USTRANSCOM has its roots in the Goldwater-Nichols Department of Defense Reorganization Act of 1986, which allowed DoD to unify transportation into a single functional command, originally known as the Unified Transportation Command (Pub. L. 99-433, 1986). The ideal structure was debated, and the President's Blue Ribbon Commission on Defense Management, also known as the Packard Commission, formed USTRANSCOM in 1988, when it became an operational unified combatant command (Engstron, 1991). In these early years, the mission was "to provide global air, land and sea transportation to meet national security objectives" (Engstron, 1991).

In recent testimony to Congress, General Darren W. McDew, Commander of USTRANSCOM, highlighted that the command is a necessary enabler of combat power projection (McDew, 2017). The military's wartime readiness relies on a robust and responsive supply chain. USTRANSCOM plays a critical transportation role in that chain through its integrated multimodal distribution network that crosses the U.S. Air Force's Air Mobility Command (AMC), the U.S. Navy's Military Sealift Command (MSC), and the U.S. Army's Surface Deployment and Distribution Command (SDDC). AMC provides a range of airlift services, including channel movements and unit moves.[1] SDDC provides port-handling services, liner movements on cargo ships, rail transport, multimodal transportation, and trucking and personal-vehicle transportation. MSC provides both organic and commercial ship charters.

More broadly, USTRANSCOM offers a range of important transportation-enabling services in support of movements, including coordination of complex movements across multiple modes to meet required timelines, adjudication of scarce transportation resources during peacetime and wartime, and strategic management of relevant industrial bases. In fiscal year (FY) 2017, USTRANSCOM employed 4,129 civilians and 12,085 military personnel. In addition, USTRANSCOM revenues in FY17 were over $5 billion. Figure 1.1 separates this revenue by component command.

[1] Unit moves are when an entire military unit moves with much of its equipment for an exercise, special operation, or contingency operation overseas.

Figure 1.1
USTRANSCOM FY17 Total Revenue, by Component



SOURCE: Component FY17 IF-12s (Excel spreadsheets provided by USTRANSCOM).
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USTRANSCOM Readiness

Customers see the movement services associated with their shipments but are not always aware of the broader capabilities provided by USTRANSCOM in support of movements and mission readiness. For USTRANSCOM to be ready to meet its mission requirements, it needs to maintain a wide range of capabilities. USTRANSCOM defines *readiness* as "the underlying infrastructure, assets, and people that provide USTRANSCOM with the ability to provide a global spectrum of mobility solutions and related enabling capabilities" (USTRANSCOM, 2016a). In 2016, USTRANSCOM Program Analysis and Financial Management Directorate (J8) found readiness costs throughout its FY15 cost structure and has found readiness costs crossing its direct transportation services, transportation mission-enabling support, and management headquarters activities. Wartime mission requirements are derived from operational plans, including surge capacity to accommodate the volume of cargo needed to move by surface (a combination of cargo ships, rail, and trucking) and air according to Time Phased Force Deployment Data, as well as peacetime training and exercises. Readiness requirements apply to both USTRANSCOM headquarters and the service components.

In this analysis, we do not assess the types and levels of activity required for USTRANSCOM to be ready, as this question is beyond the scope of this effort.[2] We also do not draw a line where peacetime shifts into wartime, because recent history has shown that there is a continuum in terms of materiel movement. Instead, we focus on the elements that go

[2] Training requirements and levels of movement required for readiness were not available at the USTRANSCOM level. AMC has defined training requirements for its organic airlift, which have been met or exceeded in recent years.

into readiness—people, equipment, and infrastructure—and how they align with peacetime activities.

First, USTRANSCOM must have trained personnel who can meet the requirements of the mission. At the headquarters level, this means that personnel need to understand how to develop and update joint distribution processes, contract with transportation providers, work within legal constraints, assess threats to intermodal operations, use and develop transportation management information technology (IT) systems, and develop policy to synchronize complex mobility operations (USTRANSCOM, undated-b). Within the service components, these trained personnel include pilots, maintainers, loaders, schedulers, and specialists in port operations. In the case of MSC reduced operating status (ROS) ships, the U.S. merchant mariner workforce is an important limitation. Unfortunately, the pool of merchant mariners is aging, and certifications for steam ships that are present within the ROS fleet are dwindling.

Second, USTRANSCOM relies on its components, contractors, and the Maritime Administration (MARAD) subsidies to ships that are available for defense purposes to provide ready equipment. AMC and MSC contain both organic assets and commercial assets that must be balanced. This equipment includes organic aircraft and ships, maintenance capabilities, and spares required for maintenance. In contrast, SDDC's business lines rely less on organic assets and more on contracted assets and therefore must consider the U.S. flagged shipping industrial base. The U.S. flagged shipping industry faces limited capacity for building cargo ships and a highly regulated and aging Merchant Marine workforce. Although most of these assets are not owned, or administered, by USTRANSCOM, peacetime movements demonstrate the capacity of these components to integrate into the broader DTS.

Third, USTRANSCOM readiness relies on infrastructure, such as contracts for commercial services and ports, as well as IT systems. Contracts are a critical form of readiness capacity, because the government does not have sufficient organic transportation capacity to meet wartime surge requirements. Contracts can include both direct transportation services (such as ship charters and container movements) and indirect support services (such as port operations stevedoring contracts). IT systems (such as transportation management business systems) are also crucial to USTRANSCOM operations because they provide the conduit for warfighters to communicate their needs with transportation providers and to manage operations effectively.

Many types of peacetime operations offer opportunities for USTRANSCOM to perform activities needed to stay ready for wartime surge. As examples, peacetime operations offer the opportunity for personnel to perfect skills—workload planning, palletizing materiel, loading and unloading, normal flying operations, and port operations. Other training falls outside normal peacetime operations and must be planned for separately. For instance, in port operations, additional experience is necessary to load certain large wheeled military equipment, but stevedores would rarely get experience with these vehicles in normal commercial operations. AMC pilots need to execute hard landings and flying with a single engine, which they cannot do while carrying customer cargo. Some weapon systems rely on contractor logistics support during peacetime but need to connect with the DTS during wartime surge. USTRANSCOM must exercise these required capabilities in peacetime to be ready to support wartime needs. Other activities (such as moving service members' personal vehicles) do not directly aid USTRANSCOM readiness but do provide morale and welfare impacts for other portions of DoD. Although this report does not define what level of activity is necessary or sufficient to prepare for surge operation, we do identify how USTRANSCOM can price its services for those movements that contribute to readiness.

USTRANSCOM Funding

USTRANSCOM utilizes the Transportation Working Capital Fund (TWCF) to recover many of the costs of providing transportation services to DoD.[3] Within this market-like environment, USTRANSCOM provides such transportation services as surface cargo movement and passenger flights to DoD customers, and these customers pay rates for the services. Rate revenue is supplemented with revenue from other sources, including Service Level Bills (SLBs) for USTRANSCOM services, including traffic management and the Air Force's Airlift Readiness Account (ARA).[4] Another source of revenue for USTRANSCOM is direct appropriations from Congress for one-time programs, such as the Fallen Heroes program. We refer to these revenues as *non-rate revenue*. Overall, non-rate revenue accounts for about 5 percent of the 2016 TWCF revenue for USTRANSCOM, with the exception of MSC, which we discuss in more detail in Chapter Two.

As the DoD budget process precedes execution by two years, the rate-setting process also occurs far in advance of the actual demand for mobility services, based on workload estimates from the services. Lags between rate-setting and execution can lead to imbalances in cost recovery, as actual demand for services may differ from estimates. For instance, during the year of execution, the Army may decide to do fewer exercises than originally estimated. Customers do not have to actually buy all of the movements that they estimated in the projections. This can result in an operational loss for USTRANSCOM, and it has limited ability to encourage more movements. USTRANSCOM tracks these as net operating results within the TWCF and adjusts future rates to account for these overages or surpluses for an accumulated operating result of zero over time (DoD, 2014). In addition, some costs can change over the course of the year, which creates imbalances. Therefore, both costs and imbalances create rates, and these imbalances are based on differences between prior estimates and actual execution.

Motivation

One potential challenge of a working-capital fund (WCF) approach to cost recovery is setting rates that provide customers with incentives to take actions that are in the best interest of the enterprise as a whole. If customers view rates as low, they may inflate their requests in ways that are detrimental to the defense transportation system. If rates are perceived as too high, customers may seek transportation services outside the DTS, at an increased cost to DoD. Because commercial options exist for many types of services provided by USTRANSCOM, customers have an easy benchmark to evaluate the reasonableness of rates from their perspective.

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[3] Interestingly, the TWCF originated in the 1950s, before USTRANSCOM existed, when DoD issued its initial guidance on industrial funds. Industrial funds were meant for organizations that produced goods or services and could support a buyer-seller relationship (DoD, 2014). As a result of this guidance, all three components that became USTRANSCOM started using industrial funds in the 1950s. Over the years, the names and details of how the industrial funds were run changed, but in the mid-1990s, the funds were pulled into the Defense Working Capital Fund (DWCF) structure that exists in policy today (Connor et al., 2008).

[4] SLBs include traffic management, port readiness, vehicle-processing-center charges, distribution-process-owner management, radio-frequency identification tags, and Integrated Data Environment Global Transportation Network Convergence asset visibility (McCord, 2016).

A USTRANSCOM working group is currently evaluating rates in response to complaints from customers, including the perception that rates include fixed readiness costs not associated with customer peacetime movements and that costs are not managed efficiently and not transparent to customers (USTRANSCOM, 2016b). The deputy commander of USTRANSCOM asked the RAND Corporation to examine the current cost-recovery approach and make recommendations for restructuring rates within the WCF structure to incentivize customers to make peacetime movement decisions that are consistent with the wartime outcomes that USTRANSCOM must achieve. The WCF cost-recovery structure can be designed to support both the customer and the provider in making informed decisions about mobility and allow for decisions that are in the best interests of DoD as a whole.

To recommend a cost-recovery approach that meets this objective, we reviewed literature on commercial WCF best practices; analyzed budget and cost data provided by USTRANSCOM Program Analysis and Financial Management; and interviewed stakeholders at SDDC, AMC, and MSC. We then apply lessons learned in these analyses to the entire TWCF, as well as to specific aspects of the TWCF of interest to USTRANSCOM leadership. We assume that the TWCF will remain a WCF, including continuing to use rates, and resulting in accumulated operating results (AORs) that will be adjusted from year to year.[5]

Organization of This Report

The remainder of this report is structured as follows. In Chapter Two, we describe the process as it works today, including the services that USTRANSCOM provides, USTRANSCOM customers and their decisionmaking processes, and the calculations of current rates. Chapter Three explores the practices of commercial and government WCFs. Chapter Four applies the best practices identified in the prior chapter to USTRANSCOM and conducts analyses to inform a new process for TWCF cost recovery. Chapter Five examines five specific case studies of selected by USTRANSCOM leadership for in-depth implementation of cost-recovery recommendations. Chapter Six discusses steps to implement our cost-recovery recommendations for USTRANSCOM more generally. Finally, Appendix A highlights current policies and regulations that pertain to TWCF cost recovery, and Appendix B presents details of the correlation analysis.

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[5] In general, past losses are fixed costs, because they are sunk costs and cannot be changed. However, because the scoping conditions for this effort involve maintaining a WCF, we include these costs as being recovered through rates.

CHAPTER TWO

Overview of Current TWCF Processes

To improve TWCF cost-recovery processes, we first document the current process in terms of the types of customers the DTS supports, the services the DTS provides, and the rates that mediate between these sources of demand and the supply of transportation. We conducted this analysis by examining existing cost-recovery documentation created by J8 and interviewing subject-matter experts (SMEs) to explore the types of decisions made by USTRANSCOM and customers.

USTRANSCOM Customers

USTRANSCOM conducts the majority of its business, nearly three-quarters in FY16, with the military services. Other prominent customers are U.S. Special Operations Command and the Defense Logistics Agency (DLA). Roughly 4 percent of FY16 revenue was collected from Foreign Military Sales or other non-DoD customers. Figure 2.1 presents the full distribution of customers by percentage of revenue.

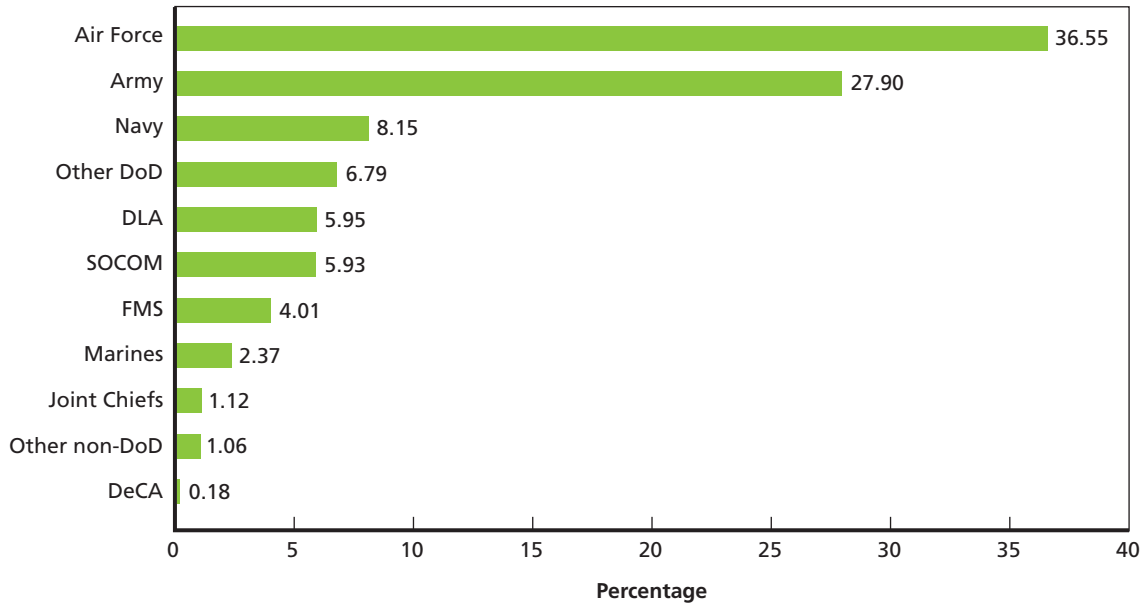
Reasons for Materiel Movement

All USTRANSCOM customers move materiel to support two major categories of activities: sustainment and unit move.

Sustainment customers tend to move smaller amounts (smaller than an entire unit move but can have varying and sometimes substantial size and weight) of materiel per shipment in individual door-to-door shipments on a regular basis. An example of this type of move would be sending U.S.-made food products to Europe to restock the commissaries or spare-part replenishments. Another source of sustainment customers is Foreign Military Sales—needing to move weapon systems and spares that customers purchased from the United States to their home countries. Because these customers tend to use door-to-door shipments, they receive very little direction from booking specialists in USTRANSCOM. These customers pay for these movements directly out of their own budgets and often have options outside the DTS, using such commercial carriers as UPS, FedEx, or DHL. As a result, customers are very price-sensitive and will choose to go outside USTRANSCOM if there is a lower-price option.

Unit move customers are of two types: Those who are moving an entire unit's worth of materiel for an *exercise* or those carrying out a *contingency* operation. *Exercise* customers are moving their entire units to participate in an exercise, either with another country or with the

Figure 2.1
FY16 USTRANSCOM Customer Sources, by Percentage of Total Revenue



SOURCES: Analysis of FY11 and FY18 President's Budget spreadsheets (provided by USTRANSCOM).
NOTE: DeCA = Defense Commissary Agency; FMS = Foreign Military Sales; SOCOM = U.S. Special Operations Command.
RAND *RR2438-2.1*

other military services. These customers usually have a long lead time prior to their demand for mobility and have reasonably predictable requirements. This type of customer tends to work closely with USTRANSCOM planners to ensure that the command can meet the required delivery date. They are somewhat price-sensitive—because they are given a budget for the exercise, and any costs that are above that budget may need to come out of unit funds—but the exercises are not typically canceled if the costs are above budget. Contingency customers are at the heart of USTRANSCOM's wartime mission. Typically, they are moving their entire units overseas to meet a specific mission. For contingency customers, funding comes indirectly through a regional combatant command rather than unit funds. Because these customers do not directly pay for the move, and because the purpose is to directly meet military missions, they are more concerned with the timely arrival of materiel than the cost of a movement.

Regardless of the nature of their activities, customers have some ability to make choices when interacting with USTRANSCOM. All customers decide what materiel is to be shipped, how much is to be shipped, and the required delivery date. Depending on the type of materiel being moved, the customer may also have choices regarding who moves the materiel. The sustainment customers tend to shop around for the best prices by looking at the costs for a Joint Operation Planning and Execution System (JOPES) move, direct booking, and outside carriers. For instance, DeCA is allowed under regulation to contract for its own movements outside the DTS. In contrast, unit move customers are less likely to choose to go outside the system, because of the restrictions on moving materiel. For instance, hazardous material and ammunition movements will greatly constrict the customer's shipping options.

Decisions about the details of the movement process—including the shipping mode, carriers, and routings—are made by USTRANSCOM. Some of these decisions are constrained by customer choices. For example, customers with a short required delivery date will require air- rather than sea-lift capacity, or certain types of materiel (such as ammunition and hazardous materials) can be shipped only organically. In all cases, it is USTRANSCOM that decides specific aircraft or ships involved in movement, as well as the route and timing a movement will take.

USTRANSCOM Activities

USTRANSCOM supplies mobility through several business lines, which include but are not limited to the following:

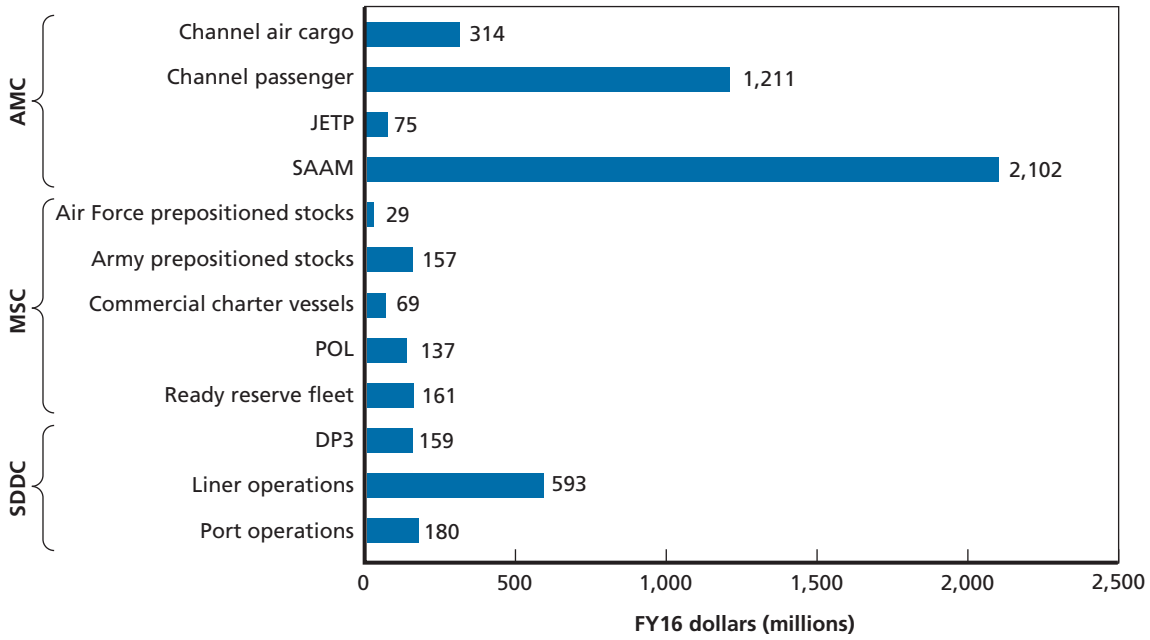
- AMC
  - channel air cargo
  - channel passenger
  - Special Assignment Airlift Mission (SAAM) and Joint Exercise Training Program (JETP)
- SDDC
  - port operations
  - liner operations
  - Defense Personal Property Program (DP3)
- MSC
  - commercial charter vessels
  - ready reserve fleet
  - petroleum, oil, and lubricants (POL)
  - Army and Air Force prepositioned ships.[1]

Figure 2.2 shows total revenue for each of these business lines.

The AMC business lines for channel air cargo and channel passenger are regularly scheduled flights that the military can use to airlift equipment and people to set locations around the world. In these channel business lines, the customer pays for the number of people or pounds of materiel being moved on established routes. If a customer needs to move materiel to a location not serviced by channel schedules or needs an entire aircraft, then the customer uses a charter through the SAAM and JETP lines of business, which are further described in Chapter Five. In addition to moving military equipment cargo, AMC is involved in specialized missions—for example, aerial refueling and aeromedical evacuation. AMC also has training activities that are paid for directly by the Air Force, which we exclude from the TWCF business line analysis because they are paid for by the Air Force outside the WCF structure. AMC activities are supported with organic aviation assets and commercial aircraft through the Civil Reserve Air Fleet (CRAF) program. The CRAF program has historically provided about 40 percent of the airlift for DoD cargo and about 90 percent for passengers (McDew, 2017).

[1] SAAM/JETP, port operations, and liner operations are all discussed in more detail in the case studies provided in Chapter Five.

Figure 2.2
FY16 Total Revenue, by Business Line



SOURCE: Component FY16 IF-12s (Excel spreadsheets provided by USTRANSCOM).
RAND *RR2438-2.2*

SDDC contracts with ports to provide such local services as stevedoring and also has military battalions located at certain ports to assist with loading and unloading ships under port operations (see Chapter Five for more information). The SDDC business line for liner operations maintains a contract with cargo shippers for less than full-ship charters (see Chapter Five). SDDC also moves personal vehicles owned by service members and their families around the world in its vehicle-transportation and storage business line. In addition, SDDC does extensive work on multimodal surface transportation that combines rail, road, and ship cargo movements.

MSC works with the same U.S. flagged carriers as SDDC to allow for full-ship charters to move materiel to ports around the world on its contracts. Although some of these charters are for container cargo, others are for specialized missions, such as moving petroleum oil and lubricants. In addition, MSC works with the services to preposition materiel on ships to rapidly respond to surge requirements. MSC also manages a fleet of organic ships that can be called on to provide additional ship capacity during contingencies.

Both SDDC and MSC use primarily commercial capacity to meet peacetime movement requests because of the Jones Act (Pub. L. 261, 1920) and the Military Cargo Preference Act of 1904 (10 U.S.C. 2631, 2012).[2] During wartime, the percentage of cargo moved on commercial surface assets averages 90 percent (McDew, 2017). In addition, this reliance on com-

[2] Section 27 of the Merchant Marine Act of 1920 is colloquially known as the Jones Act. It requires that all goods that are transported by water between U.S. ports be put on U.S. flagged ships that are built in the United States, owned by citizens, and crewed by citizens or permanent residents. The law was, in part, a response to prior insufficient capacity in wartime by protecting U.S. shipbuilding and merchant marines. The Military Cargo Preference Act of 1904 requires that 100 percent

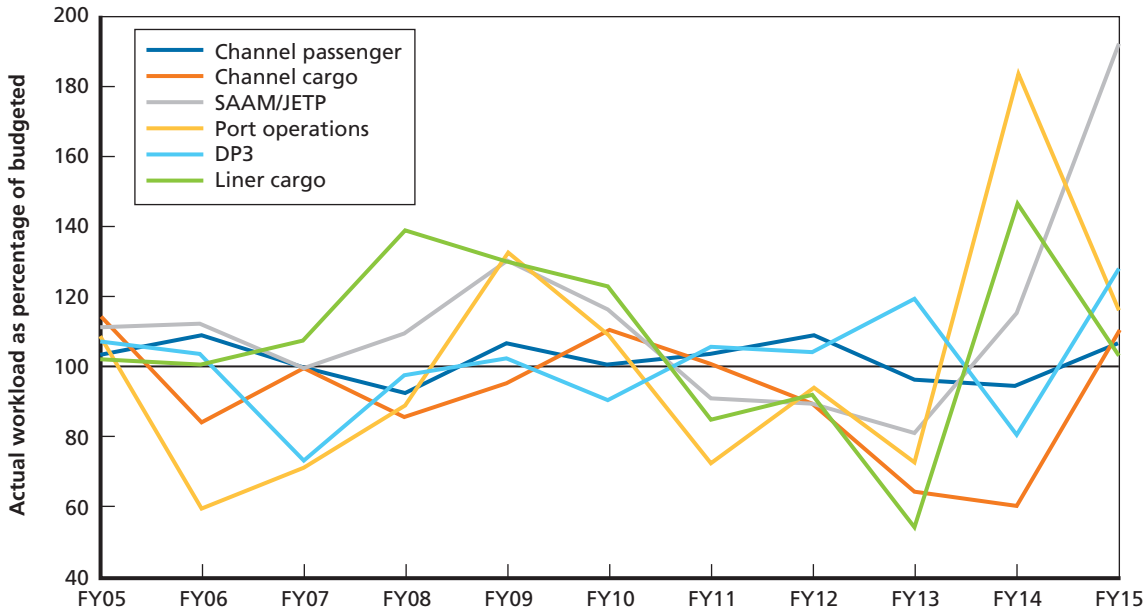
mercial partners, in theory, allows the U.S. government to have surface surge capacity on contract without having to pay the full cost for this capacity in peacetime. Economic forces have reduced demand for U.S. flagged ships in favor of cheaper foreign flagged vessels, so the U.S. military is a growing portion of the U.S. flagged fleet's customer base. In comparison, air, rail, and trucking are less reliant on U.S. military demand. The Air Force does not have as many statutory limitations and therefore continues to provide organic capacity for much of its cargo movements, but it does participate in CRAF to allow for additional wartime surge capacity. AMC accounts for the majority of USTRANSCOM's business by dollars, roughly three-quarters in FY16. SDDC is significantly smaller, but in FY16 it was roughly double the size of MSC business.

Figure 2.3 shows the comparison of USTRANSCOM's projection of its workload versus the actual workload for an FY. For many business lines, there are considerable variations year to year in the level of alignment between projections based on service allocations and what is actually executed in a given FY.

Why Have a WCF Approach?

Organizations can budget and recover costs in a multitude of ways. Most government functions receive appropriated funds; therefore, activities are provided to other departments without the need to recover costs through rates to customers. Appropriations work well for activities

Figure 2.3
USTRANSCOM Actual Workload as Percentage of Budgeted Workload, by Business Line



SOURCE: Component FY16 IF-12s (Excel spreadsheets provided by USTRANSCOM).
NOTE: Black line = Expected levels if budgeting matched actual values.
RAND *RR2438-2.3*

of U.S. military cargoes be on U.S. flagged vessels, unless the President finds that the rates charged by these vessels is "excessive or otherwise unreasonable" (10 U.S.C. 2631, 2012).

where the requirement is fairly predictable and costs are well understood. The downside is that, if the requirement increases between budgeting and execution, program leadership will need to obtain additional funding to cover the increase in mission or will be unable to satisfactorily fulfill that mission.

DoD has chosen a WCF approach for transportation services because of a number of characteristics of these activities, including the customer and provider market environment. The rates in a WCF play a useful resource allocation role, especially for limited air assets. Customers can shape requirements in ways that increase the costs of transportation services and excessively tax the system. If movements were free, customers would have no incentives to prioritize and limit items that must travel by air or to limit the quantities of materiel being sent to only what is needed for a particular mission or exercise. These unconstrained demands would impose huge costs on the system and exceed current resources. Therefore, customers need to prioritize their transportation requests, and rates can help accomplish this. By seeing the implications of different priority forms of shipping, customers can make informed decisions within their own portfolios based on their priorities and use premium transport assets for those movements with greatest urgency, with other movements going through lower-cost channels. However, WCFs, as they are typically structured, make the supplier organization's revenues more uncertain. Fixed costs, including the resources required to maintain wartime capacity, must be spread across many customers, and may be over- or underrecovered if actual workload does not match planned levels.[3]

In addition, many costs that DoD faces, such as fuel costs, are highly variable. It is difficult to account for this variation in appropriations. Moving highly variable costs into WCFs allows for DoD to smooth out costs so the rates do not change from day to day for the internal customers. Unfortunately, having steady rates also means that customers do not respond to the price increase by moving less materiel. The downside of short-term price stability is that, if fuel or other costs skyrocket and the WCF does not recover these costs, then recovering these losses can raise future prices more than if customers paid market rates. Also, WCFs allow for quicker surging of activity in response to contingencies than would be possible through reliance on appropriations, but the trade-off is that this allowance makes the appropriation process much more complicated, because each customer must receive appropriations to buy services from the WCF. Finally, a WCF can provide visibility into what activities will cost (Stewart, 2016).

USTRANSCOM Current Cost Recovery

In DoD, WCF rates are typically set to recover the expected total cost of providing the goods or services. Keating, Pint, et al. (2015) described this as "a DWCF provider, in conjunction with the customer, estimates how much and what types of work the DWCF provider will perform, along with the costs it will incur. Costs are allocated across the provider's products. Then each product's price is set as the ratio of expected costs allocated to the product divided by the quantity expected to be sold." Financial Management Regulation (FMR) policy suggests that the DWCF should not make or lose money by providing services, so the pricing is designed to break even if workload is similar to the forecast (DoD, 2017b).[4] Each year, USTRANSCOM Strategy, Capabilities, Policy and Logistics (J4) develops forecasts of work-

[3] A WCF needs to break even over the course of two to three years rather than yearly (DoD, 2014).

[4] Additional detail on the existing language in the DoD FMR appears in Appendix A.

load. Then, USTRANSCOM J8 develops its own expected average rates for most of the business areas, except where the costs are covered by SLBs or when policy dictates that the rate will be based on commercial rates. Most of the rates include overhead costs, such as capital depreciation and general and administrative (G&A) expenses, and the accumulated operating result. However, for some business lines, there are rules that adjust the percentage of total costs that will be recovered through the rates. Then these costs are divided over the anticipated workload for the coming years.

The customer rate structure varies by business line, as described in Table 2.1, and is used to support peacetime- and wartime-related movements. The table identifies the components and business lines and provides a brief description of the rate-setting method. The following columns indicate how much of the cost to USTRANSCOM is recovered in the rates and whether any administrative fees are applied to the cost. For example, for SDDC liner rates, the cost analysis department sets rates to recover 100 percent of expected costs, based on the payments made to carriers, plus the net operating result from the past year. The average carrier contract costs, also known as *blended rates*, are based on the average cost to move between two regions (i.e., traffic area pairs), average accessorial fees, and the size of the shipment in measurement tons (USTRANSCOM, 2015) and include a 34 percent surcharge to cover administrative costs. Chapter Five provides a more detailed description of liner costs. Ideally, policy states that the accumulated operating result should equal zero over a two-year period (USTRANSCOM, 2016c). For organic SAAM flights, the rate is designed to recover 91 percent of expected costs, including overhead and AORs, but for commercial flights where the administrative fee incorporates overhead. Under this rate structure, commercial SAAM/JETP flights are cheaper than organic ones to some destinations, but many customers are moving loads that require organic assets, such as ammunition. MSC typically charges its contract cost plus an administrative fee of 14 percent. The one exception is ROS ships. These government-owned ships are maintained by the Navy budget in peacetime, and a daily rate for usage is applied during wartime when demand exceeds commercial capacity.

In addition to the customer rate structure outlined in Table 2.1, AMC wants to reward customers that place an order and do not make many changes to the order at the last minute, because it makes scheduling aircraft more efficient. Therefore, AMC has a 10 percent scheduling incentive for commercial and organic SAAMs that meet the following criteria:

- Validation of the mission occurs 30 days or more before the mission.
- There are no significant user changes within 30 days of the originally scheduled takeoff (such as JETP priority, port of embarkation or debarkation, date available for pickup or date required for delivery, type or number of aircraft requested, load, or special support).
- The aircraft assigned is not a commercial domestic flight.
- The aircraft is not associated with presidential flights (AMC, 2016; AMC, 2017).

We are not sure what types of customers currently avail themselves of the scheduling incentive discounts. The discounts would drive behavior that would reduce labor associated with booking aircraft.

Non-Rate Revenue and Service Appropriated Responsibility

Some of USTRANSCOM's revenue is collected apart from rates. These non-rate revenues include reimbursables for services rendered to customers outside the normal lines of operation,

Table 2.1
Customer Rate Structure, by Component and Business Line

Command	Rate-Setting Method	% Recovery	Administrative Fee
AMC			
Channel cargo	Rate per pound; commercial benchmark	N/A	No
Channel passenger	Rate per passenger; commercial benchmark	N/A	No
Organic SAAM/JETP	Rate per flying hour;[a] cost recovery	91	No
Commercial SAAM/JETP	Commercial rate per flying hour[b]	100	Yes
SDDC			
Liner ocean	Blended rate, if traffic area pair; cost+, if multimodal or one-time only	100	34% liner; 20% multimodal or one-time only
Direct book	Contract cost	100	Yes,[c] 7–13%
Port handling	Full recovery	100	No
MSC			
Charter	Contract cost+	N/A	Yes, 14%
POL	Contract cost+	N/A	Yes, 14%
Prepositioned (Army and Air Force)	Contract cost+	N/A	Yes, 14%
ROS	During-peacetime docking cost: Navy budget; daily rate for use	0, docking cost; 100, daily rate	No

[a] Includes flying hours to position and deposition organic aircraft.

[b] Includes ferry hours, which are the equivalent of positioning and depositioning organic aircraft.

[c] DeCA's FY16 7% rate is based on a market survey of commercial freight forwarders (SDDC, 2015). All other SDDC direct-booking customers are charged an administrative fee of 13%, which is based on recouping SDDC liner G&A costs from the 2016 budget.

such as arranging ground transportation in the U.S. Central Command (USCENTCOM) area of responsibility or via SLBs. SLBs are payments that are appropriated to services and then paid to USTRANSCOM independent of execution-year workload. SLBs are established in advance for planning purposes via a memo from the Under Secretary of Defense (Comptroller) (see McCord, 2016, for an example). Other factors required for the DTS to function—primarily, organic asset procurement—are the responsibility of the services to appropriate without passing funds to USTRANSCOM. Finally, the TWCF occasionally receives one-time revenues to account for unique costs or unforeseen events. Table 2.2 provides examples observed in years for which we have budget data (FY06 to FY16) for all three USTRANSCOM service component commands.

Table 2.2
Examples of Non-Rate Revenue, by Service Component Command

Service Component Command	Non-Rate Revenue	Service Appropriated Responsibility	One-Time Revenue
AMC	ARA	Aircraft procurement, military construction, installation, management, and military personnel	Fuel-cost supplemental
MSC	Surge vessels in ROS	Ship procurement and other shipbuilding or conversion costs, installation, and management	
SDDC	Port-readiness SLB, traffic-management SLB, and Defense Freight Railway Interchange Fleet railcars	Military construction at ammunition ports, installation, management, and household goods (military personnel)	USCENTCOM container detention

SOURCES: Interviews with USTRANSCOM and component SMEs; component IF-12s (Excel spreadsheets provided by USTRANSCOM); McCord, 2016.

USTRANSCOM Today

In summary, USTRANSCOM offers a range of critical movement capabilities to its customers. In addition, it offers important enabling services that are supported through the rate structure for the TWCF and non-rate revenue described in this chapter. In the following chapters, we analyze best practices and apply those best practices to USTRANSCOM's unique supply chain challenges.

CHAPTER THREE

WCF Best Practices from Industry

A review of relevant business and economic literature indicates that a WCF is an effective method for cost recovery in organizations with decentralized decision authority. Within an organization that has independent decentralized components, a WCF is a method to allocate resources in a way that is beneficial to the enterprise as a whole. WCFs do this by providing a market-based structure through which independent parts of an overarching organization can exchange goods or services (Hirshleifer, 1956; Williamson, 1979). In a commercial scenario, the motive is generally to lower costs for the enterprise, but WCFs can be organized using a variety of price structures based on the characteristics of the relationships they are working to optimize. For example, a WCF would be structured differently if components had a choice to work outside the system to meet their needs or if components had some ability to control the scale and timing of their demands. In general, WCFs function best when prices reflect only the cost of the demand that customers level directly on the system. Any costs that are not imposed by the customer are recovered through other mechanisms. This two-part pricing system gives customers incentives to make decisions that are cost-effective for the organization as a whole while still facilitating cost recovery.

Commercial WCFs

The preferred pricing strategy to incentivize customers to make decisions that are good for the enterprise is a marginal cost-recovery approach (Baldenius, and Reichelstein, 2006; Baldwin and Gotz, 1998; Brauner et al., 2000; Byrnes, 1993; Camm and Shulman, 1993; Göx and Schiller, 2006; Heath, Huddart, and Slotta, 2009; Hirshleifer, 1956; Keating and Gates, 1999; Keating and Gates, 2002; Keating, Gates, Pace, et al., 2001; Keating, Gates, Paul et al., 2003; Keating, Pint, et al., 2015; Keating and Sommerhauser, 2012; Sahay, 2003).[1] In this model, costs are recovered through a two-step process known as *non-linear* pricing. Prices reflect only the costs customers directly impose on a system with their requests. Other costs, to the extent that they exist, are recovered separately through fees. If customers' demands can be met at the cheapest rate with internal options, they will choose these options; if not, the choice to use an

[1] Literature about commercial WCFs more commonly discusses the concept as transfer pricing. We utilize commercial WCFs as a method to refer to the aspects of transfer pricing that are comparable to the TWCF case—the movement of funds between independent business units as part of a broader shared enterprise—and exclude the portions of the transfer pricing literature focused on issues outside our scope, such as tax avoidance by multinational corporations using transfer pricing mechanisms. The most-recent literature in this field focuses on tax avoidance, which clearly falls outside the scope of this study; thus, the citations here reach further back.

external provider that is cheaper than the internal source will lower the cost of the enterprise as a whole.

We might consider an organization with an internal print shop as an example of a commercial WCF. In this model, an organization would have several business units that utilize a common internal print shop. The print shop charges rates designed to incentivize customers to make printing decisions that reduce costs for the organization as a whole. Business units are charged for what is required to fulfill specific orders: materials, labor hours, and so on. In many cases, this pricing will lead the print shop to be cheaper than outside commercial options. In these cases, when business units use the print shop's services, the entire enterprise saves money. If the print shop is not cheaper, business areas will use outside printing services for less frequent or specialty tasks for which it would be costly to maintain equipment or trained personnel. In these instances, the enterprise saves money as well, because outsourcing these orders is cheaper in the long run than the print service internally maintaining expensive or rarely used capacities. Other costs required to maintain the print shop, such as its general overhead, are recovered separately from the prices charged to customers. For example, these costs could be recovered through a budget for the printing department or fees charged to each business unit based on the prior-year use. Separating fixed costs from the prices that customers pay directly facilitates periodic reevaluation of the need for an internal capability—i.e., if customers become unhappy with the fixed fees they are charged or find the rates uncompetitive. This arrangement ensures that business units make decisions that are cost-effective for the organization as a whole, and, at the same time, the print shop is able to recover all of its costs and continue operation.

WCFs Within DoD

DoD, unlike private industry, does not have an interest in profits but should and can have an interest in cost minimization and cost-efficiency. But DWCFs face other challenges that commercial WCFs do not (Byrnes, 1993; Keating and Gates, 2002; Rogerson, 1995; Thompson, 1991). They are subject to regulations beyond cost-effectiveness; therefore, the DWCF's goals can be price or cost stabilization for customers and wartime readiness, along with cost-efficiency.[2] In addition, the DWCF information systems tend to have limited detail on the costs associated with particular services that they provide to customers.[3] DWCFs have historically used full cost recovery through rates, or a "break-even principle," rather than a marginal cost approach (Keating and Gates, 2002; Rogerson, 1995). The approach DWCFs have tended to take hinders customers' ability to understand what they are truly paying for (Rogerson, 1995) and confuses the link between activity and cost for customers (Byrnes, 1993). Also, unlike private print shops, it is undesirable for these internal services to shut down because of irregular use because they are needed to meet wartime requirements. Thus, there is a need to encourage customers to use these internal services either through mandates

[2] See Appendix A for a discussion of these policies.

[3] For instance, most DWCFs do not track the amount of time that customer service employees spend on arranging particular customer requests in existing IT systems. In other cases, there are lags in billing from commercial suppliers that make sharing actual costs associated with a transaction impractical.

in DoD regulations, such as the 50-50 rule for depots,[4] or financially through a combination of appropriations and mandatory fees. Mandates to use the WCF will also require auditing and penalty functions for enforcement.

In Chapter Two, we discussed the TWCF, and here we compare it with two other DWCFs, the Defense Financial and Accounting Services (DFAS) and DLA. Each organization has fixed costs, but DFAS and the TWCF face the challenge of customers having choices to move outside the system.

Table 3.1 demonstrates that the TWCF is not alone in setting rates that depart from commercial best practice: All three DWCFs use a variation of full cost recovery—or, in the case of the TWCF, full cost recovery for some of its activities and hybrid cost recovery for other activities. Yet in two of three cases, alternative rate structures would be suggested by the business literature. This raises questions about how commercial best practices should be adjusted to reflect and support USTRANSCOM's operational realities and goals.

Summary

Our review of relevant business literature on commercial WCFs showed that there are clear best practices. The business literature indicates that customers should be charged only the costs that the customers directly impose on the WCF, with other costs recovered separately. Of course, DWCFs have different characteristics from commercial WCFs, and recommendations must take this into account. In the next chapter, we consider how these different circumstances affect how commercial best practices can be applied to the specific concerns of the TWCF.

Table 3.1
DWCF Comparison

	DFAS	DLA	TWCF
WCF activity type	Financial and accounting services	Supply chain management	Transportation services
Cost driver	Hourly workload from customers	Parts, fuel	Commercial and organic transportation services, including air and sea lift and other enabling services
Outside activity allowed?	Yes	No, except systems supported by performance- based logistics	Yes
Current cost-recovery method	Full cost recovery	Full cost recovery	Variable rates, hybrid WCF
Literature suggested cost-recovery method	Two-part pricing	Full cost-recovery rates	Two-part pricing

SOURCE: Modified from USTRANSCOM, 2016c (see the "Nuances Between WCFs" slide).

[4] Under the 50-50 rule, each military department cannot spend more than 50 percent of its depot maintenance funding on work done by private-sector contractors. See 10 U.S.C. 2466, 2012.

CHAPTER FOUR

Applying WCF Best Practices to USTRANSCOM

Although DoD is not a business, it nevertheless needs a mechanism to help allocate constrained resources among customers in peacetime and support its readiness for the wartime mission. USTRANSCOM can draw insights into structuring prices to incentivize customer behavior from the commercial literature, but an effective cost-recovery structure must recognize that USTRANSCOM has a readiness focus that is distinct from the bottom-line focus of commercial entities. In this chapter, we analyze USTRANSCOM's existing cost-recovery structure so that we can recommend a new structure that aligns decentralized customer incentives with USTRANSCOM readiness needs. Our recommendations are based on two foundational principles: that TWCF rates should lead to customers that contribute to USTRANSCOM readiness to use the DTS and that customers should not be charged more than the costs they directly impose on the system.

To demonstrate these principles, we conduct a three-step analysis. First, we identify which USTRANSCOM costs are currently recovered through rates versus those recovered through non-rate mechanisms, based on FY16 budget data. We then assess which cost categories vary with customer activity through two complimentary analytic methods. Finally, we assess how well current cost recovery aligns with costs that vary with customer demands. With the results generated from these analyses, we then outline a cost-recovery structure that provides customers incentives to engage in movements that support USTRANSCOM readiness needs.

Cost-Recovery Analysis

We first examine how USTRANSCOM recovers costs today—specifically, the distribution of rate and non-rate revenue—to form a baseline to compare our recommended approach against. We do this by examining USTRANSCOM budget exhibits, called IF-12s, that track workload and costs annually. Each service component of USTRANSCOM has a separate IF-12, which reports costs by element and business line. Example cost elements are personnel, fuel, travel, general and administrative, and direct contract costs. IF-12s also record the revenue collected in each business line by rates and revenue collected by non-rate mechanisms. For each line of business, and for each component as a whole, we examine the proportion of total costs that are recovered through rates. Analysis of the FY16 IF-12s indicates that the TWCF recovers most of its costs through rates, with the percentage varying by component.[1] AMC recovers nearly

[1] IF-12s are Excel spreadsheets provided to RAND by USTRANSCOM. FY17 IF-12s were not available for the majority of the execution period of this report, but President's Budget submissions became available late in the process. We examined these levels and note that, although USTRANSCOM revenue has generally declined, the relevant proportions of fixed and

97 percent of its costs through rates, while SDDC recovers 85 percent of its costs through rates. MSC accounts for rate and non-rate revenue differently, because many of its business lines work with only a single customer. MSC rates can also be highly sensitive to unplanned workload, but the staff works to stabilize the rates by using reimbursable mechanisms to cover many unplanned movements. Therefore, within MSC, the distinction between rate and reimbursable revenue is less clear, and we omit MSC data from most analysis. These results align with the TWCF as a hybrid WCF that recovers most of its costs from rates but also has some costs recovered through non-rate mechanisms.

Analysis of Fixed Versus Variable Costs

To distinguish between fixed and variable costs, we undertake a multistep analysis to determine which costs change with customer demand (i.e., variable costs) and which do not (i.e., fixed costs). We attempt to estimate these types of costs through two distinct processes, because no single method is likely to reveal true cost types, given the inherent difficulty in determining the true marginal cost imposed by customers. Businesses struggle to define the true marginal cost of an activity, so instead the focus here is on costs that vary with customer demand more generally.

First, we examine what costs vary based on statistical analysis of USTRANSCOM-reported workload using historical IF-12 data from FY06 to FY16. Workload items cover a variety of metrics across business lines—for example, flight hours by aircraft type or measurement tons of cars transported via surface operations. For each combination of cost category and line of business, we calculated Pearson correlations between that combination and all actual workload measures reported for a component. For example, for AMC, there is a correlation between channel cargo civilian personnel costs and flight hours, between SAAM civilian personnel costs and flight hours, and so on. A cost category and line of business combination is deemed to vary if the combination is significantly correlated with *any* of the actual activity measures at the $p < 0.1$ significance level. Additional details on the workload measures driving these correlations and the level of correlation between items are available in Appendix B.

Second, we assign cost categories to cost types based on the experience and knowledge of USTRANSCOM budget SMEs. SMEs divided cost categories into three types. Variable categories where costs vary with customer demand, fixed categories that do not, and partially variable categories that include some variable and some fixed costs.[2] The focus of these classifications is on cost categories, not business lines. This is to say that while similar cost categories may be classified differently across service components (for example, travel, which is classified as partially variable for AMC and MSC but fixed for SDDC), they do not vary across business lines within a service component.

Combining these two methods addresses the limitations of each in that SME analysis does not vary by business line, and the correlation analysis is a rough measure of variability because USTRANSCOM does not have metrics for all activities that are driven by customers. This statistical analysis is also unable to address how some cost categories are apportioned

variable costs are largely invariant. As our analyses and recommendations focus on these percentages, not raw dollar figures, we proceed using the already-executed FY16 numbers.

[2] In reality, the fixed-cost categories likely have a small amount of variation, and the variable costs likely have some fixed costs when examined at this level of granularity. Therefore, performing an analysis of several years of data at lower-level cost categories and workload measures may provide greater clarity about variable costs.

across business lines within a component. Some costs that are incurred across an entire component may be allocated to business lines based on workload. This allocation method may cause some costs to appear to vary with workload, when in fact they are fixed, so the correlation method may overestimate the amount of variable cost because of current financial practices. The results of both approaches are very similar—both methods point to the same general conclusions. The SMEs, though, have a slight informational advantage over the statistical approach because they know which costs are being allocated on the basis of activity to business lines, regardless of whether that activity actually changes total cost. Later analysis focuses on the SME categorization to facilitate interpretation and replication.

For each method of assessing cost categories—SME and correlation—we then compare the distribution of variable and fixed costs across business lines and component totals. In these analyses, we calculate the proportion of costs in that business line that are driven by variable cost categories, and we do the same for fixed costs. Partially variable costs are apportioned between both, as they contain both fixed and variable costs, based on the proportion of variable costs in a business area. That is to say if, in a business line, 80 percent of other costs are variable, we assume that 80 percent of the partially variable costs are variable. With these calculations, we produce an estimate of the proportion of costs for each business line that varies with customer workload. Finally, we compare these estimates with the current cost-recovery structure by business line to compare current practices with best commercial practice. The following sections describe the results of these analyses for each service component command.

AMC

AMC activities draw on both commercial and organic assets. Although the commercial contracts are completely variable, there are still complementary enabling services that have fixed costs for AMC. Table 4.1 presents the SME and correlation analysis for AMC by business line. We exclude the training business line, because this is an internal Air Force account and not a customer-driven portion of TWCF business. Variable costs include, primarily, those associated with flying hours: POL, military augmentation (cost of reserve pilots), and commercial augmentation (costs associated with contracted airlift). Fixed costs in this area include civilian personnel, depot maintenance that is not based on flying hours, G&A, and depreciation.

Next, we take a closer look, in Figure 4.1, at how cost recovery works within AMC's business lines. In FY16, each of AMC's business lines collected over 90 percent of its revenue from rates, with an average of approximately 97 percent for AMC as a whole. In Figure 4.1, we can see that, for example, the SAAM and exercise business lines each collected 98 percent of their revenue from rates. This figure also shows that the percentage of costs in each business line are variable—that is, they are driven by customer demand. The figure presents calculations based on SME categorizations and the calculations based on the correlation analysis. Looking at the business line for channel passenger, we see that SMEs designated $197.1 million out of a total of $226.4 million as variable costs.[3] This means that 87 percent of the costs in this business line are variable, based on SME assessments. We repeat these procedures for all business lines, using both the correlation analysis and the SME assessments.

[3] This includes apportionment of the costs in partial: $174.9 million are labeled variable, with $32 million labeled partial and $45.2 labeled fixed. Roughly 70 percent of the costs are labeled partial, so we assign that portion of the $32 million variable costs, producing the variable number of $197.1 million.

Table 4.1
AMC Cost Type Assessments

Cost Category	SME	Correlation: Channel Passenger	Correlation: Channel Cargo	Correlation: SAAM	Correlation: JETP
Civilian personnel	Fixed	Yes	Yes	Yes	No
Aviation POL (flying)/MOGAS	Variable	Yes	Yes	No	Yes
Supplies/equipment	Partial	Yes	Yes	Yes	No
Military augmentation	Variable	No	No	Yes	No
Commercial augmentation	Variable	Yes	Yes	Yes	Yes
Depot maintenance	Fixed	Yes	Yes	Yes	Yes
Contractor logistics support	Partial	No	No	No	No
Depot-level repair	Variable	Yes	Yes	No	No
Travel	Partial	No	No	No	No
Depreciation	Fixed	No	No	No	No
G&A	Fixed	Yes	No	No	No
ADPE	Fixed	Yes	Yes	Yes	No
Facility maintenance/utilities	Fixed	No	Yes	Yes	No
Other	Partial	Yes	Yes	Yes	No

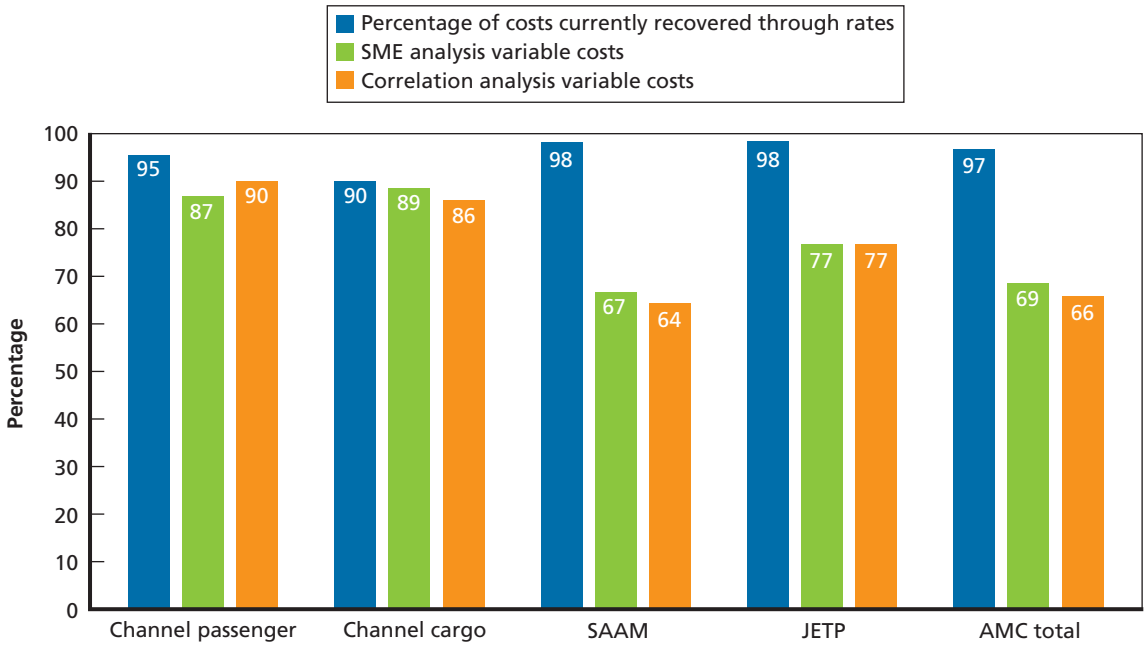
NOTES: Yes = significantly correlated with customer activity; no = not correlated with customer activity; ADPE = Automatic Data Processing Equipment; MOGAS = mobility gasoline. Cost categories represent different proportions of costs across business lines. Among other differences, depot-level repair handles engines, which require additional maintenance with increased usage, while depot maintenance focuses on other aspects of maintenance that are not associated with flying hours.

Generally, rate revenue recovered for any individual movement or activity exceeds the portion of costs associated with that movement or activity that varies in response to customer demand. For some business lines, these values are close, but others are more divergent. Looking at channel cargo, the second business line in Figure 4.1, we observe that 90 percent of costs were recovered through rates, while SME analysis suggests that 89 percent of costs are variable, with correlation analysis suggesting that 86 percent of costs are variable. For this business line, current cost recovery is closely aligned with what we would expect to observe if rates reflected only costs that customers imposed on the system. On the other end of the spectrum is the SAAM business line. SAAM recovers nearly all of its costs through rates, but only roughly two-thirds of its costs are variable with customer demand. In this business line, and others, structuring rates to recover only variable costs would generally lead to a shift from rates to non-rate revenue.

SDDC

SDDC activities focus primarily on commercial assets, with most of its variable costs accounted for by direct contracts with commercial shippers. Table 4.2 presents the SME and correlation analysis for SDDC by business line: port operations, DP3, and liner operations. We exclude traffic management because it collected no revenue from rates in FY16 and is administered

Figure 4.1
Percentage of AMC Business Line Costs Recovered, by Rates and Variable Costs



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outside the context of the WCF. SDDC fixed costs are military and civilian labor, as well as G&A costs.

In FY16, SDDC collected roughly 85 percent of its revenue through rates, but this varies considerably by business line. Figure 4.2 presents the percentage currently collected through rates, SME analysis, and correlation analysis. The liner operations business line, the vast majority of SDDC activity by dollar value, collects roughly 95 percent of its revenue through rates, while port operations, unique among SDDC and AMC business lines, collects less than one-half of its revenue from rates. There is similar variability in the percentage of costs in each business line that is variable—86 percent for liner operations, compared with roughly one-third for port operations. As with AMC, rates would be reduced across SDDC business lines if customers were charged for only the costs they directly imposed on the system. This would require a shift to additional non-rate revenue.

MSC

MSC activities are primarily focused on chartering entire commercial ships but also include organic assets in the reserve fleet. Variable costs include ship charters and port charges, while fixed costs include labor and G&A. Table 4.3 presents the SME and correlation analysis for MSC business lines.

We do not present a comparison of the estimated percentage of variable costs with the percentage recovered from rates, given two distinct features of MSC operations. First, many of these business lines are tied to a single customer—for example, the Army and Air Force for prepositioned stocks and DLA Energy for POL tankers. In these cases, although some revenue might be recovered through rates, the distinction has less meaning than in other business lines.

Table 4.2
SDDC Cost Type Assessments

Cost Category	SME	Correlation: Port Operations	Correlation: DP3	Correlation: Liner Operations
Military labor	Fixed	No	No	No
Civilian labor	Fixed	No	No	No
Travel	Fixed	Yes	No	Yes
Supplies/equipment/material	Partial	Yes	No	Yes
USTRANSCOM G&A	Fixed	No	No	No
USTRANSCOM—DPS transfer	Fixed	No	No	No
Other purchases from WCF	Fixed	No	No	No
Transportation of things	Partial	No	No	No
Direct contracts	Variable	No	Yes	Yes
Direct contracts—FFP	Fixed	No	No	No
Depreciation	Fixed	No	No	No
Facilities maintenance/utilities/rent/lease	Partial	No	No	No
ADPE	Fixed	No	No	No
Other contracts	Partial	No	No	No
Direct reimbursed container	Variable	No	No	No
Other	Partial	No	No	No

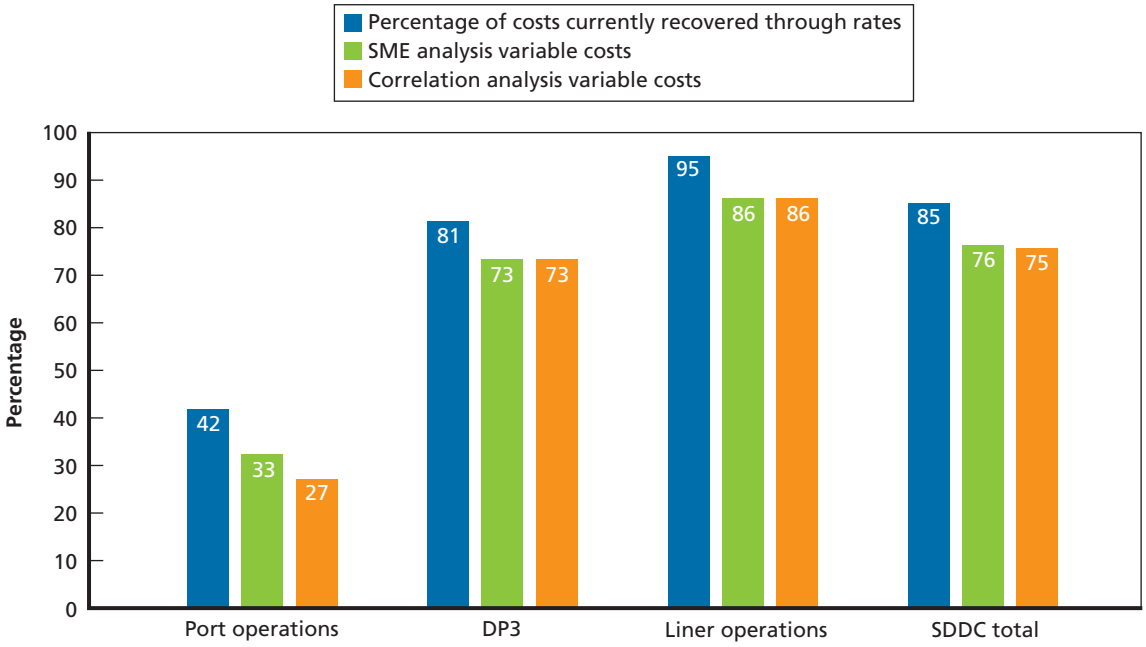
NOTES: Yes = significantly correlated with customer activity; no = not correlated with customer activity; DPS = Defense Personal Property System; FFP = firm fixed price. Cost categories represent different proportions of costs across business lines.

Whether a bill is paid as a rate or is reimbursable, the funds come from the same place. With no need to adjudicate demands among multiple customers in these areas, MSC works with its customer to determine how to recover the required revenue. A second distinction is the vulnerability of MSC rates to unpredicted workload. MSC is the smallest of the three service components in USTRANSCOM in terms of business. If it operated purely on rates, it would have less ability to absorb unexpected costs, leading to unstable rates for customers. To avoid this outcome, MSC recovers unplanned workload outside the rates, recovering them as reimbursables instead, to ensure that the rates remain stable. For these reasons, the calculations that we did for AMC or SDDC are less meaningful for MSC. That said, our general recommendations are applicable to MSC business lines as well. Before implementation, further analysis and accounting would be required to understand exactly how much, if at all, MSC rates should change.

Fixed, Variable, and Readiness Costs

Some customers perceive USTRANSCOM services to be more expensive than alternatives. Much of this extra expense is believed to be due to fixed readiness costs that are unrelated to

Figure 4.2
Percentage of SDDC Business Line Costs Recovered, by Rates and Variable Costs



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peacetime demand and are thus USTRANSCOM's responsibility. However, readiness costs comprise both fixed and variable portions, as the system needs to be maintained and exercised in peacetime to be ready for wartime. Some readiness needs can be achieved through customer movements in peacetime and thus can be recovered through variable costs. Unit moves on chartered aircraft or ships would be an example of customer requirements that contribute to readiness. On the other end of the fixed-to-variable spectrum are prepositioned stocks and USTRANSCOM command staff. Both of these are readiness costs and are vital for wartime surge but are fixed with respect to customer movements. Figure 4.3 presents some example of costs in the various fixed-variable and readiness–non-readiness combinations.

Our recommendations focus on fixed versus variable costs to examine costs across the USTRANSCOM enterprise. Unit moves are beneficial for readiness because they replicate some of the conditions seen during wartime surge, including movements of ammunition and hazardous material. These moves are beneficial for the readiness of airlift and sealift capacity and consist of costs that are more variable than fixed. In contrast, personal-effects movement, while crucial for morale, do not exercise the system for weapon system handling. Many of those moves utilize ports with high levels of existing military traffic and are consistent from year to year because of rotation policies. Some of the variable costs will contribute to DTS readiness. Others serve customer needs without affecting USTRANSCOM readiness. When customer demands contribute to readiness, it is in the best interest of DoD for those movements to stay within the DTS. Otherwise, additional readiness costs might need to be incurred. Thus, we focus on a cost-recovery system that provides pricing incentives to customers to send work that contributes to readiness in the DTS.

Table 4.3
MSC Cost Type Assessments

Cost Category	SME	Correlation: Commercial Charter Vessels	Ready Reserve Fleet	Correlation: Army Prepositioning	Correlation: Air Force Prepositioning	Correlation: POL
Civilian personnel	Fixed	No	No	No	No	No
Military labor	Fixed	No	No	No	No	No
Communication	Fixed	No	No	No	No	No
Travel	Partial	No	No	No	Yes	No
Training	Fixed	No	No	No	No	No
Supplies	Partial	No	Yes	No	No	Yes
Equipment	Partial	No	No	No	No	Yes
Ship engineering SVS	Fixed	No	No	No	No	No
Fuel	Partial	Yes	No	Yes	No	No
Ship charters	Variable	No	No	No	No	No
Operating hire	Partial	Yes	Yes	Yes	No	Yes
M&R	Fixed	No	Yes	No	No	Yes
IT services	Fixed	No	No	No	No	No
Utility services	Fixed	No	No	No	No	No
Port charges	Variable	Yes	No	Yes	Yes	Yes
Oil and chemicals	Fixed	No	No	No	Yes	No
Other contract services	Partial	No	No	No	No	No
Other	Partial	Yes	No	No	No	No
MSC overhead	Fixed	No	Yes	Yes	Yes	No
Depreciation	Fixed	No	No	No	No	No
USTRANSCOM overhead	Fixed	Yes	Yes	Yes	Yes	Yes

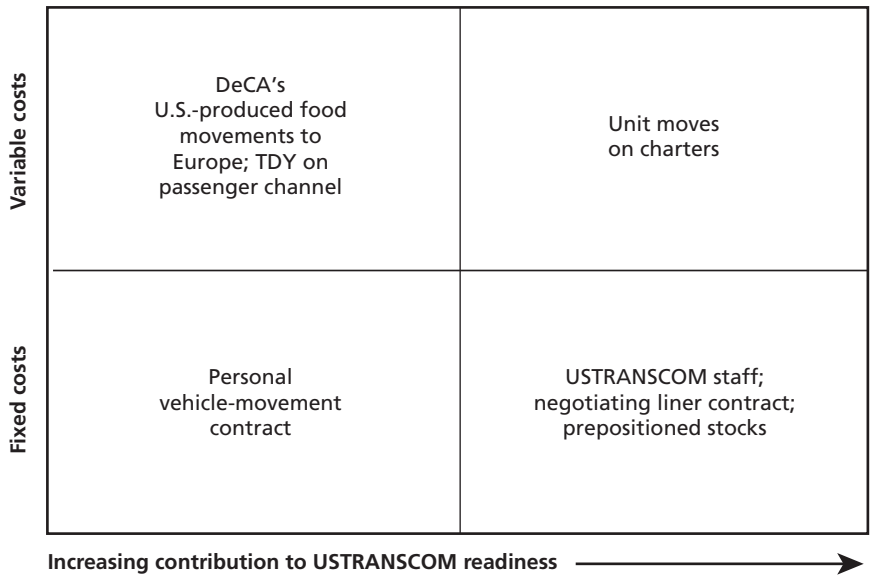
NOTE: Yes = significantly correlated with customer activity; no = not correlated with customer activity; SVS = services; M&R = maintenance and repair.

Cost-Recovery Refinements to Support the USTRANSCOM Mission

Based on these analyses and tailoring of commercial WCF best practices, we recommend two changes to the existing TWCF cost-recovery structure to better align customer incentives with what USTRANSCOM needs to support its wartime mission:

1. Recover fixed costs through non-rate mechanisms, rather than through rates.
2. Construct rates to reflect activities' effects on USTRANSCOM's readiness.

Figure 4.3
Example of Fixed/Variable and Readiness/Non-Readiness Costs



NOTE: TDY = temporary duty yonder.
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Recover Fixed Costs Through Non-Rate Mechanisms

Recovering fixed costs through non-rate mechanisms, rather than rates, aligns the TWCF with commercial best practice and makes clear to customers both what they are paying for with each movement and the costs they are imposing on the system. Of course, USTRANSCOM still needs to recover fixed costs to operate, and many of these are central to readiness concerns. To recover fixed costs, we consider three possible non-rate mechanisms that exist in some form today: SLBs, readiness accounts modeled after the ARA, and direct appropriations to USTRANSCOM. By readiness accounts, we refer to the arrangement in which a service has deemed an activity key to its readiness and wants to ensure that business stays within the TWCF by charging potentially below the marginal cost of a movement. In this case, the service agrees in advance to pay any shortfall resulting from this pricing arrangement.

We assess each mechanism across four dimensions: predictability, flexibility, transparency, and facilitation of negotiations. *Predictability*, the likely stability of the funding level over time, helps USTRANSCOM and service leadership plan for future activities. *Flexibility* refers to how much discretion a funding mechanism offers USTRANSCOM to adjust to changing workloads, should circumstances require. *Transparency* is how clearly this mechanism makes the cost of providing services clear both to USTRANSCOM and to its customers. Finally, we assess the degree to which a mechanism *facilitates ongoing negotiations* between USTRANSCOM and its customers regarding the level of service being provided. This negotiation can take the form of a customer wanting more service provided or being unhappy with its current costs and looking to reduce services to lower a bill. This form of negotiation may reduce the flexibility for the USTRANSCOM commander on some service provision but should not allow the services full discretion over USTRANSCOM budgeting. We assess the

mechanisms on the degree to which they facilitate this conversation. Table 4.4 provides our assessments, ranking mechanisms that are the best on a metric in green, those in the middle in amber, and those that fare the least well in red.

Each non-rate mechanism we examined has strengths and weaknesses; therefore, no single mechanism will address all of USTRANSCOM's needs. We examine this concern in the next chapter, which applies our recommendations to five case studies of interest to USTRANSCOM leadership, but first we discuss strengths and weaknesses of each option in general. SLBs provide several benefits as a non-rate cost-recovery mechanism. Through the process of publishing the SLBs in advance for the services for budget purposes, the SLBs give USTRANSCOM an opportunity to describe what services are being provided directly to customers and can facilitate a discussion of the level of service desired by customers. Without proper framing on level of service, customers may try to dictate, during negotiations, what USTRANSCOM can do with these SLB funds. Readiness accounts are the most flexible, with their open-ended commitment to funding, but the service must accept funding risk, given workload uncertainty across years. Finally, direct appropriations are the most predictable from a historical perspective, functioning on a multiyear cycle, which can facilitate advanced planning. In addition, direct appropriations are valuable to fund wartime excess capacity. That said, continuing resolutions in recent years have added significant uncertainty; they are the most difficult to modify on short notice and can be inflexible to changing circumstances. In recent years, appropriations have seen cuts, which would be difficult to absorb if USTRANSCOM is depending on this funding to recover fixed costs. Relying on funding sources outside the rates can reduce the commander's flexibility, increase external oversight, and affect the size of headquarters staff. Shifting to non-rate revenue is a trade-off for improving the incentives of USTRANSCOM's customer base.

Construct Rates to Reflect Activities' Effects on USTRANSCOM Readiness

Our second recommendation is that rates should be structured to drive activities that contribute to USTRANSCOM's readiness into the DTS. Practically, this means that, for those activities, customers should be charged the lowest price of available options. Sometimes this will be the variable cost to the DTS, and sometimes it will be an option outside the DTS. If the lowest-cost option is the cost a customer imposes on the DTS, with fixed costs already recovered through non-rate mechanisms, nothing else needs to change, and the customer can be charged this price. If a commercial option exists that is cheaper than the DTS rate, the

Table 4.4
Assessment of Non-Rate Cost-Recovery Mechanisms

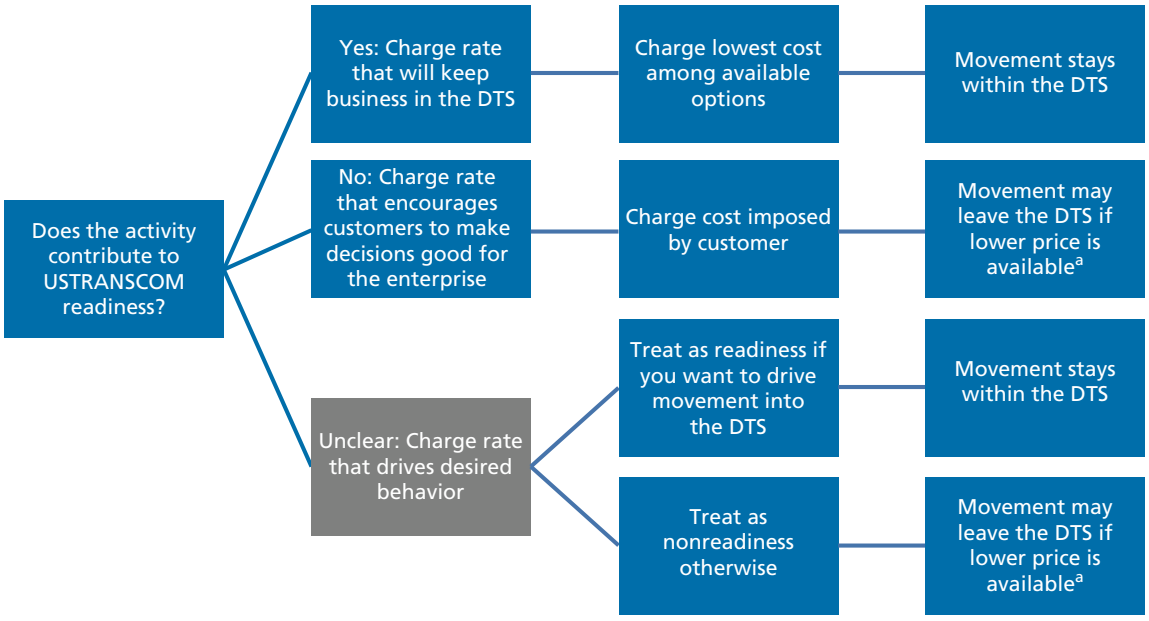
	SLBs	Readiness Accounts	Appropriations to USTRANSCOM
Predictability	Amber	Red	Green
Flexibility	Amber	Green	Red
Transparency	Green	Red	Amber
Facilitate negotiations of level of service	Green	Amber	Red

customer should be charged this commercial price to ensure that the activity stays within the DTS. Any shortfall resulting from this commercial benchmarking would need to be recovered through non-rate revenue. Once such a structure is fully adopted, USTRANSCOM can compare readiness with the fixed costs associated with the mission to determine whether individual business lines are best provided within the DTS, versus relying solely on the commercial provision. Figure 4.4 presents a diagram of the implementation of this recommendation.

If activities are not contributing to USTRANSCOM's readiness, then they should be priced based on the cost they impose on the system, to ensure that customers make cost-effective decisions for the enterprise as a whole. Some of these activities may leave the DTS. But because they have been designated as not contributing to readiness, this should have no impact on USTRANCOM's ability to surge in wartime. Activities moving outside the system would represent less business for USTRANSCOM but at the same time prevent taxing limited assets and allow personnel to focus on tasks that are considered to be contributing to readiness.

It might not be easy to determine whether some activities contribute to readiness. Activities in this gray area could still benefit from this framework, with rates charged based on the desired ends. These activities could be treated as supporting readiness if the goal is to keep them within the DTS and not otherwise contribute to readiness. This may include movement types closely linked to surge operations, even if any particular movement does not contribute greatly to USTRANSCOM readiness—for example, movement of an entire unit, but to a location not likely to be needed during wartime surge. If these activities are deemed to contribute to the wartime mission based on the opportunity they provide to exercise the DTS, even if their content is not clearly contributing to readiness, then these activities could be benchmarked to commercial prices and treated as contributing to readiness.

Figure 4.4
Proposed USTRANSCOM Rate Structure Flowchart



[a] Many movements (such as hazardous material) can only be done by an organic aircraft by regulation; thus, those would need to stay within the DTS.

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Summary of Cost-Recovery Refinements

Based on an analysis of USTRANSCOM's existing cost-recovery structure and a review of commercial best-practice literature, we recommend that USTRANSCOM modify its cost-recovery structure to

1. recover fixed costs through non-rate mechanisms
2. structure rates with commercial benchmarks to ensure that customer activities that contribute to USTRANSCOM readiness remain within the DTS.

We apply these general principles to five case studies of specific interest to USTRANSCOM leadership in Chapter Five and discuss details of implementation in Chapter Six.

CHAPTER FIVE

Case Studies on Specific Areas

To further refine our proposed cost-recovery system, we examine it in greater depth in the context of four areas. These areas were selected by USTRANSCOM J8 prior to this study as a result of a working group effort, and there is an additional case of interest to the USTRANSCOM deputy commander: G&A costs, the liner operations business line, the port operations business line, SAAM/JETP positioning and depositioning costs, and weapon system supply chains. Each deep dive provides insight into the variation in USTRANSCOM business lines and how best practices can be tailored and applied to different situations. For each of these case studies, we briefly describe the current system, discuss readiness concerns specific to that area, and apply the proposed cost-recovery system outlined in Chapter Four.

G&A Costs

G&A expenses are typically defined as those costs that cannot be directly related to the production of a good or service. These activities are necessary to provide the infrastructure that would allow USTRANSCOM to meet wartime surge, but they are largely not visible to customers. At this time, there is variation in what costs are defined as G&A by each component of USTRANSCOM, as shown in Table 5.1. In particular, MSC includes many cost subcategories in its G&A costs that other components report separately. These additional categories tend to be things that are still fixed costs in the other components but are labeled separately. For instance, civilian personnel for SDDC is a fixed cost, but SDDC does not include civilian personnel in its G&A. USTRANSCOM headquarters G&A costs are allocated down to the component commands based on the dollar value of their respective business lines. In addition, each component has its own headquarters G&A expenditures.

Figure 5.1 shows G&A costs as a percentage of revenue for FY16.[1] AMC total expenditures on G&A are the largest, because the majority of transportation dollars flow through its business lines, but are small as a percentage of revenue. These G&A costs are currently recovered through the rates charged to USTRANSCOM customers.

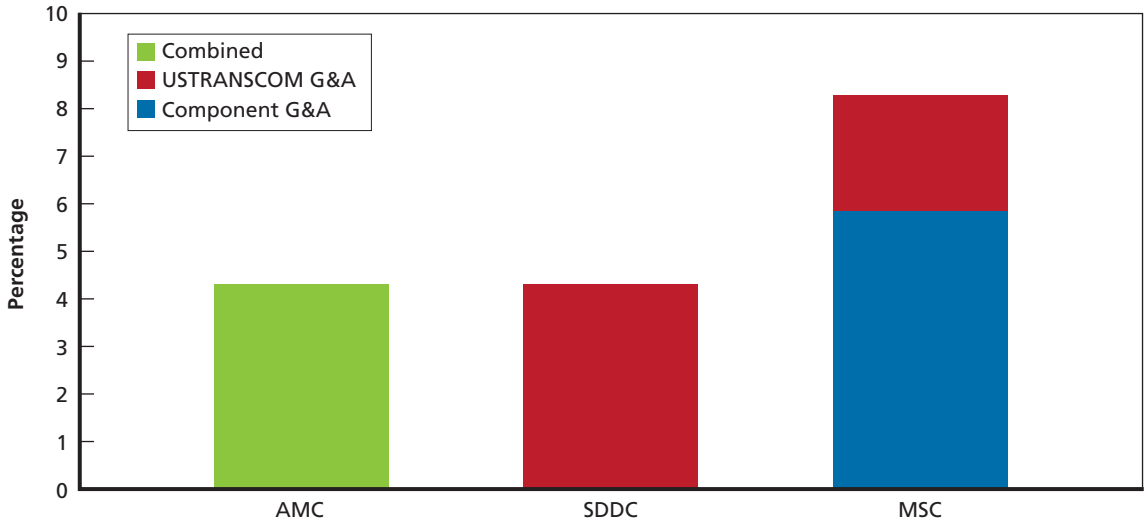
[1] The visibility of USTRANSCOM headquarters G&A and component G&A on the IF-12 documentation varies. AMC has one line in the IF-12 that combines USTRANSCOM and component G&A. SDDC has a single line for USTRANSCOM G&A that is allocated down to the component but no single line for its own G&A. MSC has two lines labeled as overhead, including one for USTRANSCOM G&A allocated to MSC and MSC's own overhead. The IF-12s are Excel spreadsheets provided to RAND by USTRANSCOM.

Table 5.1
G&A Cost Subcategories

Command	Cost Subcategory
AMC	• DFAS financial operations • AMC G&A • G&A purchased from the TWCF
MSC	• Officer composite • Enlisted composite • Civilian personnel compensation: – Executive, general, special schedule – Foreign-national direct hire • Navy-managed supplies and materials • Locally purchased supplies and equipment • Locally purchased noncapitalized equipment • Financial operations DFAS • Commercial transportation • Foreign-national indirect hire • Purchased communications • Rents and leases (non–General Services Administration) • Printing and reproduction
SDCC	• G&A purchased from Defense Business Operations Fund–Transportation headquarters only • G&A purchased from the TWCF

SOURCE: FY16 IF-12s (Excel spreadsheets provided by USTRANSCOM).

Figure 5.1
FY16 G&A as a Percentage of Revenue for Each USTRANSCOM Component



SOURCE: Component FY16 IF-12s (Excel spreadsheets provided by USTRANSCOM).

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G&A Recommendations

Because G&A costs are fixed, we recommend recovering them through non-rate mechanisms. Current DWCF policy in Title 10 (10 U.S.C. 2208, 2012) indicates that applicable administrative expenses should be recovered through rates, but there is flexibility if the service provider can connect the cost to readiness.[2] Appendix A includes more excerpts of policy relevant to our recommendations. In our assessment, USTRANSCOM G&A costs are driven by the wartime mission; USTRANSCOM would still have G&A costs even if it supported no customer movements in peacetime. The Financial Management Regulation (DoD, 2014), developed by DoD in response to the legal requirements of Title 10, appears to take a much harder stance: All G&A must be recovered through the rates. But it later states: "The DWCF activities should identify all costs related to maintaining a capacity to meet mobilization requirements. These costs are not considered normal operating costs and may be reimbursed by direct appropriations so that customer rates are not burdened by contingency requirements." Thus, current policy provides a narrow path for USTRANSCOM to justify implementing our recommendations. Specifically, in this case, USTRANSCOM may wish to seek a direct appropriation to cover its G&A costs. G&A costs are largely stable from year to year and would benefit from the predictability and long-range planning facilitated by direct appropriations. Additionally, USTRANSCOM may want to press for changes to the FMR to clarify the allowance of G&A cost recovery through non-rate mechanisms. While awaiting this clarification, it would benefit USTRANSCOM to narrowly define the subcategories included in G&A. A narrower definition of G&A costs would facilitate direct connections to readiness and enhance arguments to recover these costs through non-rate mechanisms while remaining in compliance with current interpretations of Title 10 and the FMR.

Liner Movements

The liner business line manages DoD cargo movements on non-chartered commercial surface carriers. These carriers are U.S. flagged ships contracted to move specific loads of cargo to a large number of ports within several traffic areas. The Military Cargo Preference Act of 1904 specifies that 100 percent of U.S. military cargo is to be transported on U.S. flagged vessels (10 U.S.C. 2631, 2012). Customers in this business line are predominantly military services, accounting for roughly two-thirds of all liner business. Over three-quarters of the business from the services, or one-half of all liner business, comes from Army customers. The remaining business comes predominantly from DLA, with some DeCA business as well. Activities in this business line use commercial ships because there are no organic assets involved in liner surface movements. In FY16, liner movements had costs of roughly $640 million, approximately 60 percent of SDDC's total costs.

When arranging liner movements, customers provide information about the amount of materiel to be moved and the required delivery dates. Customers in this business line have two main options: full-service booking with USTRANSCOM or direct booking through a website. Full-service customers work through USTRANSCOM to plan and execute a movement. USTRANSCOM maintains contracts that specify rates for port pairs (starting point and destination), which are maintained for ports showing activity in the past three years. However,

[2] The full discussion of implications for existing policies is in Appendix A.

even if a port-pair rate does not exist, it is possible to establish a one-time-only rate for any pair of ports, as required for a specific customer movement.

Direct-booking customers use rates from the Universal Services Contract 8, the contract by which all liner movements are contracted, rather than the rates described in the previous chapter. Existing cargo preference policies prohibit U.S. military customers from negotiating their own commercial rates with non–U.S. flagged vessels. Still, some customers have indicated that they have gone outside the Universal Services Contract 8 to obtain less expensive lift capacity, according to our conversations with USTRANSCOM SMEs. Direct booking is available for existing routes and only to some customers, primarily DLA and DeCA, allowing them to schedule services without otherwise interfacing with USTRANSCOM staff. These customers pay a percentage fee for the use of these contracts, generally assessed after a move is completed. This percentage fee is an example of fixed costs—in this case, of setting up contracts that will be necessary for wartime readiness—that are being recovered through rates rather than SLBs or appropriations.

Because there are limited military personnel and no organic assets in this business line, the majority of readiness concerns focus on the health of the industrial base. In recent testimony, General Darren W. McDew, the commander of USTRANSCOM, indicated that the ongoing contraction of U.S. flagged carriers may necessitate new strategies to meet contingency requirements (McDew, 2017). There needs to be some cargo moved through the system to ensure that it is exercised and ready for wartime, but by and large the pressing concern is ensuring enough DoD cargo flows through commercial shippers to maintain the industrial base needed to meet wartime surge requirements. Wartime plans call for U.S. merchant mariners to crew existing organic ships held in reserve status (maintained by MSC), but employing these mariners is five times more expensive for commercial shippers when compared with foreign competitors (MARAD, 2011). MARAD has a subsidy effort, through the Voluntary Intermodal Sealift Agreement (VISA) and Maritime Security Programs, to assist these carriers. However, when possible, USTRANSCOM also tries to keep a stable workload on U.S. flagged ships to maintain a pool of trained mariners.[3] Ensuring the viability of the U.S. flagged fleet—specifically, its ability to train and employ U.S. merchant mariners—is key to liner readiness.[4]

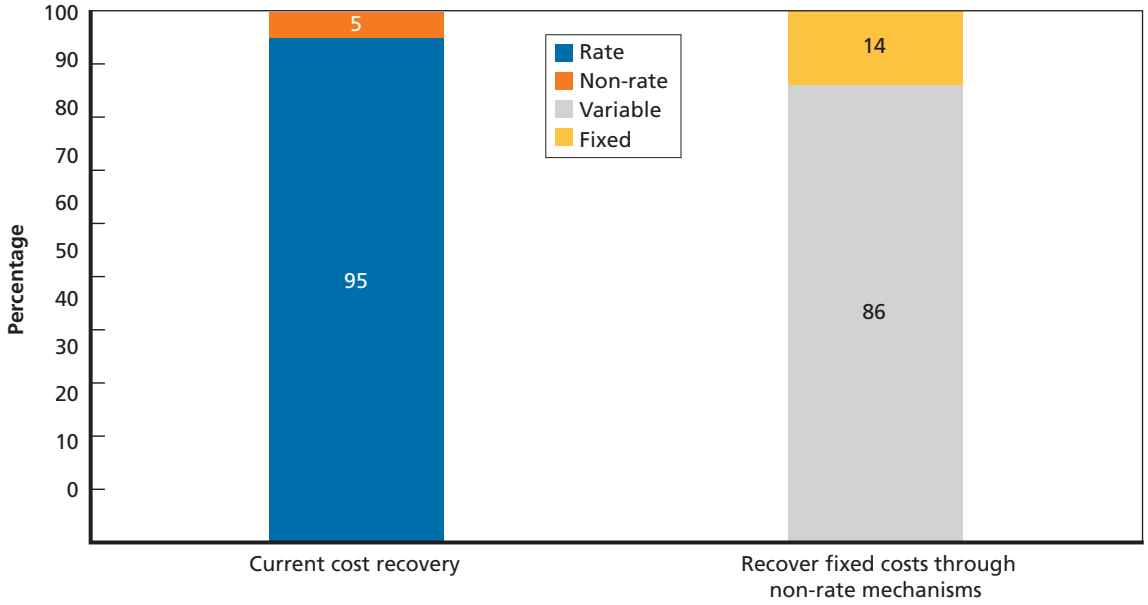
Liner movement recovers operating costs through a mix of rate and non-rate revenues. In FY16, this business line had $640 million in costs. Over 80 percent of these costs were direct contracts paid to commercial carriers. These costs, combined with an AOR recoupment of $165 million, led to roughly $840 million collected in revenue in FY16. Of this revenue, $800 million was collected through rates, and $40 million was collected through non-rate revenue. Non-rate revenue is split between customer reimbursables for services outside regular liner movement and the fees assessed to direct-booking customers. This can be seen in Figure 5.2, with the first bar presenting the cost recovery split between rate and non-rate revenue as of FY16. For this FY, the liner business line recovered 95 percent of its revenue from rates.

Our analysis of fixed and variable costs, as described in more depth in Chapter Four, examined which cost categories varied with customer demands. Results presented here,

[3] See the MARAD website for more information on the VISA program (MARAD, undated).

[4] U.S. flagged carriers are required to employ U.S. citizens who are merchant mariners even in peacetime. They man organic ships owned and managed by MSC in wartime as well, with longer and more-frequent tours in times of conflict.

Figure 5.2
FY16 Liner Cost-Recovery Structure



SOURCE: Analysis of SDDC FY16 IF-12 (Excel spreadsheet provided by USTRANSCOM).
RAND *RR2438-5.2*

in the second bar of Figure 5.2 and in Table 5.2, focus on cost-category assignments from USTRANSCOM SME assessments.

This analysis indicates that approximately 86 percent of the costs in liner are variable with customer workload in FY16, with the remaining 14 percent of costs being fixed. Thus, there are some costs, approximately 9 percent, currently recovered through rates that do not appear to vary with customer workload. Following the cost-recovery approach described in Chapter Four, we would recommend recovering these costs through non-rate mechanisms. In this case, we recommend the establishment of an SLB to fund business systems, G&A, and other fixed costs. Establishing an SLB tied to recovering fixed liner costs would give USTRANSCOM, through SDDC, an opportunity to negotiate with the military services on the level of services that they provide in the liner business area and make clear to customers what they are paying for in the rates. Given the nature of fixed costs in this area—primarily, enabling services and overhead rather than items directly related to movements or shortfalls generated by charging commercial rates when USTRANSCOM's marginal cost is higher—we recommend this non-rate cost-recovery mechanism in the liner business area.

Port Operations

The port operations business line manages DoD cargo that moves through ports around the world. Port operations' central activity is the loading or unloading of cargo from commercial ships for DoD customers. Ports are managed through a mix of 12 Army battalions and stevedore contracts. Local stevedores unload cargo from ships, while Army personnel are on-site to pro-

Table 5.2
FY16 Liner Business Line Cost Details

Cost Category	Cost Type	FY16 Dollars (Millions)
Military labor	Fixed	2.3
Civilian labor	Fixed	25.8
Travel	Fixed	0.3
Supplies/equipment/material	Partial	0.1
USTRANSCOM G&A	Fixed	31.6
USTRANSCOM—DPS transfer	Fixed	0.4
Other purchases from WCF (less TRANSCOM G&A)	Fixed	1.5
Transportation of things	Partial	5.7
Direct contracts	Variable	537.7
Direct contracts—firm fixed price	Fixed	0.0
Depreciation	Fixed	1.4
Facilities maintenance/utilities/rent/lease	Partial	0.5
ADPE	Fixed	30.5
Other contracts	Partial	–0.5
Direct reimbursed container	Variable	1.7
Other	Partial	1.0
Total costs		640.0

SOURCE: SDDC FY16 IF-12 (Excel spreadsheet provided by USTRANSCOM).

vide oversight and other administrative functions required to keep the port available for DoD cargo in both peacetime and wartime. Over 90 percent of USTRANSCOM's port operations business line customers are associated with the military services—roughly 70 percent of this is driven by Army customers. Customers can choose not to interface with USTRANSCOM port operations business line by booking what is known as door-to-door service, in which case the carrier arranges for loading and unloading at ports. For door-to-door movements, customers do not draw on USTRANSCOM's port operations capabilities. If customers do not book door-to-door service, they use the port operations business line to unload cargo.[5]

As of this writing, there are approximately 40 port contracts facilitating the management of more than 100 ports within seven traffic areas. Port locations with these contracts are driven by operational plans created by the G-3, so USTRANSCOM aligns the contracted locations with readiness concerns. Therefore, the need to maintain ports for readiness reasons is at the foreground of the cost-recovery strategy for port operations.

[5] In these cases, arrangements for cargo to be unloaded are made by the commercial entity shipping the cargo, likely using the same or similar stevedores that exist under the port operations contracts, but USTRANSCOM personnel are not involved in these contracts, and Army personnel do not oversee these operations.

The port operations business line recovers operating costs through a mix of rate and non-rate revenues. According to the FY16 IF-12, this business line had costs of approximately $200 million. The largest cost is direct stevedore contracts, accounting for over one-third of all costs in the business line. The majority of the remaining costs are fixed costs associated with readiness—primarily civilian and military personnel. These costs, combined with a negative charge of nearly $30 million to offset a prior positive AOR, were partially recovered through roughly $100 million of non-rate revenue (according to SDDC's FY16 IF-12). Rates are calculated for a port by traffic area, commodity type, and direction of travel. If a rate does not exist for a port, then a cost-plus billing method is used, because rates are not maintained for ports without consistent workload.

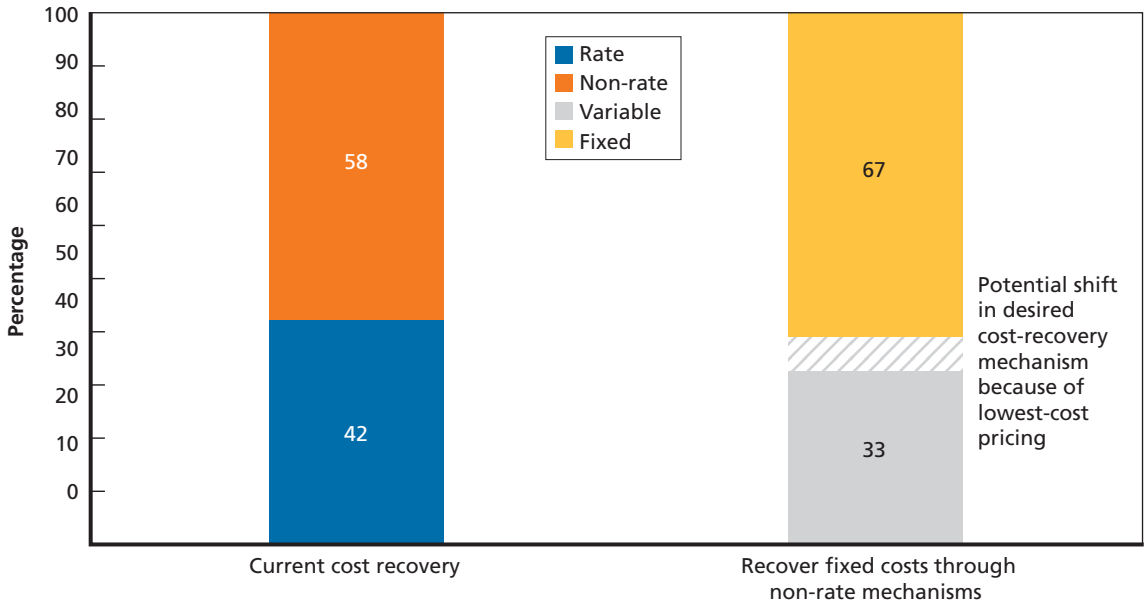
Non-rate revenues are largely collected through SLBs. The exceptions are reimbursable costs for services provided outside the rates, such as ground transportation within the USCENTCOM area of responsibility, and some additional non-rate revenue collected from the Defense Freight Railway Interchange Fleet. The majority of non-rate revenue, roughly $86 million in FY16, is collected through a port readiness SLB. To calculate this SLB, port operations personnel were recently split between port readiness and port handling based on their job duties. The costs of port readiness personnel are split among the military services based on usage of port operations in the prior year. In FY16, this led to the Army paying roughly 80 percent of port readiness costs, or roughly $71 million, with the remainder split roughly evenly among the other services. This SLB alone recovers enough revenue to cover one-half of all port operations costs in FY16, making port operations unique among SDDC business lines in recovering the majority of its costs through non-rate mechanisms. This can be seen in Figure 5.3, with the first bar showing the split between rate and non-rate revenue, as of FY16. As of that time, port operations recovered roughly 42 percent of costs through rates, with the remainder recovered through the port readiness SLB, other SLBs, and reimbursables.

Our analysis of fixed and variable costs, as described in more depth in Chapter Four, examined which cost categories varied with customer demands. Results presented here, in Figure 5.3 and Table 5.3, focus on cost-category assignments from USTRANSCOM SME assessments.

We found that, based on SME assessments, roughly one-third of port operations costs vary with customer workload—again, this is primarily driven by the local stevedore contracts. The remaining two-thirds of costs were fixed with regard to customer demand. Keeping with our cost-recovery approach, outlined at the end of Chapter Four, we recommend reducing the percentage of port operations costs recovered through rates from (42 percent in FY16) to more closely resemble the port operations costs that vary with customer activity (33 percent in FY16). This 9 percent of total costs would be recovered through non-rate mechanisms. In this case, given the widespread use of the port readiness SLB, we recommend increasing the share of costs recovered via that SLB moving forward. This SLB is already established and has a purpose aligned with the goal of our recommendation, suggesting that implementing cost-recovery changes via this route will be less complicated than establishing a new non-rate revenue mechanism. This change in cost recovery would more closely align the costs that customers pay with the costs that they directly impose on the system.

A 9 percent shift in cost recovery from rates to an SLB implements the baseline recommendation of recovering fixed costs through non-rate mechanisms, but it may be desirable to go further in this line of business. Port operations activities are central to USTRANSCOM

Figure 5.3
FY16 Port Operations Cost-Recovery Structure



SOURCE: Analysis of SDDC FY16 IF-12 (Excel spreadsheet provided by USTRANSCOM).
RAND *RR2438-5.3*

Table 5.3
FY16 Port Operations Business Line Cost Details

Cost Category	Cost Type	FY16 Dollars (Millions)
Military labor	Fixed	6.7
Civilian labor	Fixed	46.1
Travel	Fixed	3.0
Supplies/equipment/material	Partial	–0.4
USTRANSCOM G&A	Fixed	9.7
USTRANSCOM—DPS transfer	Fixed	0.1
Other purchases from WCF (less TRANSCOM G&A)	Fixed	1.5
Transportation of things	Partial	6.1
Direct contracts	Variable	74.0
Direct contracts—firm fixed price	Fixed	0.0
Depreciation	Fixed	10.0
Facilities maintenance/utilities/rent/lease	Partial	19.4
ADPE	Fixed	10.4
Other contracts	Partial	6.4
Direct reimbursed container	Variable	0.0
Other	Partial	3.9
Total costs		196.9

SOURCE: SDDC FY16 IF-12 (Excel spreadsheet provided by USTRANSCOM).

readiness because these are precisely the types of activities that USTRANSCOM must be prepared to exercise in case of wartime surge. Therefore, these activities should be priced to keep customers within the DTS. Customers have options for how they pay for their port operations—either using USTRANSCOM contracts in this business line or directly paying the shipper to manage port operations. To keep these customers in the DTS, port operations should charge the lower of its own variable costs or commercial shippers' rates to provide customers incentives aligned with the readiness needs of USTRANSCOM. Doing so may create shortfalls in cost recovery, which would also need to be recovered through non-rate mechanism. Again, because the port readiness SLB is already established and focused on this issue, we recommend recovering any shortfalls through that SLB as well.

If other shippers' rates are lower than SDDC's variable costs at some ports, USTRANSCOM would benefit from further analysis of the rates it pays to stevedores versus the rates carriers pay. It is possible that other carriers have more market power than USTRANSCOM has at these ports.

SAAM/JETP Positioning and Depositioning

When customers charter an entire aircraft to move personnel, materiel, or both, it happens within the SAAM or the JETP line of operation.[6] The aircraft can be an organic aircraft owned by the Air Force or a commercial aircraft chartered by USTRANSCOM. Examples of organic aircraft that service these lines of operation are AMC C-5s and C-17s, as well as military augmentation for C-130s, KC-10s, KC-135s, and non-AMC C-5s and C-17s.[7] For both organic and commercial charters, there are charges associated with moving aircraft to the point of embarkation (positioning) and then, once the charter is over, moving the aircraft from the point of debarkation back to its home location (depositioning) or next mission. Both commercial and organic aircraft charge fees associated with this positioning or depositioning of the aircraft (also known as ferry and backhaul in commercial contexts), which are included in the costs that the customer will pay for the movement.

Prior to requesting a movement, customers make choices about how much materiel to move and when to conduct the move. During the booking process, organic customers are told the cost for the direct-mission portion of the flight and the worst-case scenario for how much the positioning and depositioning will cost. TWCF rates are based on flying hours for organic aircraft. Current practice is to include actual positioning and depositioning hours in the total billed cost of the mission (the full rate for positioning and depositioning and live mission hours). Although the customers know the cost per hour of each type of aircraft, they have little certainty about the length of the positioning and depositioning legs. In contrast, commercial aircraft are priced by the seat or ton mile, including a 10 percent administrative service charge. The commercial rates associated with positioning and depositioning miles are set lower than the live miles. The actual length and cost of these repositioning legs are highly variable, according to our analysis of FY16 data; see Figure 5.4 for organically supported missions and Figure 5.5 for commercially supported missions.

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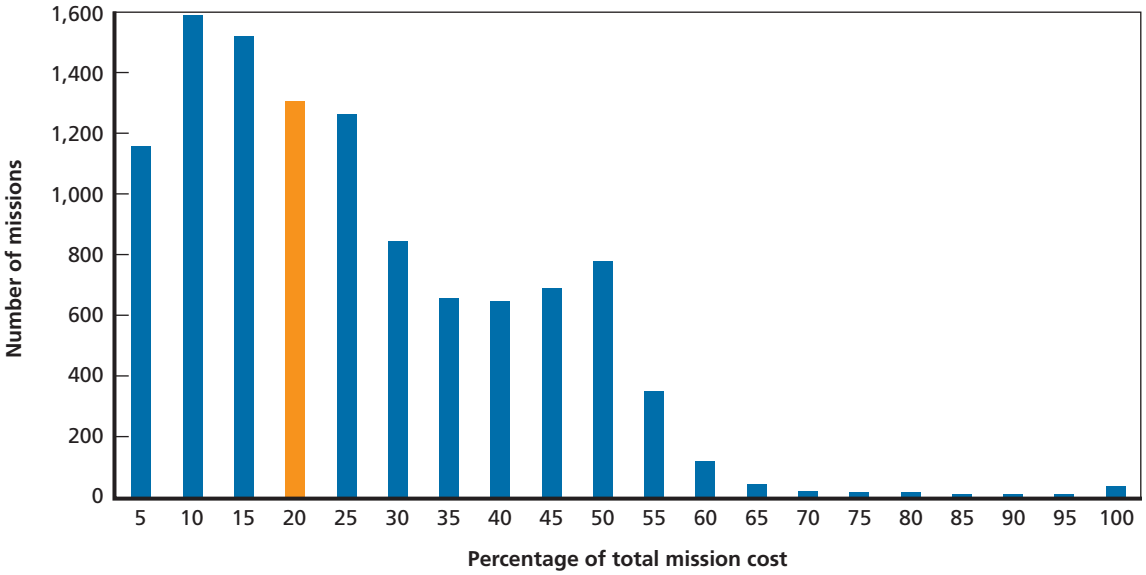
[6] These business lines use the same aircraft for generally the same services but differ based on customer and purpose. SAAMs serve a variety of customers and are frequently used for contingency operations, while the JETP business line exists solely to execute Joint Staff organized training exercises.

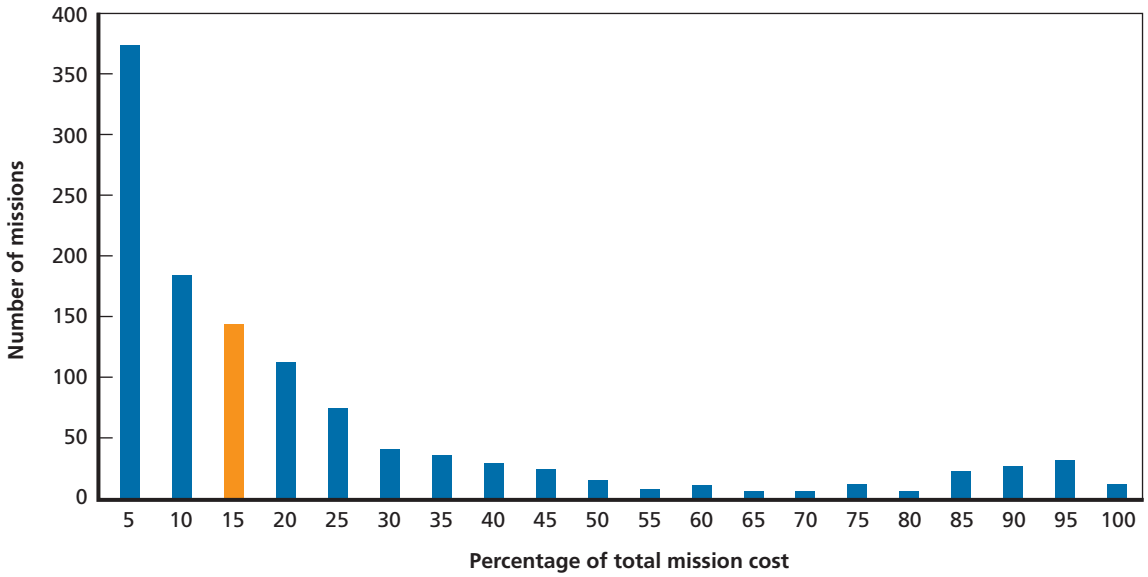
[7] Military augmentation is a cost associated with using reserve component crews.

Figure 5.4
Frequency of Organic Movements by Positioning and Depositioning, as a Percentage of Total Mission Cost for FY16



SOURCE: AMC provided data from the Distribution Component Billing System for flown missions.
NOTES: The orange bar indicates the histogram bucket that includes the mean. Because of the way organic costs are reported in the Distribution Component Billing System, our analysis excludes missions that cross FYs to prevent double counting of dollars or misrepresenting positioning and depositioning costs. In addition, there are some missions that appear to solely consist of positioning and depositioning costs. We inquired about those movements but learned that there was neither a clear explanation nor cleaner data available for analysis. Perhaps these missions were canceled after the aircraft had been positioned.
RAND *RR2438-5.4*

Figure 5.5
Frequency of Commercial Movement by Positioning/Depositioning, as a Percentage of Total Mission Cost for FY16



SOURCE: AMC provided data on commercial augmentation.
NOTE: The orange bar indicates the histogram bucket that includes the mean.
RAND *RR2438-5.5*

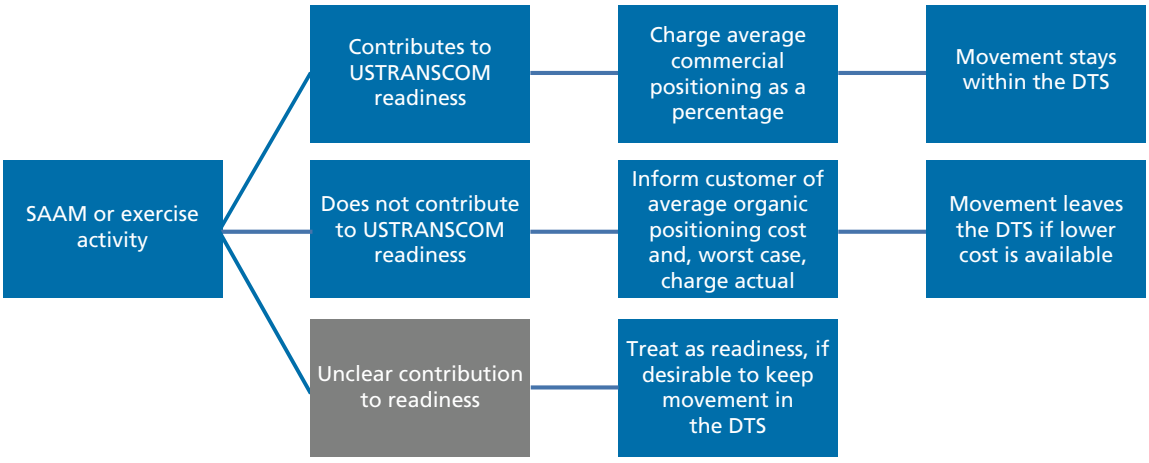
Although the average positioning and depositioning cost for organic movements in FY16 was 18 percent of the total mission cost, as indicated by the orange bar in Figure 5.4, customers are typically facing costs anywhere from 0 to 55 percent. The histogram buckets are for every 5 percentage points; thus, 18 percent appears in the 20 percent bucket. This uncertainty in the final cost of the mission is difficult to budget.

The average cost of ferry and backhaul for commercial augmentation movements is 14 percent of total mission cost, as is shown by the orange bar in Figure 5.5.[8] However, the variation around the average is more concentrated from 1 to 35 percent,[9] so customers are somewhat less likely to be surprised by large positioning costs. Regardless, uncertainty still plays a role in current customer decisionmaking.

Current data for SAAM and JETP movements do not indicate whether a movement increases readiness. But SAAM and JETP movements tend to replicate activities that would be important for surge capacity. Many of these movements take entire units of personnel and equipment to foreign locations for training or contingencies. It is important that USTRANSCOM regularly exercise this capability. At the same time, positioning and depositioning costs are present whether or not the activity is being done organically. Therefore, the marginal cost of chartering an aircraft always includes some costs associated with positioning and depositioning.

We recommend that USTRANSCOM and AMC provide more-transparent information to their customers to help them make decisions that are both cost-effective for DoD and maintain USTRANSCOM readiness. We recognize that USTRANSCOM and AMC do not know the exact cost of positioning and depositioning at time of booking, but it is possible to reduce uncertainty for the customer. Figure 5.6 summarizes our positioning and depositioning rate recommendations.

Figure 5.6
Positioning and Depositioning Rate Recommendations



RAND *RR2438-5.6*

[8] In part, these costs are lower because the rate without cargo or passengers is lower on commercial flights.

[9] The customer learns the actual cost only after the movement is complete. SAAM and JETP customers are encouraged to book at least 30 days in advance. If a customer locks in the date of the charter at least 30 days in advance, the customer receives a discount of 10 percent. This is applicable to both organic and commercial aircraft as a scheduling incentive under certain circumstances.

If a SAAM or JETP activity contributes to USTRANSCOM readiness, then we recommend pricing to keep the movement within the DTS. The average commercial positioning cost tends to be lower than organic positioning. Therefore, we recommend that readiness customers be quoted at time of booking and charged at billing the average commercial positioning cost as a percentage of mission flight hours. This would be about 14 percent of direct-mission-hour costs regardless of whether the aircraft is supplied organically or by commercial augmentation. This price change can be achieved by reducing rates overall for readiness customers or by changing the charges for these legs to a percentage surcharge for these customers. In addition, these recommendations can stabilize rates for readiness customers, giving them more predictability in planning their mission costs. If the costs of organic positioning average 18 percent of total mission costs, then there will be a shortfall in cost recovery through the rates that will need to be addressed by a non-rate mechanism.

If an activity does not contribute to USTRANSCOM readiness, we recommend informing the customer of the average organic positioning cost as a percentage of flying hours, which, in FY16, was 18 percent, as well as the worst-case scenario given the selected departure location. This gives the customer the information to make the most cost-effective decision for DoD, and the customer can seek a provider outside the DTS if it is cheaper. If a nonreadiness activity decides to stay in the DTS, then the DTS is recouping the marginal costs of the move by charging the actual cost associated with positioning and depositioning.

There are some instances in which it is possible that a movement has an unclear contribution to readiness and therefore falls into the gray area of the diagram in Figure 5.6. In these cases, USTRANSCOM can treat these movements as related to readiness if it is desirable to keep the movement in the DTS, but if assets are being overutilized for other movements, then it is possible to shift this demand toward the commercial sector.

As mentioned, charging the average commercial positioning cost will result in some small shortfalls in cost recovery in the likely event that organic assets face higher positioning and depositioning costs. It is possible that a reduction in costs associated with positioning and depositioning could increase demand for SAAM and JETP flights, but once the organic fleet meets its flying requirements, a business rule could shift many of these demands to commercial aircraft to avoid overtaxing the organic fleet. Because the Air Force already has the ARA, we recommend that any shortfalls associated with the difference between the commercial average cost and actual organic positioning costs could be recovered through this mechanism.

Our team has identified no policy hurdles to changing how positioning and depositioning are recovered beyond USTRANSCOM- and AMC-developed documents. Therefore, these recommendations can be implemented after customer contributions to readiness are understood and business systems allow for differential pricing.

Weapon System Supply Chains

When a service designs and procures a new weapon system, it also designs the approach to sustaining that weapon system. This includes a wide range of activities, such as maintenance constructs, parts management, and transportation of items across the supply chain.

Sustainment approaches can vary from provision of all activities by organic sources (including service depots, DLA, and USTRANSCOM) to performance-based logistics approaches in which a contractor manages all sustainment processes to achieve desired levels

of availability, with hybrid options between these end points. If a type of contractor-based support is selected, then the supply chain must integrate effectively with organic organizations and activities during a wartime surge. This includes organic access to data, process alignment, and shifting transportation to USTRANCOM, which is the provider of strategic movement to support the sustainment of weapon systems during wartime.

Decisions about characteristics of the sustainment approach for a new weapon system are made by the program office and the program executive officer. Discussions begin very early in the life of the program, and the details are finalized as the program proceeds. For example, the Air Force includes a high-level discussion of the intended sustainment approach in its initial acquisition strategy documents. Unless there is a requirement for organic support, contractors have strong incentives to push for and develop plans for contract support. The Navy finalizes the sustainment approach for a new system through the materiel support decision process, which occurs after Milestone C, the beginning of production. A materiel support decision is made by the program, the program executive officer, and the Naval Supply Systems Command regarding whether to move the sustainment of the system into the Naval Inventory Control Point supply system and the Naval Supply Working Capital Fund.

From a purely wartime support perspective, organic-sustainment approaches allow for a straightforward transition between peacetime and wartime support for a system. However, if contract support is desired, requirements can be shaped to reduce risks associated with the transition to integrate necessary portions of the supply chain with organic support in wartime. For example, a program can build in a requirement to periodically test the ability of the contractor support system to integrate into organic surge activities.

To ensure that USTRANSCOM can provide the transportation support needed to sustain weapon systems in wartime, it can engage with the weapon system programs and service sustainment commands early in their acquisition processes, providing information about transportation costs, performance, and wartime sustainment processes. Recent efforts to engage contractor-supported systems (Faris, undated) are an initial step on integration but might not make USTRANSCOM fully prepared for integration with its U.S. military customers during contingency operations.

According to the principles of our recommendations, if USTRANSCOM wants new systems to have organic sustainment transportation to support readiness, then it should price these services in peacetime at a competitive rate to incentivize the services to keep these activities within the DTS. If the decision is still made to utilize contract support, USTRANSCOM should work with the acquisition community to develop requirements for testing the ability to integrate the supply chain into organic support for wartime surges.

CHAPTER SIX

Recommendations for a Future USTRANSCOM Cost-Recovery System

USTRANSCOM is currently recovering some fixed costs—those that are required to support USTRANSCOM's mission and are largely invariant despite the level of customer activity flowing through the DTS—from customers through rates. This policy runs against preferred practice in relevant academic literature, suggesting that customer incentives could be better aligned with DTS readiness needs through changes in USTRANSCOM's cost-recovery structure. In this chapter, we outline some near-term steps that USTRANSCOM could take to move toward this new cost-recovery system, describe the process USTRANSCOM might use for cost recovery, discuss relevant policy or regulatory changes required to implement this change, and describe changes to business systems required for implementation.

Near Term

We recognize that fully implementing the recommendations presented here is challenging and will take some time. Yet there are incremental steps that can be taken in the near term to move TWCF rates in the desired direction. **The first recommendation is to recover fixed costs through non-rate mechanisms, where possible.** Removing fixed costs from the rates will limit the shortfalls and windfalls associated with incorrect workload forecasts. Furthermore, removing fixed costs will not prevent price fluctuations in such areas as POL; therefore, the AOR will continue to exist. The WCF will continue to smooth revenues and costs for USTRANSCOM customers.

Our analysis, outlined in Chapter Four, can help inform how to change the rates. For instance, SDDC could work to shift more of its fixed costs in port operations to its SLB without any changes to regulation or DoD policy. Meanwhile, changes to cost recovery associated with more-complex areas, such as G&A, could be approached two different ways. As discussed in more depth in Chapter Five, current policy indicates that DWCFs must pay for G&A costs through rates. The first option is to revise policy directly to allow for G&A outside of the rates. However, policy also allows an exception for readiness costs—arguably including G&A—that could be used while working toward policy change. So the second option is to argue that G&A is a readiness cost while pushing for regulatory change.

The second step is for USTRANSCOM to begin an assessment of which activities contribute to USTRANSCOM readiness. Although USTRANSCOM has a working definition of its own readiness, it needs to operationalize this definition to understand which activities associated with customer requests improve its readiness and which activities have little

impact on readiness. It is possible that certain mobility activities may have diminishing returns to scale. For example, the 20th movement to a port or between ports during a year may contribute less to USTRANSCOM's readiness than the first movement to that port. Too much activity on organic assets may result in overusage of limited resources, so readiness goals may benefit from a floor and a ceiling for annual usage. Once USTRANSCOM has a clear understanding of what activities contribute to readiness, and the level to which the system must be exercised to be ready, then it is possible to more fully implement the cost-recovery approach we outlined to align customer incentives with readiness needs.

USTRANSCOM can benefit from a new cost-recovery approach that will provide the right incentives for customers across DoD to make movement choices that ensure that USTRANSCOM has future capability to surge. Although not all of these changes can be implemented immediately, the intermediate steps should help the organization make changes that will lead to better alignment of customer incentives with USTRANSCOM readiness.

Future Process

As we described in Chapter Four, there are two key principles underlying our recommendations for changes to USTRANSCOM's cost-recovery approach. First, best practice calls for USTRANSCOM to recover fixed costs through non-rate revenue. These fixed costs can be recovered through non-rate mechanisms, such as appropriations, SLBs, and readiness accounts, rather than rates.

Second, we recommend that USTRANSCOM structure rates to drive activities that contribute to USTRANSCOM's readiness into the DTS. For those activities, customers should be charged the lowest price of available options. Sometimes this lowest price will be the variable cost to the DTS associated with the customer requirement, and sometimes it will be the cost of a commercial option outside the DTS. If a commercial option exists that is cheaper than the DTS variable cost, the customer should be charged this commercial price to encourage the activity to stay within the DTS. Non-rate revenues will be needed to cover any shortfalls associated with the commercial benchmarking of prices. Figure 4.4 presented a flowchart of the implementation of this recommendation.

Those activities not contributing to USTRANSCOM's readiness should be priced based on the cost that customer requirements impose on the system. This practice will ensure that customers make cost-effective decisions for the enterprise as a whole, even if some movements leave the DTS. If the activity has been designated as not contributing to readiness, then the loss of the activities from the DTS should have no impact on USTRANCOM's ability to meet contingency requirements. In addition, this will avoid taxing limited assets and allow personnel to focus on tasks that are considered to be contributing to readiness. For some activities, USTRANSCOM may have trouble identifying whether they contribute to readiness. Activities in this gray area could still benefit from this framework, with rates charged based on whether USTRANSCOM wants to maintain that business within the DTS or allow it to possibly exit the system.

Implementation of Recommendations

Implementing our recommendations would require changes to policy and regulations, business systems, and internal USTRANSCOM processes. In the following sections, we discuss changes in these areas that would need to be made in the long term.

Longer-Term Policy and Regulatory Change

According to 10 U.S.C. 2208 (2012) and the DoD FMR (DoD, 2014), WCF activities are required to set their prices based on full cost recovery, including all overhead. But a close reading of the FMR provides additional options. The FMR suggests that an organization could justify removing an activity from the DWCF and returning it to appropriated funds if it is difficult to identify the customers so they can budget accordingly or if the advantages of the buyer-seller relationship do not exceed the disadvantages. Additionally, the FMR policy requires that rates not include mobilization-related costs. Because USTRANSCOM's infrastructure is sized to allow for mobilization in contingencies, logic would suggest that readiness costs should not be entirely recovered from customers through rates.

To implement our recommended cost-recovery structure, we suggest that fixed costs needed for mission readiness that are not affected by customer demands be removed from the DWCF. In this case, no immediate change to the United States Code, and therefore legislation, is required. An alternative strategy is for USTRANSCOM to push for revisions of the FMR to explicitly allow fixed costs to be recovered outside the rates without a specific attachment to mobilization for each fixed cost.

Longer-Term Updates to Business Systems

Business and IT systems are key requirements for worldwide mobility and for allowing USTRANSCOM to analyze how efficiently and effectively they can meet the mission. Existing systems are fragmented and make it difficult to piece together customer requirements with costs to USTRANSCOM and the final amount billed to the customer. In addition, the systems have information that is too limited about each movement's contribution to readiness. Therefore, these systems severely limit USTRANSCOM's ability to do analysis. To apply our recommendations for the future cost-recovery process, systems would need to be able to track contributions to USTRANSCOM's readiness and track more-detailed costs back to specific customer activities. With improved cost tracking, it will be possible to stop blending existing rates, ensuring that rates reflect the costs that customers impose on the system and that what is included in the prices is communicated to customers.

APPENDIX A

Policy

Existing Policy

USTRANSCOM relies on a wide array of policy documents to guide its operations and management of the TWCF. Some of these documents are the result of specific legislation, such as 10 U.S.C. 2208 (2012), while others are developed internally by DoD. Those developed internally are easier for USTRANSCOM to update. For this effort, we examined several documents that could affect how USTRANSCOM chooses to recover costs in the future. These documents include the following:

- 10 U.S.C. 2208 (2012)
- DoD Directive 5158.04 (2007)
- DoD Instruction 4515.13 (2016)
- DoD Directive 4500.09R–Part II (2018)
- DoD FMR 7000.14, Vol. 1; Vol. 2B, Chapter 9; Vol. 4, Chapter 6; and Volume 11B, Chapter 58 (DoD, 2010; DoD, 2014; DoD, 2009b; DoD, 2009a)
- Air Force Instruction 65-601 (2015)
- Jones Act (Pub. L. 261, 1920)
- Military Cargo Preference Act of 1904 (10 U.S.C. 2631)
- DoD Directive 4500.09E (2017).

Some of these laws, policies, and regulations provide background but do not affect our recommendations. For instance, our recommendations work entirely within the constraints laid out by the Jones Act's and the Military Cargo Preference Act's requirements that government cargoes are carried on U.S. flagged ships with U.S. merchant mariners (Pub. L. 261, 1920; 10 U.S.C. 2631, 2012). Similarly, DoD Directive 4500.09E (2017), on transportation and traffic management, specified how transportation requirements would be identified for USTRANSCOM, mandated the use of U.S. flagged vessels, regulated that commercial resources be used "to the maximum extent that is practicable," and required that transportation requirements be met cost-effectively. Our recommendations would not affect the identification of transportation requirements or the use of commercial resources, including U.S. flagged vessels, but would promote cost-effective usage of transportation resources (DoD Directive 4500.09E, 2017). Other existing policies require more-detailed analysis, which we outline in this appendix.

National Security Act of 1947

The policy (10 U.S.C. 2208) associated with WCFs stems from the National Security Act of 1947, which requires that

> [c]harges for goods and services provided for an activity through a working-capital fund shall include the following: (A) Amounts necessary to recover the full costs of the goods and services provided for that activity. (B) Amounts for depreciation of capital assets, set in accordance with generally accepted accounting principles. (10 U.S.C. 2208, 2012)

The same document indicates that charges cannot include amounts that are necessary to recover "the costs of functions designated by the Secretary of Defense as mission critical." In addition, the law highlights what costs the WCF will need to cover:

> Working-capital funds shall be charged, when appropriate, with the cost of—
>
> (1) supplies that are procured or otherwise acquired, manufactured, repaired, issued, or used, including the cost of the procurement and qualification of technology-enhanced maintenance capabilities that improve either reliability, maintainability, sustainability, or supportability and have, at a minimum, been demonstrated to be functional in an actual system application or operational environment; and
>
> (2) services or work performed; including applicable administrative expenses, and be reimbursed from available appropriations or otherwise credited for those costs, including applicable administrative expenses and costs of using equipment. (10 U.S.C. 2208, 2012)

This "when appropriate" language leaves room for appropriations to cover some of the costs of meeting their mission. Thus, the current United States Code suggests that the majority of costs should be billed to the customer but also provides some room for interpretation associated with the costs that are included and excluded from the fund, based on mission criticality and appropriateness.

DoD Directive 5158.04

DoD Directive 5158.04 (2007), *United States Transportation Command*, designates the commander of USTRANSCOM as the official DoD distribution process owner, manager of the TWCF, and overseer of global mobility readiness. In addition, the directive outlines the mission of the organization: "[P]rovide effective and efficient air, land and sea transportation for the Department of Defense" (DoD Directive 5158.04, 2007). Moreover, it highlights how USTRANSCOM needs to maintain good relationships with the commercial transportation world through readiness programs, such as VISA, Voluntary Tanker Agreement, Sealift Readiness Program, and Civil Reserve Air Fleet.

This directive allows USTRANSCOM to take a very active role in ensuring readiness, which supports our recommendations. Our recommendations do not require any changes to this directive.

DoD Directive 4500.0-R

DoD Directive 4500.09R outlines the policies guiding use of DoD-owned and -controlled aircraft and sealift. We reviewed both the passenger and cargo parts of the regulation (DoD Directive 4500.09R-Part I, 2017; DoD Directive 4500.09R-Part II, 2018).

In the passenger section, the document makes it clear that "DoD activities are required to use DTS services outlined in this regulation except when they are Service-unique or theater assigned transportation assets." For passenger movements, deviations from DTS requirements are approved only if a user can establish that existing procedures are unworkable (DoD Directive 4500.09R-Part I, 2017).

The cargo portion (DoD Directive 4500.09R-Part II, 2018) allows the Undersecretary of Defense for Acquisition, Technology and Logistics to "grant exceptions" to DoD Directive 4500.09E (2017). This is important because it gives the procurement community a choice regarding how to provide logistics for programs. Customers with choices will often exercise them in favor of low-cost options. In particular, the acquisition community has the potential to bypass the DTS with performance-based logistics contracts.

FMR

The DoD FMR directs "financial management . . . of appropriated and non-appropriated, working capital, revolving, and trust fund activities" (DoD, 2017b). Vol. 2B, Chapter Nine, covers DWCF budget justification analysis (DoD, 2014). This volume includes regulations on full recovery of costs, rate setting, and underutilized plant capacity. It highlights that the DWCF creates a customer-provider relationship that is not profit oriented and is designed to break even. Ideally, this relationship encourages all buyers and sellers to be cost conscious in a way they are not with appropriated funds. To put an activity within the DWCF, four criteria should be met:

1. identification of product or service
2. presence of a cost-accounting system
3. identification of customer so they can budget resources accordingly
4. evaluation of costs and benefits, including whether the customer can "influence cost by changing demand."

Therefore, it is possible that an organization could justify removing an activity from the DWCF and returning it to appropriated funds if it is difficult to identify the customers so they can budget accordingly or if the advantages of the buyer-seller relationship do not exceed the disadvantages. At this time, many DoD customers have difficulty predicting their future requirements for movement and thus might not budget adequately for services.

The regulation continues to say that DWCF management headquarters costs must be included in the rates:

> A DWCF management headquarters is a discrete organization or part of an organization that has authority over the management of the DWCF activity group. OSD [Office of the Secretary of Defense] and Service Departmental activities normally do not have this direct responsibility. All the major systems/logistics organizations in the Services include headquarters elements directly supporting DWCF activities that should be funded or reimbursed by DWCF activity groups. Costs for discrete DWCF management headquarters organiza-

> tions and parts of organizations that perform direct DWCF management headquarters functions should be directly funded by DWCF, if feasible, or reimbursed by DWCF. Only significant costs (exceeding 1 percent of the total activity group costs, or if less than 1 percent, costs that exceed $1 million) should be reimbursed. In addition, significant costs for common support functions (e.g., counsel, personnel, etc.) at organizations partially funded or reimbursed by DWCF (i.e., that have direct DWCF management responsibilities) should also be allocated, if feasible. (DoD, 2014)

Although this policy recommends that all indirect costs be included in the WCF rates, in other sections, the FMR suggests that readiness costs should be excluded from rates. The FMR also indicates that there is precedent for dual-funded organizations that use both a DWCF and appropriated funds:

> A dual funded organization is an organization that is funded (including reimbursable funding) by both the DWCF and other appropriations or accounts. In those instances where a function is funded with a combination of both DWCF and appropriated funds, the function initially will be funded in its entirety either by the DWCF or by appropriated funds. The determination of whether the particular function initially is to be funded by the DWCF or by appropriated funds will be based on the predominance of definable units of measure for the function—e.g., work load, productive hours, outputs, or ultimate use. The part of the organization (or funding source provided) initially funding the function shall be reimbursed for appropriate amounts by other parts of the organization (or financing sources or customers) involved. Reimbursement (and the allocation of costs) between the provider and customer shall be made based on the same unit of measure—e.g., work load, productive hours, outputs, or ultimate use—as was used to determine which organization (or funding source) initially funded the applicable costs; and the amount of reimbursement shall be determined based on the relative portion of that unit of measure attributable to each part of the organization (or funding source) involved. (DoD, 2014)

In theory, this should allow for shifting some costs to non-rate revenue if the appropriated funds reimburse the DWCF. Another area that provides flexibility within the FMR is mobilization capability costs:

> The DWCF activities should identify all costs related to maintaining a capacity to meet mobilization requirements. These costs are not considered normal operating costs and may be reimbursed by direct appropriations so that customer rates are not burdened by contingency requirements.
>
> Mobilization capability costs include the costs to maintain a surge capacity, to procure and maintain approved war reserve material levels, and/or to maintain other assets, functions, or capabilities required to meet an operational contingency as documented in Defense Planning guidance or operational plans. All costs at businesses within the Fund related to maintaining a capacity to meet mobilization requirements will be reimbursed by funds that are from direct appropriations and will not be financed through customer rates.
>
> 1. War Reserve Material. Initial procurement of war reserve material will be funded by a direct appropriation to the Fund. Such appropriated amounts for secondary items shall be reflected as a separate goal within the applicable Supply Management or Commissary Resale activity group AOB [Annual Operating Budget].

> 2. Unutilized and Underutilized Plant Capacity.
>
> a. Unutilized Plant Capacity (UPC) represents costs associated with maintaining facilities to meet surge capacity needed for mobilization or war. The UPC is a mobilization requirement budgeted in and funded by Operation and Maintenance appropriation funds of the DoD Component responsible for the activity's management. Do not include UPC costs in the DWCF rate structure. As a general rule, UPC funding includes the pro-rata facilities support costs for any month in which 1) mobilization facilities are not used or 2) facilities are used 20 percent or less of available work days.
>
> b. Mobilization expenses related to UPC may include both maintenance and labor costs related to mobilization.
>
> c. Each non-supply DWCF activity should prepare a UPC Budget Exhibit (Fund-30). This exhibit documents total capacity, Unutilized Capacity Index, justification, and cost used in developing the request for UPC. All non-supply DWCF activities should complete the three capacity-index metrics found in Part I of the exhibit. Any non-supply activity requesting UPC funding will also complete the funded UPC line in Part I and the UPC justification in Part II of the exhibit.
>
> Industrial Mobilization Costs. The Army established a category of costs that includes both UPC and underutilized facilities cost called "Industrial Mobilization Cost." The Army will use the Exhibit Fund-30, "Under Utilized Plant Capacity" to justify their IMC [Industrial Mobilization Costs] costs. (DoD, 2014)

The plant capacity and industrial mobilization cost sections of the regulation could be the template for developing a specific section of the regulation applying to fixed costs that ensure that USTRANSCOM can meet its mission surge requirement (DoD, 2014). In theory, the logic behind war reserve being outside of the rates could be extended to portions of port operations.

Another area of potential flexibility is in the DoD FMR, which allows for alternative rate development:

> Components may propose methods other than the standardized rates for recovering the cost of operations so long as they are mathematically equivalent to the standardized rate. Any alternative pricing methods must be fully documented and justified in the DoD Components' Program/Budget Review. Any method (such as percentage of sales instead of markup on cost) must demonstrate recovery of all operating costs, provide a comparison of the current method to the method proposed, show the impact to customer funding requirements, and provide a timeline for implementation. Any change in the presentation of standardized rates for budget purposes must be approved in advance by the Director, Revolving Funds, and documented in the appropriate decision document. (DoD, 2014)

The process of alternative rate development may be an option for altering how fixed costs are recovered, as long at the rate process is documented and justified by one of the earlier surge-capacity exceptions to full rate recovery.

In addition to specifying which costs can and cannot be included in rates, the FMR indicates that DWCFs must work to break even over a several-year period:

> Accumulated Operating Results (AOR) Retention—The AOR Retention represents the amount planned for return to customer accounts via downward rate adjustments. The AOR line of the Exhibit Fund-14, "Revenue and Costs," in the approved budget submission constitutes the basis for the adjustment. Services/Agencies can plan for the return of AOR in a single year or over 2 years. (DoD, 2014)

Because our recommendations focus on recovering variable costs through the rates, ideally, the TWCF will be able to more easily break even within one to two years. The FMR also speaks to how AMC can use the ARA to meet shortfalls from the customer rates:

> Airlift Readiness Account (ARA). The United States Transportation Command (USTRANSCOM) must maintain sufficient airlift capability to respond to transportation requirements for a wide variety of mobilization conditions. This requirement exists in both peacetime and contingency environments. To the extent customer revenue is insufficient to support the costs of maintaining this capability; the Air Force shall provide appropriated funds. The USTRANSCOM will record this funding as an order and revenue in its financial reports. The USTRANSCOM must submit the Fund-8, "Air Mobility Command Common User Services" exhibit to justify the ARA requirement. (DoD, 2014)

SDDC is also given leeway in recovering costs outside of traditional rates for some readiness related capacity:

> Reserve Industrial Capacity (RIC). The Military Surface Deployment and Distribution Command (SDDC) shall plan for and maintain a Reserve Industrial Capacity (RIC) to transport personnel resources, material, and other elements required to satisfy a mobilization requirement. The SDDC will also plan and program with the Army for 100 percent of the operating cost at the Military Ocean Terminal, Concord (MOTCO). The Military Ocean Terminal, Sunny Point (MOTSU) RIC and the operating costs at MOTCO are a mobilization requirement funded by appropriated funds from the DoD Component having management responsibility for this activity. This requirement may exist in both peacetime and contingency environments. The USTRANSCOM will record the receipt of this funding as an order and revenue in its financial reports. The SDDC will provide a detailed break out of these costs in its budget submission to Office of the Under Secretary of Defense (Comptroller) (OUSD (C)). (DoD, 2014)

Thus, several areas of the FMR provide precedent for removing costs from WCF rates, despite the initial inflexible language of full cost recovery.

Air Force Instruction 65-601, Vol. 1, Chapter 18

Air Force Instruction 65-601 (2015) has a detailed chapter on the DWCF that applies to AMC. It appears that most of this instruction closely follows what is outlined in the FMR. It highlights that the primary reasons for a WCF are controlling costs through better business practices and increasing cost visibility. For instance, Section 18.4 discusses setting stabilized rates based on a measure of output (such as USTRANSCOM workload metrics for the year). Section 18.6 specifies which costs to include in the DWCF. Section 18.7 is the corollary of the prior section and indicates which costs to exclude from the DWCF. Much like the FMR guidance, Section 18.7 dictates that mobilization costs be excluded. Section 18.3 is particularly limiting:

> All Activity Groups in the Fund must set prices to recover full costs, including all direct costs, indirect costs, general and administrative support provided by others, depreciation expenses, and amortization. Include all costs in the Activity Group's operating budget. (Air Force Instruction 65-601, 2015)

Section 18.6 is equally constraining:

> Reflect the total cost of production in pricing goods and services. Total Cost of Production includes all direct costs, overhead costs, and general & administrative (G&A) costs, and depreciation expenses and amortization (i.e. absorption accounting). (Air Force Instruction 65-601, 2015)

However, Section 18.7 indicates that the rates should not include mobilization and surge costs and that they should include only peacetime operating costs. It also provides leeway associated with the maintenance of a totally idle plant, equipment and real property, and operating and maintaining activities "located in the DWCF activity but not helping to produce or sell goods and services." Finally, it allows for the exclusion of military labor costs. The similarity of this document to the FMR means that any updates to the FMR would likely need to be replicated in Air Force Instruction 65-601.

Potential Policy Updates

Although all overhead costs are supposed to be recouped, according to the FMR, we think that there is a case to be made that these costs should not be recouped through rates, because they are inherently sized to allow for surge during wartime. Current regulation offers some flexibility in interpretation of which costs are defined as indirect and G&A costs versus mobilization capacity for contingencies that should not be reimbursed through rates. Thus, USTRANSCOM could shift some of these costs from G&A to a mobilization-capacity cost element. Moreover, the policy allows for dual-funded organizations where appropriation and rates are forms of revenue. Instead, USTRANSCOM could seek to exclude costs from the WCF based on the four criteria for putting an activity in a DWCF or by arguing that much of its infrastructure spending is similar to underutilized plant capacity or mobilization requirements in that it is necessary for future readiness. These arguments allow USTRANSCOM to continue operating within the existing FMR.

Alternatively, USTRANSCOM could also push to revise the FMR and Air Force Instruction 65-601 (2015) so that DWCF operations can remove fixed costs from the rates and recoup them through non-rate revenue. Then policy would align customer incentives with USTRANSCOM readiness through pricing.

APPENDIX B

Supplementary Data Analysis

In Chapter Four, we presented correlation analysis drawing on USTRANSCOM IF-12s for measures of actual workload and expenditures, by cost category and business line. We also examined what costs vary based on statistical analysis of USTRANSCOM-reported workload using historical IF-12 data from FY06 to FY16. Workload items cover a variety of metrics across business lines—for example, flight hours by aircraft type or measurement tons of cars transported via surface operations. For each cost category and line of business combination, we calculated Pearson correlations between that combination and all actual workload measures reported for a component. A cost category and line of business combination is deemed to vary if the combination is significantly correlated with any of the actual activity measures at the $p < 0.1$ significance level. Tables B.1 through B.11 provide the specific workload measures, drawn from the IF-12s, that correlate with each cost category and business line combination. We also present the magnitude of the correlation. As in Chapter Four, we are only presenting significant correlations ($p < 0.1$).

Table B.1
SDDC Correlations: Any Measure of Workload

Cost Category	Port Operations	DP3	Liner Ocean Transport
Military labor			
Civilian labor			
Travel	0.8		0.7
Supplies/equipment/material	0.6		0.9
USTRANSCOM G&A			
USTRANSCOM G&A maintenance and utilities			
Other purchases from WCF (less USTRANSCOM G&A)			
Transportation of things			
Direct contracts		0.6	0.6
Direct contracts—firm fixed price			
Depreciation			
Facilities maintenance/utilities/rent/lease			
ADPE			
Other contracts			
Direct reimbursed container detention			
Other			

Table B.2
SDDC Correlations: Port Operations

Cost Category	Port Operations	DP3	Liner Ocean Transport
Military labor			
Civilian labor			
Travel	0.7		0.7
Supplies/equipment/material	0.6		0.9
USTRANSCOM G&A			
USTRANSCOM G&A maintenance and utilities			
Other purchases from WCF (less USTRANSCOM G&A)			
Transportation of things			
Direct contracts			
Direct contracts—firm fixed price			
Depreciation			
Facilities maintenance/utilities/rent/lease			
ADPE			
Other contracts			
Direct reimbursed container detention			
Other			

Table B.3
SDDC Correlations: Vehicles Moved

Cost Category	Port Operations	DP3	Liner Ocean Transport
Military labor			
Civilian labor			
Travel			
Supplies/equipment/material			
USTRANSCOM G&A			
TRANSCOM G&A maintenance and utilities			
Other purchases from WCF (less USTRANSCOM G&A)			
Transportation of things			
Direct contracts		0.6	
Direct contracts—firm fixed price			
Depreciation			
Facilities maintenance/utilities/rent/lease			
ADPE			
Other contracts			
Direct reimbursed container detention			
Other			

Table B.4
SDDC Correlations: Liner Cargo

Cost Category	Port Operations	DP3	Liner Ocean Transport
Military labor			
Civilian labor			
Travel	0.8		0.6
Supplies/equipment/material	0.6		0.8
USTRANSCOM G&A			
USTRANSCOM G&A maintenance and utilities			
Other purchases from WCF (less USTRANSCOM G&A)			
Transportation of things			
Direct contracts			0.6
Direct contracts—firm fixed price			
Depreciation			
Facilities maintenance/utilities/rent/lease			
ADPE			
Other contracts			
Direct reimbursed container detention			
Direct reimbursed container detention purchase			
Direct reimbursed container purchase			
Other			

Table B.5
AMC Correlations: Any Actual

Cost Category	Passenger	Cargo	SAAM	Exercise
Civilian personnel	0.9	0.7	0.6	
Aviation POL (flying)/mobility gasoline	0.6	0.6		0.6
Supplies/equipment	1.0	0.8	0.9	
Military augmentation			0.9	0.6
Commercial augmentation	0.8	1.0	1.0	0.9
Depot maintenance	0.6	0.9	0.6	0.8
Contractor logistic support				
Depot-level repair	0.6	0.7		
Travel				
Depreciation				
G&A	0.6			
ADPE	0.6	0.8	0.6	
Facility maintenance/utilities		0.6	0.7	
Other	0.9	0.9	0.9	

Table B.6
AMC Correlations: Passengers

Cost Category	Passenger	Cargo	SAAM	Exercise
Civilian personnel		0.7		
Aviation POL (flying)/mobility gasoline				0.6
Supplies/equipment				
Military augmentation				
Commercial augmentation	0.8			
Depot maintenance				
Contractor logistic support				
Depot-level repair				
Travel				
Depreciation				
G&A	0.6			
ADPE	0.6	0.8	0.6	
Facility maintenance/utilities		0.6		
Other				

Table B.7
AMC Correlations: Channel Cargo

Cost Category	Passenger	Cargo	SAAM	Exercise
Civilian personnel				
Aviation POL (flying)/mobility gasoline		0.6		
Supplies/equipment	0.6	0.7	0.8	
Military augmentation			0.8	0.6
Commercial augmentation		1.0	0.8	0.9
Depot maintenance			0.6	0.7
Contractor logistic support				
Depot-level repair				
Travel				
Depreciation				
G&A				
ADPE				
Facility maintenance/utilities			0.6	
Other	0.6	0.7	0.6	

Table B.8
AMC Correlations: SAAM

Cost Category	Passenger	Cargo	SAAM	Exercise
Civilian personnel			0.6	
Aviation POL (flying)/Mobility Gasoline		0.6		
Supplies/equipment			0.9	
Military augmentation			0.9	
Commercial augmentation		0.8	1.0	0.8
Depot maintenance			0.6	0.7
Contractor logistic support				
Depot-level repair				
Travel				
Depreciation				
G&A			0.6	
ADPE				
Facility maintenance/utilities			0.7	
Other		0.9	0.9	

Table B.9
AMC Correlations: C-5

Cost Category	Passenger	Cargo	SAAM	Exercise
Civilian personnel	0.6			
Aviation POL (flying)/mobility gasoline				
Supplies/equipment	0.7	0.8		
Military augmentation				
Commercial augmentation				
Depot maintenance				
Contractor logistic support				
Depot-level repair	0.6	0.9		0.6
Travel				
Depreciation				
G&A				
ADPE				
Facility maintenance/utilities				
Other	0.6			

Table B.10
AMC Correlations: C-17

Cost Category	Passenger	Cargo	SAAM	Exercise
Civilian personnel	0.9			
Aviation POL (flying)/mobility gasoline	0.6			
Supplies/equip	1.0	0.7		
Military augmentation				
Commercial augmentation		0.6		
Depot maintenance	0.7			
Contractor logistic support				
Depot-level repair		0.6		
Travel				
Depreciation				
G&A				
ADPE				
Facility maintenance/utilities				
Other	0.9			

Table B.11
AMC Correlations: POL

Cost Category	Passenger	Cargo	SAAM	Exercise
Civilian personnel	0.6			
Aviation POL (flying)/mobility gasoline	0.6			
Supplies/equipment	0.8	0.9	0.6	
Military augmentation				
Commercial augmentation		0.8	0.7	0.6
Depot maintenance				0.8
Contractor logistic support				
Depot-level repair	0.6	0.7		
Travel				
Depreciation				
G&A				
ADPE				
Facility maintenance/utilities				
Other	0.8			

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