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# Assessing Policy Changes on the Cost of Husbanding Services for Navy Ships

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## Abstract

Abstract: In the wake of a major corruption conspiracy, the U.S. Navy reformed husbanding services procedures to increase competition, auditability, and accountability with the end goal of reducing expenditures. The first policy change, Off-Ship Bill Pay (OSBP), formalized a process for procuring, rendering, and paying for husbanding services to increase oversight. The second policy change increased the use of multiple award contracts (MACs) in which multiple vendors are awarded a contract over a region, increasing competition for individual port visits. The purpose of this paper is to analyze the effects of these policy changes on the cost of husbanding services. Multiple regression was used to account for port visit characteristics that affect cost such as ship type and the number of days in port. MACs demonstrated a reduction effect on the cost of port visits. Further, OSBP appears to have a negligible effect on port visit cost after the initial learning curve for both Navy personnel and vendors.

## Executive Summary

U.S. Navy vessels routinely make visits in non-U.S. ports for numerous reasons including resupply efforts, multi-national exercises, and liberty where husbanding services must be contracted from a commercial vendor, referred to as a husbanding service provider (HSP). Husbanding services include tugboats to guide vessels into and out of port, transportation services, waste removal and disposal, fuel, food and water, and force protection equipment and services. In the wake of the “Fat Leonard Scandal” with Glenn Defense Marine Asia (GDMA)—a major corruption conspiracy, the U.S. Navy reformed husbanding services procedures to increase competition, auditability, and accountability with the end goal of reducing expenditures. The first policy change, Off-Ship Bill Pay (OSBP), formalized a process for procuring, rendering, and paying for husbanding services to increase oversight. The second policy change increased the use of multiple award contracts (MACs) in which multiple vendors are awarded a contract over a region, increasing competition for individual port visits. A Global MAC was awarded by NAVSUP in fiscal year (FY) 2021 but does not include data from this time period. The purpose of this paper is to analyze the effects of these policy changes on the cost of husbanding services.

Historical HSP data from the HSPortal (formerly LogSSR) corresponding to port visits made starting on October 1, 2009 (FY 2010) to the last port visit arriving on June 11, 2020 was processed to filter out non-normal (e.g., maintenance, transit, brief stop for fuel, etc.) or cancelled visits. Multiple regression was used to account for port visit characteristics that affect cost such as ship type and the number of days in port. The response variable is the natural log of total cost meaning that *the regression models provide a base value for the total cost of a port visit* and the explanatory variables are multipliers to the base cost. The explanatory variables that showed a significant effect on the total cost are exhibit line item number (ELIN) count, type of mooring (pier side or anchorage), ship type, days in port, time (FY as a categorical variable), and contract type (single award contract [SAC], single visit contract [SVC], or MAC). To supplement the port visit data, the historical crude oil prices (nominal) are also included based on the date the port visit was planned. Two regression analyses are performed on the dataset



assuming fixed effects. The first analysis (referred to as the “global cost model”) evaluates the entire dataset in a single model using two-stage weighted least squares regression. The global cost model assumes a fixed factor effect over the time horizon. To test this assumption, the second analysis explores a unique two-stage weighted least squares regression model for each FY; these cost models are referred to as “FY cost models.” The data is an unbalanced panel meaning that not every variable instance occurs in each FY.

The global cost model shows general trends in the total cost of port visits made FY 2010 to FY 2020. After Leonard Francis’s arrest in September 2013, the cost of husbanding services continues to increase to a peak in FY 2016. Leonard Francis’s company, GDMA, was the HSP for more than 25% of the port visits made prior to FY 2014. This is influential because after Francis’s arrest, the U.S. Government no longer did business with GDMA removing the HSP that provided services for a quarter of their port visits from the pool of possible vendors, reducing competition. Additionally, it was known that GDMA had a monopoly on services in certain ports, which made those ports no longer accessible to Navy vessels. The prohibition of business with GDMA and the restriction on ports likely contributed to the increase in total port visit cost beginning in FY 2014 to FY 2016.

The use of a MAC reduces the total cost by 16.9% while the use of an SVC increases the cost by 46.4% relative to port visit made under a SAC. The use of anchorage mooring leads to a cost increase of more than 30% compared to pier side mooring. Each of these factors had a statistically significant effect. Spending two days in port adjusts the base cost to approximately 60% of its original value and the effect increases total cost 115% by spending 10 days in port as opposed to five. There is a substantial increase in the total cost for high ELIN counts. For example, an ELIN count of 70 approximately triples the cost of the port visit; an ELIN count of 100 increases the port visit total cost nearly 570%. The higher the ELIN count, the more likely it is that costly ELINs are included. Although the effect of the price of oil is statistically significant, it does not have a large magnitude like the days in port and ELIN count effects.

The multiplier value for ship type (from the base of a DDG) appears to be correlated to tonnage for most ship types.

The purpose of the FY cost models is to test the assumption that explanatory variables (such as mooring, days in port, ship type, etc.) have constant effects over time. The factors of days in port, ELIN count, and price of oil have relatively constant effects over time. The effect of anchorage mooring appears to have a dynamic effect over time. Additionally, the MAC and SVC effects are also dynamic over time. The decreasing cost reduction power of the MAC may be due to HSPs with SAC trying to provide more competitive prices to maintain their contracts. The FY cost model demonstrates that total costs by ship type do not follow the general trend of port visit costs over time. The changing fluctuation in the effect of ship types in combination with other findings would seem to indicate that there are widely varying costs to port visits. Further, the variations cannot be completely described by using the explanatory variables in the models (days in port, ELIN count, price of oil, FY, mooring type, contract type, ship type, and port). Depending on the purpose of the analysis, useful insights can be derived from each cost model analysis. The global cost model has the advantage of aggregating the entire dataset to provide an average effect over time. Although mooring, SVC, and MAC show dynamic effects over time, the global cost model shows the aggregated effect over time of each factor. The mooring effect in the FY cost models is by far the most curious with the massive increase in FY 2015 and relatively mild effects all other FYs.

The OSBP process has been criticized for the increased administrative requirements for port visits both for Navy personnel and HSPs. OSBP may have increased port visit costs initially due to the learning curve but in recent years has not demonstrated such an effect.



The cost of husbanding services has decreased since FY 2016, coinciding with increased utilization of MACs. The decreasing cost may not be directly caused by MACs (particularly in FY 2018); however, there is likely an indirect effect from MAC contracts that has motivated HSPs operating under SACs with the Navy to provide more competitive prices in order to maintain the SAC in their designated markets. This is a promising indication since NAVSUP awarded a Global MAC on October 2, 2020.

This study has a few limitations. The variation in the total cost of port visits is not completely captured by either model presented in this study; there are characteristics or components of port visits that are unknown and unaccounted for in the models. In addition, it is likely there are still port visits that were either cancelled or are non-normal port visits that remain in the dataset due to lack of identification; these observations pollute the model. Finally, the selection of model type depends on the desired perspective of the data. For an overall impression of the effect of certain factors, such as contract type or the number of days in port, the global cost model provides the best estimate since it is aggregated over the entire dataset. From this claim, the authors have drawn the conclusions of a decreasing effect on cost achieved by the OSBP as well as a cost reducing effect from the MAC. The FY cost models have reduced statistical significance for certain variables due to the lack or small sample of observations. Though the FY cost models provide less complete information, the FY cost models exposes a dynamic effect from certain variables, which provides insight into cost trends.









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