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Report to Congressional Requesters

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MILITARY EXCHANGES

Exchange Service Management of Army and Air Force Package Stores

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National Security and
International Affairs Division

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The Honorable Charles S. Robb
United States Senate

The Honorable Owen B. Pickett
House of Representatives

To consolidate operations and increase earnings, the House Committee on Armed Services directed that the Army and Air Force transfer their wholesale and retail alcoholic beverage operations to the Army and Air Force Exchange Service. After the March 1989 transfer, the Exchange Service made changes in the procurement practices of military package stores. As you requested, we analyzed those changes to determine whether

- the initial decision to deliver distilled spirits to package stores through the Exchange Service's distribution network—rather than through vendors—was based on an appropriate economic analysis and
- the Exchange Service's estimated per-case freight and handling cost was reliable for evaluating distribution offers from vendors.

We also evaluated whether the transfer of package stores to Exchange Service management had (1) produced increased revenues as expected and (2) affected shelf prices of distilled spirits.

We briefed your offices on our preliminary findings in March and May 1990. This letter summarizes the results of those briefings. It also provides additional information on legislation governing how and where the Exchange Service buys distilled spirits (see app. II) and on state taxes levied on distilled spirits purchased by the Exchange Service (see app. III).

Results in Brief

The Exchange Service did not make an economic analysis before deciding to store and deliver distilled spirits through its central distribution network.

The Exchange Service's per-case cost estimate, based on an economic analysis for a specific vendor, was inaccurate for that vendor and inappropriate for evaluating the distribution offers of other vendors. The Exchange Service plans to revise and update the economic analysis model used to evaluate vendors' distribution offers.

The package stores did not generate revenues equal to their fiscal year 1988 income of $58,962,300. The Exchange Service almost met its guaranteed revenues on package store operations in fiscal year 1989, coming up short $334,800 on net revenues (total sales minus the cost of goods sold and direct store sales expenses) of $58,627,500. The revenue shortage and central overhead expenses of about $20 million assignable to package store operations were covered by revenues from other Exchange Service operations.

Average shelf prices of distilled spirits have decreased slightly since the Exchange Service began operating the package stores.

Background

Alcoholic beverages sold at package stores on Army and Air Force bases are purchased wholesale with funds from the retail sales of the beverages. Earnings, in turn, are contributed to the installations' morale, welfare, and recreation (MWR) activities, such as day-care programs, libraries, and recreation centers. To the extent that these earnings are available for MWR activities, they offset the need for the Congress to appropriate funds for these activities.

The House Committee on Armed Services believed that the transfer of alcoholic beverage operations from the individual military installations to the Army and Air Force Exchange Service would significantly increase earnings to support MWR activities. In its report on the National Defense Authorization Act for fiscal year 1989, the Committee also stated that the military services and the Exchange Service (which operates retail stores at military bases) had duplicative purchasing, transportation, and marketing systems. The Committee therefore directed that the Exchange Service take over the operation of Army and Air Force package stores and wholesale operations.[1]

Under the transfer, the Exchange Service took over the management of approximately 190 package stores at military installations across the United States. Package store managers are required to follow Exchange Service procurement procedures when ordering distilled spirits, wine, beer, and malt beverages.

[1]Wholesale operations consist of sales to nonappropriated fund activities such as clubs, golf courses, bowling alleys, and other authorized activities.

Central Distribution of Distilled Spirits

Because the Exchange Service did not conduct an economic analysis before deciding to store and deliver distilled spirits through its distribution network, the Exchange Service did not determine whether that decision was cost-effective and efficient.

Before the transfer to Exchange Service management, package store managers purchased distilled spirits either from local wholesale distributors or from distillers under an Air Force-operated, voluntary group-buying arrangement with direct delivery. After the transfer, the stores that had been receiving distilled spirits through the Air Force began receiving them through the Exchange Service's central distribution network. The stores receiving products from local distributors continued that practice until January 1, 1990, after which most stores were directed to order products from the Exchange Service warehouse unless local distributors could meet or beat warehouse prices. The Exchange Service warehouse handles an assortment of approximately 300 products from 27 vendors.

Although they did not conduct an economic analysis, Exchange Service officials believed that they could obtain lower prices from distillers by warehousing distilled spirits. Also, by using their own distribution system rather than purchasing from within-state distributors, they believed they could better control distribution to package stores. In addition, the Exchange Service had experience operating a nationwide distribution system for many of the products sold in Exchange Service stores. Moreover, the Exchange Service expected its distribution costs to be lower than those in the private sector because, as an instrumentality of the United States, the Exchange Service is exempt from direct state and local taxes. The Exchange Service also does not pay rent for the use of government-owned warehouses.

To pick up, store, and deliver the distilled spirits to package stores, however, the Exchange Service had to make significant capital purchases, including tractors, trailers, and inventory investments. The cost for the additional vehicles needed to deliver distilled spirits was estimated in February 1989 at about $2.2 million.

In 1982, the Exchange Service developed an economic analysis model to evaluate changing distribution methods for merchandise stocked by the Exchange. The model results can be used to determine, for the methods analyzed, the most economical and effective method of distributing merchandise. While this model could not be used to analyze the initial decision to warehouse and distribute distilled spirits using the Exchange

Service's network, it was used to compare an alternative distribution method, offered by one distiller, to the Exchange Service's selected method.

Per-Case Cost Estimates

After the Exchange Service decided to centrally distribute distilled spirits, a large distiller suggested an alternative. The distiller proposed to deliver its products to the stores through local distributors for the product affirmation price,[2] plus freight cost and a $3.00-per-case handling charge. The Exchange Service estimated that the average freight cost for delivery to package stores would be about $0.36 per case. Therefore, the proposal would cost the Exchange about $3.36 per case for handling and freight if it accepted the proposal. Rejecting the proposal, the Exchange Service made a counteroffer of the affirmation price, plus $2.15 per case for handling and freight. The distiller accepted this counteroffer and now distributes its products to package stores through its commercial distribution system.

However, our evaluation of the analysis used to calculate the $2.15-per-case estimate disclosed that the results were inaccurate and unreliable as a basis for management decisions.

- The economic analysis model used was not documented.
- Factors used in the model were incorrect or not updated.
- Assumptions made in the analysis were unrealistic.
- The model results used to calculate the per-case cost estimate of distributing the distiller's 25 products to all stores were not based on a representative sample of the distiller's products distributed over a representative distribution network.

The $2.15-per-case estimate developed in response to the distiller's offer has also been used by the Exchange Service as a "benchmark" to evaluate similar offers from other distillers and suppliers or their distributors.[3] Exchange Service officials told us in July 1990 that several local distributors representing other distillers had met the benchmark price and were supplying local package stores.

[2] The "product affirmation price" is a case price as favorable as or better than the price the vendor extended to similar customers.

[3] Stores in Alaska and Hawaii are required by legislation to purchase distilled spirits within the state. In addition, stores in Alabama, Idaho, North Carolina, and Washington, which are control states, must follow purchasing procedures developed for their states.

However, apart from its unreliability for analyzing the first distiller's costs, the analysis was inappropriate for evaluating proposals from other vendors because it was tailored to a specific vendor (the first distiller). Data entered in the model that were unique to this vendor included freight pick-up locations, case prices, and shipping methods. As a result, the $2.15-per-case estimate developed from the model was not valid as a benchmark for any other vendor.

The Exchange Service plans to revise and update the model. With a revised model, the Exchange could develop reliable per-case estimates to equitably evaluate each distributor's offer. The Exchange Service's economic analysis model is discussed more fully in appendix I.

Package Store Revenues

In fiscal year 1989, the first year of package store operations under Exchange Service management, the Exchange Service almost met its guarantee to make MWR payments to the military installations in amounts equal to the installations' fiscal year 1988 income from package store operations ($58,962,300), as provided in the transfer agreement. The Exchange Service's fiscal year 1989 net revenues of $58,627,500 from package store sales (including all alcoholic beverages) covered all but $334,800 of the guaranteed payment. Revenues from the Exchange Service's other operations made up for the shortfall.

Future revenues will depend on many factors. Some of those factors are outside the Exchange Service's control, such as force reductions, force deployments, and base closures, all of which affect sales. The Exchange Service and the military services have agreed to negotiate a guarantee formula to be used in future years.

Overhead Expenses Reassigned

The Exchange Service met its guaranteed MWR payments by not deducting certain overhead expenses for package store operations when calculating payments to installations. These overhead expenses are mostly for centralized Exchange operations such as purchasing, distributing, and managing all merchandise, food, and beverage sales, including sales of alcoholic beverages.

These central overhead expenses that were not assigned to the package stores were instead assigned to other Exchange Service operations. This accounting treatment, consistent with the transfer agreement, had the effect of subsidizing package store operations.

In fiscal year 1989, the overhead expenses for package stores, based on the worldwide overhead rate applied by the Exchange Service to store sales, was $20,038,619. (Net earnings computed by the Exchange Service were therefore $38,588,909—net revenue of $58,627,528 minus overhead expenses of $20,038,619).

Because the $20,038,619 in overhead was not deducted before calculating guaranteed MWR payments to the installations, other Exchange Service revenues were reduced. The Exchange Service pays package store revenues directly to the bases generating them rather than through its normal dividend arrangement paid to the central welfare funds.[4] Dividends to these central MWR funds from other operations were reduced in fiscal year 1989 because overhead expenses were not assigned to package stores.

Package Store Shelf Prices

Since the Exchange Service began operating package stores, average shelf prices for distilled spirits have decreased slightly, according to Exchange Service officials, and were expected to cause a slight decrease in operating revenues. On the basis of a survey of prices for selected products, the Exchange Service lowered prices in some stores and raised them in others.

Price changes were generally in line with the Department of Defense's (DOD) requirement that prices be set within 10 percent of the lowest average prevailing local prices, excluding state and local taxes.

In a May 9, 1989, decision paper, the Exchange Service made pricing policy recommendations for all package stores based on the results of a pricing survey. Because a key objective of the Exchange Service's takeover was to increase sales by bringing customers back to the package stores, the Exchange Service was adopting a competitive pricing policy for distilled spirits, the paper stated. The new pricing policy was to be consistent with DOD regulations.

To measure the effect of a competitive pricing strategy, each package store in the United States (excluding Hawaii) conducted a pricing survey of 81 of the top-selling distilled spirits products. Exchange Service officials then calculated the gross margin effects for each package store if

[4]Central welfare funds are administered centrally by the Army and the Air Force and are separate from the MWR funds controlled by individual installations. Installation MWR funds are spent mostly at the discretion of the installation commander.

the store's retail prices were set at 10 percent below the "average" local area retail prices and at 10 percent below the "lowest" local area retail prices.[5]

In the decision paper, Exchange Service officials directed competitive pricing strategies for package stores as follows:

- For stores in states that control the retail sale of alcoholic beverages, the strategy was to adjust shelf prices to 10 percent below the state-published prices, less general sales tax.
- For stores with prices below the DOD 10-percent criterion, the strategy was to raise shelf prices to comply with regulations. Shelf prices in southern Virginia, for example, were expected to be raised 1.6 to 3.9 percent, according to the Exchange Service.
- For stores with prices above the DOD 10-percent criterion, the pricing strategy was to lower shelf prices to 10 percent below the "average" local area prices rather than the "lowest" local area prices. This strategy was adopted to avoid a drastic decline in revenues needed to meet the guaranteed MWR payments.
- For stores where shelf prices were between the 10-percent below "average" and 10-percent below "lowest" local area prices, the prices were not changed.

In total, Exchange Service officials estimated a loss of $414,588 from these pricing changes. This loss, they observed in the decision paper, "... should easily be recovered by increased sales as well as [by] converting Class Six [package] stores from distributor sources to warehouse replenishment where we will realize a margin increase of approximately 5 percent on those sales."

Scope and Methodology

At Exchange Service Headquarters, Dallas, Texas, we interviewed officials and examined records of the Comptroller's Directorate, Purchasing Directorate, and Distribution Headquarters. We examined accounting and management records for the Exchange Service's fiscal year 1989 (January 23, 1989, to January 22, 1990). To evaluate the Exchange Service's economic analysis model, we reviewed the procedures manual for the model and the output from the analysis resulting from entering a sample of values from the distiller's proposal. To assess package store shelf prices, we obtained the Exchange Service's estimates. We did not

[5] "Gross margin" is the difference between net retail sales and total merchandise costs, which include the costs to distribute the merchandise to the point of sale.

independently evaluate the effect of Exchange Service management on shelf prices. Information in this report on state laws and regulation was taken from Summary of State Laws & Regulations Relating to Distilled Spirits, Twenty-Sixth Edition 1989, published by the Distilled Spirits Council of the United States, Inc. We did not attempt to verify independently the information included in this summary.

We visited the Atlanta Distribution Center, Fort Gillem, Georgia, and package stores at Fort MacPherson and Fort Gillem, Georgia, and Randolph Air Force Base and Fort Sam Houston, Texas. We also interviewed officials at the U.S. Army Community and Family Support Center, Nonappropriated Funds (NAF) Contracting Division, Alexandria, Virginia, and at Headquarters, Air Force Military Personnel Center, NAF Contracting and Financial Management of MWR Activities Division. In addition, we interviewed officials of the U.S. Army Audit Agency, San Antonio, Texas, to determine the scope and results of their audit of the Exchange Service's package store operations performed concurrently with ours. Their report, Implementation of Class VI (Package Beverage Stores) Transfer of Function Agreement, was issued May 8, 1990.

We conducted our review from August 1989 to July 1990 in accordance with generally accepted government audit standards. As requested, we did not obtain official agency comments on this report. However, we discussed our findings with officials from the Army and Air Force Exchange Service and have included their views where appropriate.

We plan no further distribution of this report until 30 days after its issue date, unless you publicly release its contents earlier. At that time, we will send copies to the Secretary of Defense; the Secretary of the Army; the Secretary of the Air Force; and the Board of Directors, Army and Air Force Exchange Service. We will also provide copies to other interested parties upon request.

Please contact me at (202) 275-8400 if you or your staff have any questions concerning this report. The major contributors to this report are listed in appendix IV.

Paul F. Math
Director, Research, Development,
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Abbreviations

DOD	Department of Defense
MWR	morale, welfare, and recreation
NAF	nonappropriated funds

Evaluation of the Exchange Service's Economic Analysis Model

After the Army and Air Force Exchange Service decided to channel distilled spirits through its distribution network, a large distiller proposed to supply Exchange Service package stores through local distributors representing the distiller for a set affirmation price, plus freight cost and a $3.00-per-case handling charge. The Exchange Service estimated that the per-case freight cost would average about $0.36. Therefore, Exchange Service officials estimated that accepting the proposal would cost them an average of $3.36 per case for handling and freight.

To evaluate the offer, the Exchange Service conducted an economic analysis to compare the cost of buying this distiller's products from local distributors with the existing method of purchasing directly from the distiller and supplying stores through the government-owned Exchange Service warehouse at Fort Gillem, Georgia. Using the results of this analysis, the Exchange Service calculated an average cost per case for handling and freight costs and made a $2.15-per-case counteroffer. However, because of flaws in the analysis and subsequent calculations, we believe this estimate is not accurate or reliable.

Shortcomings in the Economic Analysis

In our overall evaluation of the model's approach, as well as of the factors used as inputs and in processing, we found that

- the model was not documented,
- factors used in the model were incorrect or not updated as required, and
- assumptions made in the model were unrealistic.

Additionally, the sample used to provide input data for products and locations was nonrepresentative and produced nonrepresentative results. In spite of this, the Exchange Service used the results to estimate a per-case cost to distribute the distiller's 25 products to all package stores.

When we told Exchange Service officials of our findings in July 1990, they said they planned to update and revise the model.

Overview of the Economic Analysis Model

Before a category of merchandise is converted from one method of replenishment to another, the Exchange Service conducts an economic analysis, using a model developed in 1982. The model results can be used to determine the most economical and effective method of distributing merchandise. The Exchange Service has conducted 378 economic analyses using the model, of which 43 were conducted during 1989, the same year the distiller's offer was analyzed.

The economic analysis model uses an incremental cost approach and assesses the profit potential and cost-effectiveness of available distribution methods.[1] The model uses a computer program to compare the costs and benefits of two or more distribution methods. Warehouse processing costs are analyzed using variable costs of warehouse activities. Fixed warehouse costs are not considered when adding or removing a class of merchandise from any warehouse activity.

The model compares the current distribution method with the proposed change by examining input data to determine the Exchange Service's gross margin under each method. The model's input sheets show the item, unit shelf price and unit cost, case size, average monthly issues, vendor location, and shipping destination. According to the Exchange Service's manual that describes the model, the input data include the cost factors described below.

First-Destination Freight Costs

First-destination freight costs include shipping a product from the vendor's shipping point to one of the Exchange Service's distribution centers. The lowest cost carrier available is used to estimate these costs for input to the model.

Second- And Third-Destination Freight Costs

Second-destination freight costs include moving a product from a distribution center to a regional distribution warehouse, which serves as a consolidation warehouse for distributing to all base stores within a region. Third-destination freight costs are average costs for moving the product from the regional distribution warehouse to the retail stores.

Freight costs are calculated using the cost to move a cubic foot of merchandise between given points. Driver cost, fuel cost, maintenance cost, vehicle capacity, vehicle type and size, commercial cube shipped, and commercial cost are all factors used in calculating the cost per cube between two given points.

The model uses factors associated with established distribution routes when calculating second- and third-destination freight costs. It allows

[1] "Incremental cost" is defined as the additional cost that would be incurred as a result of the action being contemplated.

for entering up to 10 distribution warehouses located within the continental United States.

Transshipment Handling Costs

Transshipment handling costs cover sending merchandise received by a distribution center warehouse to its final destinations. These costs are based on the amount of merchandise transshipped, the time to receive and ship the merchandise, and the cost per direct labor hour.

Store Handling Costs

Store handling costs include the personnel costs for reordering and stocking merchandise in the store. The cost calculation uses estimated times for reordering and stocking and average wage rates for handling functions in each distribution area.

Inventory Investment Costs

Inventory investment costs are estimates of the costs incidental to maintaining inventories at various levels. The model calculates these costs based on average inventory investment, at cost, for a store; store lead time; warehouse on-hand and in-transit inventories; and a percentage rate that includes the current interest rate, inventory insurance coverage, and projected inventory losses.

Warehouse Processing Costs

Warehouse processing costs cover shipping, storing, and receiving merchandise in a distribution center. The direct labor cost factor included in these costs is computed by adjusting the average wage cost per hour for warehouse functions (receiving, storing, and shipping) by the percentage of "operational cost" for each function and adding a 20 percent "productivity factor."

Lack of Documentation

We found no documentation showing test results of the model, other than a 1982 internal audit report. According to an Exchange Service internal audit official, the model was last reviewed in 1982. The 1982 audit report stated that the input data and end calculations reviewed were accurate. The audit, according to the internal audit official, did not go into great detail and apparently did not validate the cost information used.

The manual for the model also did not contain enough detail for us to determine how the model's factors were derived or which items were incorporated into these factors. The Chief of the Analysis and Support

Branch, which operates the model, could not provide us with this information either. Because of the lack of documentation showing what was intended, we could not determine whether the model was operating as intended.

Incorrect or Out-of-Date Model Factors

The Exchange Service has not periodically updated factors in its economic analysis model, although the model's manual requires using current cost and benefit factors and reviewing the factors every 12 months. The model uses about 100 factors. We were told that three warehouse processing factors were updated in November 1985, and store handling wage cost factors for each region were updated in April 1987. We found no record of other factors' having been updated since 1982.

Updated information is necessary for generating accurate results. For example, the direct labor factor included in warehouse processing costs is computed by first adjusting the average wage cost per hour for warehouse functions by the percentage of "operational cost" for each function and then adding a 20 percent productivity factor. Rather than updating the factor, Exchange Service officials attempted to verify only the validity of the average wage rate and determined that wage rates accounted for about 40 percent of the factor. They did not verify the remaining costs included in the factor but concluded that 60 percent was "probably high enough to cover any additional operational or other costs included in the personnel factor." However, the public sector's wage rates have increased each year since the model was last updated.

Distribution routes were also not updated. Using current routes is important because the model calculates handling and freight costs based on route data. Second- and third-destination freight costs calculated in the model assumed distribution routes starting at the warehouse in Fort Gillem, Georgia, passing through other distribution center warehouses, and ending at installation retail stores. We found that of the eight distribution warehouses used in the analysis three were closed and one is to be phased out. Further, two new centers, added since 1982, were not included in the model.

Unrealistic Assumptions

When evaluating a proposed change in distribution method against the existing method, using incremental cost analysis is appropriate. Although the Exchange Service's economic analysis model allows for relevant costs needed to make an incremental cost analysis, certain assumptions used in the model were not incremental, and other assumptions were incorrect, which may have caused inaccurate results. We did not determine the effect of these inaccuracies on model results because the extent of the inaccuracies could not be readily determined.

First-Destination Freight Costs

Exchange Service trucks travel regular delivery routes and may pick up merchandise from a vendor when returning from a scheduled delivery to a store or warehouse—a practice called backhauling. The model used first-destination freight costs based on the assumption that Exchange Service trucks would backhaul all the distiller's products from two shipping points to the Exchange Service warehouse. Consistent with the incremental cost approach, the first-destination backhaul costs consisted of only the "off-route" costs because the trucks were assumed to be returning from scheduled deliveries with excess capacity.

The analysis used "off-route" costs of $0.14 per hundredweight to backhaul products from one of the vendor's shipping points to the Exchange Service warehouse and $0.11 per hundredweight to backhaul from the vendor's other shipping point. However, the distiller's warehoused products were actually shipped through a combination of backhauling and commercial shipping. Commercial shipping was estimated to cost about $1.12 per hundredweight from the first shipping point and $0.75 cents per hundredweight from the second point. Since the Exchange Service receives merchandise from both backhaul and commercial shipments, omitting an estimate of shipping weights under each method may have resulted in a miscalculation of first-destination freight costs.

Backhauling an assumed shipment of 40,000 pounds from the first shipping point was estimated to cost about $54.60, whereas commercially shipping the same weight was estimated to cost about $446.60, or about 8 times more than backhauling.

Second- And Third-Destination Freight Costs

When calculating second- and third-destination freight costs, the model did not follow the incremental cost concept. Although the analysis handled incremental fixed costs appropriately, it incorrectly calculated second- and third-destination freight costs. According to the model's assumptions, backhauled products bear half the round-trip freight cost. In a true incremental cost approach, a backhauled item should bear only the additional costs—the off-route costs. Therefore, the second- and third-destination freight factors may have been overstated. We found no practical way to estimate the incremental costs involved or the volume of products to be backhauled.

The calculations for second- and third-destination freight costs used an estimate of the cubic feet of product and an average-cost-per-cube factor for each route. Using average cost is not consistent with an incremental cost approach,[2] which would include only additional expenses incurred because of the shipment. However we recognize that when incremental cost data cannot be readily determined, average cost factors may be substituted as best estimates of incremental cost.

Store Handling Costs

Store handling costs, generated by the model as a percentage of product sale value, equaled 0.35 percent for warehousing and 0.39 percent for local distributors. This indicates that store handling costs were higher using local distributors. The difference was in ordering costs. For example, ordering 1,332 bottles of sampled products monthly from the Exchange Service warehouse by one region was estimated to cost $6, whereas ordering the same quantity of products from the local distributor was estimated to cost $72.

This cost differential, in our opinion, is questionable. Exchange Service officials' explanation for the differential was that it takes longer to reorder when dealing with several local distributors rather than one warehouse. We believe this explanation is not valid. Each store would deal with only one distributor for the distiller, not several as stated in the explanation. In most cases, the store is already dealing with that distributor for either non-warehoused products or products required to be bought within the state.

Inventory Investment

The difference in inventory investment cost for the two distribution methods equated to about 1 percent of the retail value of the products analyzed (1.48 percent for the warehousing method compared with 0.42 percent for the distributor method). Warehouse on-hand inventory investments and store lead time were the primary differences between the two methods.

[2]"Average cost" is the sum of all costs allocated to a particular function divided by a unit of measurement for that function. In this instance the total freight cost allocated to a route was divided by the total cubic feet of freight moved on that route.

Warehouse Inventory

The assumed warehouse on-hand inventory value used to calculate the total inventory investment was about 8.3 percent of total retail value, yet we found that the average warehouse on-hand inventory during 1989 was about 15 percent of retail value. The assumed inventory may have been too low; therefore, the inventory investment cost estimate of $15,885 under the warehouse method may have been understated. Inventory investment cost is the largest handling cost in the economic analysis, and assumptions about the inventory can significantly change the model results. For example, doubling the inventory investment costs would essentially eliminate the cost advantage of warehousing.

Store Inventory

The data inputs for the retail store inventory treated inventory investment for both distribution methods almost identically, indicating that store inventories were assumed to be almost the same under either method. However, Exchange Service officials told us that the store inventory would be lower for stores supplied by local distributors who can usually deliver within one week. Consequently, the store on-hand inventory investment data may be incorrect.

Moreover, the store on-hand inventory data inputs for both distribution methods did not agree with reported experience from Exchange Service operations. While the economic analysis assumed a 2-week store inventory for both distribution methods, operating reports showed the average store distilled spirits inventory was about 5 weeks of sales. The reports did not show average inventory by supply source (local distributor versus warehouse).

Flawed Merchandise Sample for Input Data

The Exchange Service used a sample of seven of the distiller's products distributed to eight stores throughout the continental United States to estimate the average cost per case for distributing 25 of the distiller's products to all stores. The sampled products were not representative. As a result, the model results were not representative of distributing 25 of the distiller's products to all stores.

The case prices of the seven products sampled were not representative of the case prices of the 25 products because the majority of the judgmentally selected sample items were from the distiller's lower-priced warehoused products. Product price is an important basis for sample selection because the prices of the sampled products were input to the model and used to calculate the gross margin for each method.

Price is also important because, independently, the Exchange Service merchandise manager used the difference between the total expenses/issues at cost for the two distribution methods calculated from the model results to compute a differential average cost-per-case ratio. Although the model results were not representative of the distiller's 25 products, the merchandise manager applied the ratio of the difference between the total expenses/issues at cost to the case purchase price of each of the 25 products and calculated a simple average cost per case. After calculating an average cost per case of $2.35, the Exchange Service decided that the distiller should beat this "break-even cost" by $0.20 per case to make it worthwhile for the Exchange Service to buy from local distributors. Thus, the Exchange Service made a counteroffer of $2.15 per case to the distiller proposing the change.

Legislation Affecting the Purchase of Alcoholic Beverages for Resale on Military Installations

Under current legislation malt beverages and wine must be purchased in the same state as the military base offering it for resale. Distilled spirits must be purchased from the most competitive source, considering price and other factors, except that distilled spirits resold in military stores in Alaska and Hawaii must be purchased within the state. Because distilled spirits generally may be purchased in states other than those where it is offered for resale, a centralized purchasing and distributing system is an alternative to buying from local distributors.

History of Purchase Legislation

In 1983, the U.S. Court of Appeals for the Fifth Circuit held that the State of Texas could not prevent nonappropriated fund activities of the Navy from importing alcoholic beverages directly from nonresident sellers for the purpose of resale on military bases.[1] After this decision, the Army and Air Force developed consolidated purchasing programs to buy alcohol in volume from the most competitively priced source, regardless of its location.

Since 1985, the Congress has considered provisions regulating where the services and exchanges could buy alcoholic beverages. These provisions, called "within-state" provisions, require the military services and exchanges to buy some or all alcoholic beverages within the state in which the installation receiving the beverages is located. At various times, both houses of Congress have considered modifying or eliminating these provisions.

Initially, the fiscal year 1986 Defense Appropriations Act required that all alcoholic beverages purchased for resale at a military installation be procured within the state in which the installation is located. Later, in discussions on the National Defense Authorization Act of fiscal year 1987, the House and Senate Committees on Armed Services considered this issue. In its discussion, the House Committee stated that it supported the "within-state" provision for malt beverages and wine because, traditionally, local distributors have performed necessary services.

Subsequently, the House and Senate Conference Committee amended the provision to require that alcoholic beverages purchased for resale on a military installation be procured from the most competitive source, price and other factors considered, except that malt beverages and wine must

[1] United States v. State of Texas, Texas Alcoholic Beverage Commission, et al. 695 F.2d 136 (5th Cir. 1983).

be purchased and received from a source within the state in which the installation is located. The Defense Authorization and Appropriations acts for fiscal year 1987 enacted the Conference Committee's recommendation. In addition, the 1987 Appropriations Act required that alcoholic beverages other than wine and malt beverages in contiguous states (all states except Alaska and Hawaii) be procured from the most competitive source, price and other factors considered. These provisions were essentially unchanged in DOD appropriations acts through fiscal year 1991.

Analysis of State Taxes on Distilled Spirits Bought by the Exchange Service

State excise taxes are a factor in deciding whether the Army and Air Force Exchange Service should buy and distribute centrally or from local distributors.[1] The Exchange Service is a federal entity, and therefore states may not impose direct taxes on distilled spirits it purchases directly from distillers and distributes to installations through its distribution network. However, states may impose taxes indirectly (in the form of increased prices) if the Exchange Service purchases distilled spirits from local distributors and if states have not exempted the Exchange Service from indirect state taxes. Eleven states and the District of Columbia do not exempt the Exchange Service from these taxes.

In those states that do not exempt the Exchange Service, there might well be a cost advantage to supplying package stores with distilled spirits from the Exchange Service's distribution network rather than from local distributors. We estimated that in the states where the Exchange Service is not exempt, it supplied 88,162 cases of distilled spirits to installations through its distribution network. If these cases had been supplied through local distributors, about $448,000 in taxes would have been indirectly levied on the Exchange Service.

License States and Control States Use Different Methods to Regulate Distilled Spirits

The 50 states and the District of Columbia may be classified in two groups based on their method of regulating the sale of distilled spirits: license states (32 states and the District of Columbia) and control states (18 states). In the license states, state-licensed commercial distributors serve as wholesalers. Because these distributors are privately owned, they (1) can be taxed by the state on products they purchase, including those to be resold to the Exchange Service, and (2) can pass on the cost of the state taxes to the Exchange Service as a cost-of-goods item. In this way, license states may indirectly collect taxes on distilled spirits ultimately sold to the Exchange Service.

Of the license states, 21 exempt the Exchange Service from indirect taxes on distilled spirits, but 11 states and the District of Columbia do not. The tax is called a gallonage or excise tax and is based on the product's volume and alcohol percentage. The most common tax rates range from $1.50 to $5.75 a gallon, with a weighted average of $2.58 a

[1] Information on state laws and regulations in this section was taken from Summary of State Laws & Regulations Relating to Distilled Spirits, Twenty-Sixth Edition 1989, published by the Distilled Spirits Council of the United States, Inc.

gallon.[2] Table III.1 applies the average, highest, and lowest rates to various sizes of distilled spirits cases.

Table III.1 State Excise Taxes on Selected Case Sizes

	Tax per case		
Tax rate	500 ml/1 l products (12 liters per case)	1.75 l products (10.5 liters per case)	50 ml products (6 liters per case)
Weighted average ($2.58/gallon)	$8.18	$7.15	$4.08
Highest ($5.75/gallon)	18.23	15.93	9.09
Lowest ($1.50/gallon)	4.76	4.16	2.37

Note: Cased products are in liter (l) and milliliter (ml) sizes.

In the 18 control states, the state governments act as the wholesalers for distilled spirits. When the Exchange Service purchases from the control states, any taxation would be considered a direct tax against the federal government and is therefore not allowed.

Effect of State Taxes on Purchasing Decision

Purchase locations may be critical to buying decisions because of the effects of state taxes. According to the Exchange Service's Deputy General Counsel, the Exchange Service pays no tax, direct or indirect, in any of the 50 states if it buys distilled spirits directly from the distiller, ships them to its warehouse, and then exports them to another state. When the Exchange Service buys directly from the distiller, only the regular federal tax is imposed. In the states that do not exempt the Exchange Service from indirect state excise taxes, there might well be a cost advantage to supplying package stores with distilled spirits from the Exchange Service's warehouse rather than using a local distributor.

Some Indirect State Taxes Paid, Others Avoided

The Exchange Service's records provided insufficient detail for us to determine the exact source of all distilled spirits sold in each store or the indirect state taxes paid. However, for the states that do not exempt the Exchange Service, we were able to estimate that the Exchange Service paid about $443,000 in indirect state taxes in 1989 and avoided paying

[2]The average tax calculation was weighted by state and number of package stores in the state.

about $448,000 by supplying some package stores through the warehouse.[3]

We arrived at this figure by first calculating (from Exchange Service operating reports) that 1989 net sales for the 51 package stores in the states that do not exempt the Exchange Service amounted to $14,580,646. Of this total, $8,698,140 resulted from sales at "primarily warehouse-supplied" stores, and the remaining $5,882,506 from sales of "primarily distributor-supplied" stores. We estimated the number of cases received at each store by dividing each store's net sales by the Exchange-wide average sales price per case shipped ($98.66) from the warehouse.

To estimate tax dollars paid and not paid, we applied the appropriate state excise tax rate to each store's quantity of cases. We then tallied the estimated tax liability for all "primarily distributor-supplied" stores and the estimated amount of taxes not paid for all "primarily warehouse-supplied" stores.

[3]Installations in Alaska and Hawaii are required to purchase all distilled spirits from within-state distributors. Alaska exempts the Exchange Service from state excise taxes. In Hawaii, we estimated that the Exchange Service paid about $197,000 in state excise taxes on an estimated 13,700 cases purchased.

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