Defense Spending and Senatorial Elections

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Abstract

A 100-million dollar defense project undertaken in California (population 34 million) would result in extra government spending of about $3 per capita. The same project undertaken in North Dakota (population 642,200) would increase government spending per capita in the state by $156. It appears, therefore, that senators elected from small states would be more likely to engage in attempts to influence geography of defense spending; equal effort by California and North Dakota senators would yield significantly higher per capita income effect and, hence, higher chances of re-election, for the latter. Consistent with this thinking, the author finds a small, but highly significant, negative correlation between military construction spending in a given state (used as a proxy for overall defense spending) and that state's population. The question remains open if military construction spending is a good proxy for overall defense spending; the author intends to research an alternative proxy in a separate paper.

Background

The U.S. electoral system, according to some observers, is designed in a way that ensures overrepresentation of small states. In particular, each state elects two senators. It is a conventional belief around the Capitol that, other things being equal, incumbent senators tend to be re-elected when local economies in their home states are strong. Conversely, worsening economic situation in the election year is likely to result in challenger winning the Senate race.

As basic Keynesian theory postulates, other things being equal, greater government spending leads to higher levels of per capita income. Therefore, an incumbent senator must ensure that the greatest possible amount of federal spending takes place in her home state. The problem here is that most of federal spending (e.g., Social Security, Medicare, and Medicaid) is tied to recipients and, therefore, neither the Congress nor the executive branch can control the geography of overall federal spending.

A notable exception is defense spending. U.S. Department of Defense (DoD) exercises full control over deployment of its assets, both domestically and internationally. It is therefore in an incumbent senator's best interest to ensure that the greatest possible amount of *defense* spending takes place in her home state.

The impact of additional defense spending on a state's economy, however, would be inversely related to the size of the state. A 100-million dollar defense project undertaken in California (population 34 million) would result in extra government spending of about $3 per capita. The same project undertaken in North Dakota (population 642,200) would

increase government spending per capita in the state by $156. It appears, therefore, that senators elected from small states would be more likely to engage in attempts to influence geography of defense spending; equal effort by California and North Dakota senators would yield significantly higher per capita income effect and, hence, higher chances of re-election, for the latter.

Obviously, not all defense projects are footloose. Considerations of geopolitics and military strategy can (and do) play an important role in deciding where a particular project is going to be located. It is nevertheless interesting to estimate the extent to which defense spending is used essentially as a tool of Senate campaign. If such usage indeed takes place, one should expect disproportionately high defense spending per capita in (at least some) small states.

The Data

The author was not able to locate precise data on defense spending by state. There are, however, several readily available proxies:

- DoD *Base Structure Report* contains detailed data on square footage of buildings and acreage of land owned and leased by DoD in various U.S. states and foreign countries, as well as replacement values of assets deployed. Also provided are numbers of military, civilian, and other personnel authorized for a particular site or installation.
- DoD document *Military Construction, Family Housing, and Base Realignment and Closure Program* (C-1) lists military construction programs

budgeted for implementation in 2001 and 2002 fiscal years by state and location.

After some deliberation, the author decided to perform the initial test on the C-1 data. Data given in *Base Structure Report*, while more detailed, required a labor-intensive aggregation and were, therefore, excluded from the scope of the present paper. The author, however, fully intends to revisit the *Base Structure Report* data to validate the conclusions of the present paper.

The raw C-1 data were aggregated by state; the results are presented in **Table 1**. To obtain military construction spending per capita, the aggregated military construction spending figures were divided by state populations from the 2000 census. The results are presented in **Table 2**. The graphical presentation of the newly obtained data is provided as **Figure 1**.

At the first glance, the disparities in military construction spending per capita are nothing short of striking. Clear outliers are found in Alaska ($522.67), Hawaii ($561.69), and District of Columbia ($178.88), which is not surprising given the strategic importance of the former two and the command-and-control function of the latter. Interestingly enough, though, the most populous of three locales is Hawaii with 1.2 million residents.

Even after dropping these outliers from the sample, the disparities do not disappear. Five smallest states (Wyoming, Vermont, North Dakota, South Dakota, and Delaware) receive, on average, $56.70 per capita in military construction spending, while for five largest states (Illinois, Florida, New York, Texas, California) the average is only $18.80, still a threefold difference.

The Models

Given the high variability of both population and military construction spending per capita, use of log-linear regression appeared feasible. Two alternative specifications were developed (see **Table 3**), and each run on three sets of data, (1) complete set, (2) complete set less Alaska and Hawaii, and (3) complete set less Alaska, Hawaii, and District of Columbia.

Consistent with the initial hypothesis, military construction spending per capita is inversely related to population. Predictably, all regressions show relatively low (6-19%) values of R^2 (which could be interpreted to mean that location of military installations is not determined *primarily* by Senate races). At the same time, the worst of six regressions (Regression 3B) is significant at a 5% confidence level, while the remaining five are significant at least at a 2.5% confidence level (which could be interpreted to mean that electoral politics *does* indeed play a role).

Implications for Policy

One disturbing implication of this analysis is that DoD appears to be under adverse incentive to devise unnecessary projects, which, however, would be funded if they are to be implemented mostly in small states. Another equally disturbing implication is the degree of control DoD can exercise over senators elected from small states. Indeed, by terminating (or simply delaying until after Senate elections) some projects, DoD can influence (if not determine) the outcome of a Senate race in a small state.

Conclusions and Directions for Further Research

A small, but statistically significant, negative correlation appears to exist between military construction spending per capita and population. The origin of this correlation is presumed to lie in the fact that senators elected from small states, driven by an opportunity to significantly increase overall government spending per capita in their home states, tend to be more diligent in securing defense construction contracts for their home states.

One question remains open: to what extent is military construction in a given state representative of overall defense spending in that state? Military construction represents less than 10% of the U.S. defense budget, so one could argue that military construction is not a good proxy for an overall level of defense spending. The author plans to address that question at a later date by producing a similar paper based on other proxies of defense spending by state (in particular, asset and personnel deployment data from DoD *Base Structure Report*).

References

U.S. Bureau of Census (2001), *Census 2000 Ranking Tables for States*.

U.S. Department of Defense (2001), *Base Structure Report*, Office of the Deputy Under Secretary of Defense (Installations & Environment)

U.S. Department of Defense (2002), *Military Construction, Family Housing, and Base Realignment and Closure Program* (C-1)

Table 1. Military Construction Spending by State in 2001-02 (Dollars in Thousands)

Alaska	327,679	Montana	21,334
Alabama	131,006	North Carolina	542,663
Arkansas	121,029	North Dakota	61,410
Arizona	150,484	Nebraska	1,879
California	845,280	New Hampshire	48,115
Colorado	212,850	New Jersey	109,842
Connecticut	15,100	New Mexico	61,264
District of Columbia	102,330	Nevada	46,852
Delaware	25,165	New York	177,876
Florida	390,722	Ohio	93,950
Georgia	305,646	Oklahoma	99,468
Hawaii	680,503	Oregon	15,412
Iowa	29,713	Pennsylvania	97,317
Idaho	44,323	Rhode Island	37,940
Illinois	203,722	South Carolina	105,246
Indiana	157,083	South Dakota	43,173
Kansas	92,610	Tennessee	47,190
Kentucky	181,675	Texas	392,406
Louisiana	89,425	Utah	52,350
Massachusetts	52,297	Virginia	463,210
Maryland	280,662	Vermont	9,300
Maine	100,185	Washington	375,520
Michigan	52,399	Wisconsin	5,274
Minnesota	18,029	West Virginia	8,500
Missouri	101,645	Wyoming	41,130
Mississippi	198,169		

Table 2. Military Construction Spending Per Capita by State in 2001-02 (Dollars)

Alaska	522.67	Montana	23.65
Alabama	29.46	North Carolina	67.42
Arkansas	45.27	North Dakota	95.62
Arizona	29.33	Nebraska	1.10
California	24.96	New Hampshire	38.93
Colorado	49.49	New Jersey	13.05
Connecticut	4.43	New Mexico	33.68
District of Columbia	178.88	Nevada	23.45
Delaware	32.11	New York	9.37
Florida	24.45	Ohio	8.28
Georgia	37.34	Oklahoma	28.83
Hawaii	561.69	Oregon	4.50
Iowa	10.15	Pennsylvania	7.92
Idaho	34.25	Rhode Island	36.19
Illinois	16.40	South Carolina	26.23
Indiana	25.83	South Dakota	57.19
Kansas	34.45	Tennessee	8.29
Kentucky	44.95	Texas	18.82
Louisiana	20.01	Utah	23.44
Massachusetts	8.24	Virginia	65.44
Maryland	52.99	Vermont	15.28
Maine	78.58	Washington	63.71
Michigan	5.27	Wisconsin	0.98
Minnesota	3.66	West Virginia	4.70
Missouri	18.17	Wyoming	83.30
Mississippi	69.66		

Table 3. Alternative Regression Specifications and Results

Regression A: CONST/POP = $a + b$ LOG(POP)
Regression B: LOG(CONST/POP) = $a + b$ LOG(POP)

where
CONST – military construction spending,
POP – population

Dataset	**Regression A** (*t*-statistics for coefficients are given in parentheses)	**Regression B** (*t*-statistics for coefficients are given in parentheses)
1. Complete	$R^2 = 0.1406$ Adjusted $R^2 = 0.1230$ $a = 618.83$ (3.0907) $b = -86.66$ (-2.8308)	$R^2 = 0.1492$ Adjusted $R^2 = 0.1318$ $a = 4.3953$ (4.2666) $b = -0.4617$ (-2.9312)
2. Two outliers removed	$R^2 = 0.1938$ Adjusted $R^2 = 0.1767$ $a = 238.15$ (3.9013) $b = -31.26$ (-3.3613)	$R^2 = 0.0926$ Adjusted $R^2 = 0.0733$ $a = 3.4565$ (3.5483) $b = -0.3251$ (-2.1904)
3. Three outliers removed	$R^2 = 0.1379$ Adjusted $R^2 = 0.1192$ $a = 163.06$ (3.3275) $b = -20.21$ (-2.7130)	$R^2 = 0.0619$ Adjusted $R^2 = 0.0416$ $a = 3.0411$ (3.0523) $b = -0.2639$ (-1.7429)

Figure 1. Military Construction Spending (Dollars Per Capita) as a Function of State Population