



The
STEPHEN S. FULLER INSTITUTE
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The Impact of Changing Federal Procurement Outlays on Selected Sub-Sectors in the Washington Region's Economy

Research Paper 1

Other Management Consulting Services

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Research Paper 1: Other Management Consulting Services Sub-Sector

The Washington region's economy is federally dependent.¹ Prior to 1996, regional dependence on the federal government was the result of direct employment by the federal agencies located in the region.² After 1996, federal procurement from private sub-sector contractors became the largest source of federal dollars in the Washington region. However, not all sub-sectors of the regional economy are equally dependent on federal procurement spending. The first in a five-part series, this paper analyzes federal dependence of the “other management consulting services” sub-sector.

A method for determining dependence of sub-sectors on federal procurement spending is to compare federal procurement spending with employment and wages by sub-sector. Employment that relies on federal procurement dollars will have a strong correlation with regional federal spending. Wages paid in the sub-sector can be directly compared; dependent sub-sectors will have a higher ratio of federal procurement spending to total wages paid in a sector. This paper examines a single sub-sector to measure dependence on federal procurement spending.

Federal Dependence of the “Other Management Consulting Services” Sub-Sector

To identify a federally dependent sub-sector of the Washington region's economy, federal procurement spending in the Washington region was aggregated by quarter and graphically compared with quarterly employment. The period examined in this analysis covers the federal government's fiscal years 2008 through 2016.

Employment and Federal Procurement

Inspection of graphs by 6-Digit industrial classifications appeared to show a strong correlation between federal procurement spending and employment in several sub-sectors. The “other management consulting services” sub-sector was chosen as employment in the sub-sector visually appear to track federal procurement spending and the sub-sector has a substantial amount of employment. This sub-sector consists primarily of management consulting services in telecommunications and utilities.³ Several vendors awarded federal contracts in 2016 include: Calibre Systems Inc., Creative Business Solutions, and Cormac Corporation. In 2016, 9,005 employees worked in this sub-sector in the Washington region with an annual average salary of \$120,100; total wages paid were \$1.08 billion.

¹ Fuller, S. (2015). The Roadmap for the Washington Region's Future Economy. *Center for Regional Analysis*. Arlington, VA.

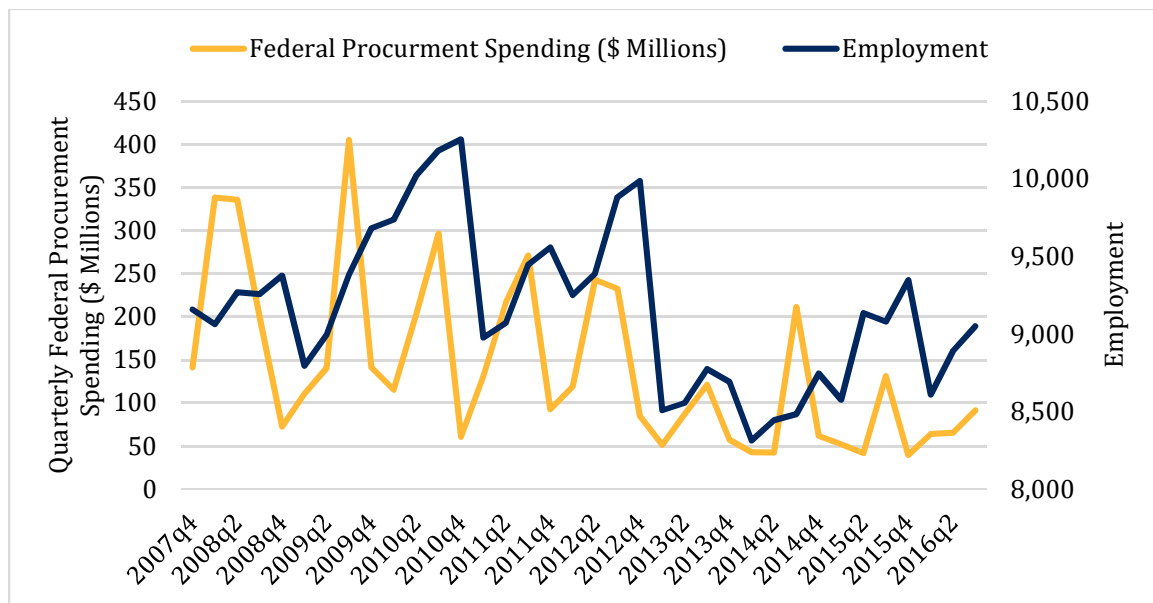
² Waters, K. (2017). Federal Procurement Spending in the Washington Region: 2008 - 2016. *The Stephen S. Fuller Institute*. Arlington, VA.

³ NAICS Code: 541618

Despite variation in the levels of federal procurement spending and employment in the “other management consulting services” sub-sector during the study period, federal procurement spending tracked employment trends well with both exhibiting overall declines (Figure 1). Total employment (inclusive of that supported by federal procurement spending) in the sub-sector increased from a low in the fourth quarter of 2008 through the fourth quarter of 2010. Following a period of stable employment, total employment in the sub-sector declined from 9,988 in the fourth quarter of 2012 to 8,508 in the first quarter of 2013. From the beginning of 2013 through the third quarter of 2016, this sub-sector failed to generate sustained employment gains.

Federal procurement from Washington region establishments in the “other management consulting services” sub-sector averaged \$193 million per quarter in the Washington region from the fourth quarter of 2007 through the third quarter of 2012.⁴ Following a decline between the third and fourth quarter of 2012, annual federal procurement averaged only \$78 million per quarter from the fourth quarter of 2012 through the third quarter of 2016.

**Figure 1. Other Management Consulting Services
(Telecommunications and Utilities)**



Sources: usaspending.gov; Bureau of Labor Statistics, Quarterly Census of Earning and Wages; The Stephen S. Fuller Institute at the Schar School, GMU

While federal procurement spending and employment visually appear correlated, a more robust statistical treatment is required to measure this relationship. To determine a statistically significant correlation, a regression model is used to

⁴ Data are aggregated by the date the federal contract was signed.

estimate the relationship between employment and federal procurement spending.⁵ Specifically, a first-difference model is used to analyze the correlation between changes in federal procurement spending and changes in employment in the “other management consulting services” sub-sector.

Regression results indicate that a \$1 million increase in federal procurement spending is correlated with an increase of 1.75 direct jobs in the sub-sector (Table 1). This result is statistically significant at the 5 percent level, providing strong evidence of the correlation between federal procurement spending and employment in the “other management consulting services” sub-sector.^{6,7} The coefficient from the model is of similar magnitude to the direct employment impact provided by the Bureau of Economic Analysis (BEA). In 2013, the BEA reported that a \$1 million increase in the broader “management and consulting services” sub-sector in D.C., Maryland or Virginia would be associated with an increase of 1.4 jobs, 2.1 jobs, or 2.2 jobs, respectively.

Table 1. First-Difference Regression of Employment on Federal Procurement Spending – Other Management Consulting Services

	Coefficient	Robust Std. Error	P- Value
First-Difference Federal Procurement Spending (1-Quarter Lag)	1.750	0.697	0.017
Quarter Dummy Variable	101.8	51.52	0.057
Constant	-250.9	163.9	0.136
R ² = 0.428, F = 5.76, n = 34			

Source: The Stephen S. Fuller Institute at the Schar School, GMU

The share of employment in the “other management consulting services” sub-sector dependent on federal procurement spending decreased between 2008 and 2015. Estimated employment supported by federal procurement spending, obtained using the regression coefficient and annual federal procurement spending in the region, declined from 1,657 in 2008 to 464 in 2015, a 72.0 percent decline (Table 2). Total employment in the sub-sector during the same period declined from 9,243 in 2008 to 9,036 in 2015, a 2.2 percent decline. As a result of the difference in the magnitude of declines, the estimated share of employment in the sub-sector supported by federal procurement spending decreased from 17.9 percent in 2008 to 5.1 percent in 2015. The decrease in the share of employment supported by federal procurement spending indicates that the sub-sector is sustaining itself with revenues realized from sources other than federal contracting.

⁵ A seasonal dummy is included to capture seasonal patterns in the data.

⁶ Durbin-Watson, Alternative Durbin, Breusch-Pagan and lagged errors indicate no serial correlation.

⁷ Limitations include the small sample size and omitted variables

**Table 2. Employment Impacts of Federal Procurement Spending –
Other Management Consulting Services**

Year	Annual Federal Procurement Spending (\$ Millions)	Average Total Employment	Estimated Jobs Supported by Federal Procurement Spending	Estimated Share of Jobs Supported by Federal Procurement Spending
2008	946.8	9,243	1,657	17.9%
2009	798.1	9,215	1,397	15.2%
2010	675.5	10,050	1,182	11.8%
2011	711.8	9,265	1,246	13.4%
2012	679.5	9,629	1,189	12.4%
2013	317.4	8,633	556	6.4%
2014	359.1	8,498	628	7.4%
2015	265.0	9,036	464	5.1%

Sources: usaspending.gov; Bureau of Labor Statistics, Quarterly Census of Earning and Wages; The Stephen S. Fuller Institute at the Schar School, GMU

Wages and Federal Procurement

A second method for estimating the dependence of the “other management consulting services” sub-sector on federal procurement spending is to examine federal procurement spending as a share of total wages paid. Annual federal procurement spending in this sub-sector declined from \$946.8 million in 2008 to \$265 million in 2015, a decrease of 72.0 percent (Table 3). In contrast, annual wages earned in this sub-sector increased from \$905.0 million in 2008 to \$1,047.6 million in 2015, an increase of 15.8 percent.

Divergence between federal procurement spending and wages resulted in a substantial decline in the estimated share of wages from federal contracts. In 2008, federal procurement spending in this sub-sector totaled \$946.7 million, 104.6 percent of total wages paid in the sub-sector. The share exceeding 100 percent is reflective of the fact that federal procurement spending data are aggregated by the date the contract was signed, not when the spending occurred. Therefore, a single large contract signing can temporarily increase the share over 100 percent. Additionally, contract dollars are spent over the course of the project, often lasting several years. Finally, wages are just a portion of the cost of a contract, other costs include employee benefits and capital costs. From the peak of more than 100 percent in 2008, federal procurement as a share of total wages declined to just 25.3 percent in 2015. While these results imply that the sub-sector’s dependence on federal procurement spending is greater than the employment estimates suggest, both findings indicate that the sub-sector’s dependence on federal procurement spending decreased substantially during this period.

**Table 3. Federal Procurement Spending as a Share of Wages Paid –
Other Management Consulting Services**

Year	Annual Federal Procurement Spending (\$ Millions)	Total Annual Wages (\$ Millions)	Federal Procurement Spending as a Share of Total Wages
2008	946.8	905.0	104.6%
2009	798.1	907.9	87.9%
2010	675.5	1,011.0	66.8%
2011	711.8	960.5	74.1%
2012	679.5	1,038.5	65.4%
2013	317.4	943.0	33.7%
2014	359.1	995.0	36.1%
2015	265.0	1,047.6	25.3%

Sources: usaspending.gov; Bureau of Labor Statistics, Quarterly Census of Earning and Wages; The Stephen S. Fuller Institute at the Schar School, GMU

Conclusion

While it is known that the Washington region's economy is highly dependent on procurement spending by the federal government, local sub-sectors are not equally dependent on this spending. The research presented here highlights a single sub-sector in the Washington region during the FY 2008-FY 2016 period. Regression analysis results indicate that a \$1 million increase in federal procurement spending for "other management consulting services" (primarily transportation and utility) is associated with an increase of 1.75 direct jobs the following quarter in the sub-sector in the Washington region. Importantly, this is the direct impact associated with increased federal spending and does not include indirect or induced impacts on employment.

The estimated share of jobs supported in this sub-sector by federal procurement spending in the Washington region declined from 17.9 percent in 2008 to just 5.1 percent in 2015. Similarly, federal procurement spending as a share of annual wages paid in the sub-sector also decreased, declining from 104.6 percent in 2008 to 25.3 percent in 2015. While results from the analysis of wages indicate a greater dependence on federal procurement spending, both results indicate that the "other management consulting services" sub-sector in the Washington region became substantially less dependent on federal procurement spending from the fourth quarter of 2007 through the third quarter of 2016.

In the next paper in this series, the same method will be applied to the "research and development in the social sciences and humanities" sub-sector of the Washington region's economy.

About These Data

Employment and Wage Data from Quarterly Census of Earnings and Wages provided by the Bureau of Labor Statistics and retrieved on 9/21/2017. Federal procurement data are from usaspending.gov and were retrieved on 05/25/2017. Procurement spending was aggregated by place of performance by the date the contract was signed.