

Robert M.

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Does Public Service Motivation Lead to Budget Maximization? Evidence from an Experiment

Donald P. Moynihan

La Follette School of Public Affairs, University of Wisconsin-Madison

dmoynihan@lafollette.wisc.edu

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Robert M. La Follette
School of Public Affairs
UNIVERSITY OF WISCONSIN-MADISON

1225 Observatory Drive, Madison, Wisconsin 53706

608-262-3581 / www.lafollette.wisc.edu

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Abstract

One of the most enduring theories in public management is Niskanen's model of the budget-maximizing bureaucrat. While popular, the image of bureaucrats relentlessly advocating for larger budgets has been frequently attacked. A chief criticism is that the assumption of self-interest does not align with budget-maximization, since bureaucrats have little direct way to benefit from larger budgets. A more plausible assumption that offers a stronger causal logic for maximization behavior is that bureaucrats are motivated to help others. If they believe that spending on public goods is beneficial to society, public employees may be likely to advocate for larger budgets. Using vignette-experiment methodology, this paper finds that individuals with higher levels of public service motivation do not advocate for significantly higher budgets. The results undercut an alternative theoretical means to support budget Niskanen's original theory, thereby further undermining the budget maximization model.

Introduction

Few theories about public management have had the reach and impact of William Niskanen's model of the budget maximizing bureaucrat.¹ Though the theory is often criticized, it remains durable. Many scholars take the basic assumptions of Niskanen as a given, and the concept of the budget-maximizing bureaucrat has achieved a level of permanence seemingly unrelated to the quality of the original theory or evidence from subsequent empirical work. Siegelman (1986, 51) points to the budget-maximizing bureaucrat as evidence that it is "possible for an unrealistic assumption to be taken as a given for so long that it comes to acquire a certain believability, even when detached from its normal theoretical context."

The budget maximizing bureaucrat has had a significant enough impact that it may qualify as a self-fulfilling prophecy (Ferraro, Pfeffer, and Sutton 2005). Theories become self-fulfilling prophecies by causing policymakers to reshape institutions as if the assumptions were true, by altering what individuals regard as social norms (for instance, one may become embarrassed to draw on motivations other than self interest) and by changing the language that shapes social environment (think for example of the power of the term "budget-maximizing bureaucrat" on how people perceive public servants) (Ferraro, Pfeffer and Sutton 2005). A number of Presidents have begun with the assumptions that bureaucrats do indeed seek to maximize their budgets, contributing to the aggressive use of structural and appointment powers by political officials to counter this perceived behavior (Moynihan and Roberts 2010). Niskanen himself has been influential at the highest levels of policy, as chair of a think-tank, the Cato Institute, a member of President Ronald Reagan's Council of Economic Advisers, and assistant director of the U.S. Office of Management and Budget.

It remains important, therefore, to continue to study budget-maximization. With such a contentious theory, developing credible evidence that either refutes or supports the model is

valuable. This article takes as a starting point a frequent observation made by critics of Niskanen's theory, which is that bureaucratic self-interest does not clearly lead to budget-maximization, since bureaucrats have little direct way to benefit from larger budgets and are largely shielded from the negative effects of budget cuts. The article therefore offers an alternative assumption of individual motivation that provides a stronger theoretical base for budget maximization, which is that bureaucrats see government as a means of serving others. If they believe that spending on public goods is beneficial to society, they are likely to argue for larger budgets.

The next section reviews Niskanen's original theory, the criticisms made, and the reasons why public service motivation (PSM), offers an alternative theoretical pillar for budget-maximization. Next, I provide a description of data and methods. The primary method to assess whether PSM affects budget maximization is to use vignette experiment methodology. Respondents – graduate students in public affairs, social work and business programs – were asked to make hypothetical budget decisions across a range of public programs. Their self-reported PSM scores were regressed against recommended budget changes. I discuss the potential external validity issues with the method before turning to the findings. Across a variety of specifications of the empirical models and robustness checks, PSM does not predict budget maximization. The article concludes by discussing the limitations of the model and the implications of the findings.

The Budget-Maximizing Model

The budget-maximizing model represented the application of public choice economics to budgeting. Public choice scholars argued that budget growth was a direct result of bureaucratic

self-interest, as increased budgets gave bureaucrats greater access to salary, people and power (Niskanen 1971). The result, said Niskanen, would be an oversupply of government services, with bureaucrats providing more of a service than the median voter desires.

Niskanen's arguments have been criticized on a number of grounds. One weakness in his model is the assumption that political principals would passively accept bureaucratic recommendations. Bureaucrats do not dominate elected officials, who generally have a stronger self-interest in maximizing budgets (reelection) than bureaucrats do (Forrester 2001). Indeed, other formulations of the model have sought to make it more coherent by decreasing attention to the role of bureaucrats, and instead emphasizing the self-interest of elected officials (Casas-Pardo and Puchades-Navarro 2001). Political scientists have been especially critical of this aspect of Niskanen's theory, preferring models of bureaucracy that assumed strategic delegation rather than passivity on the part of Congressional principals (Kiewiet and McCubbins 1991).

The most damaging criticism is the assumption that individual bureaucratic self-interest will be satisfied by increasing the bureau budget. Niskanen (1971, 38) originally proposed that budget maximizing is possible only if "salary, perquisites of the office, public reputation, power, patronage, output of bureau.... are a positive monotonic function of the total budget of the bureau during the bureaucrat's tenure in office." But it was quickly pointed out that bureaucrats have little direct capacity to personally benefit from larger budgets, since salaries are fixed and large items of spending must be approved by central budget agencies. Niskanen (1975) responded by later amending his theory to suggest that bureaucrats may wish to maximize only the discretionary portion of their budget. To try to better link self-interest and budget maximization, Niskanen also later suggested that maximization is likely to be limited to parts of the bureaucracy where promotion depends on budget size, suggesting the military as an example

(Niskanen 2008, 194). These adjustments to the theory not only signal the problematic nature of the original assumption, but also significantly restrict explanatory scope of the model, which initially presented budget-maximization as a primary explanation for the growth in the size of the government.

Alternative explanations for how self-interest aligns with budget maximization have been offered (Casas-Pardo and Puchades-Navarro 2001, 148), but are not much more convincing. For example, Casas-Pardo and Puchades-Navarro note that some have proposed job security as an alternative explanation for maximization, ignoring the fact that enforced layoffs because of budget cuts are highly unusual in government positions, and especially unlikely to affect more senior officials with the greatest potential to influence the budget. Instead, governments generally prefer to utilize voluntary reductions via buyouts, or failing to replace exiting staff.

A related criticism is that bureaucratic self-interest might actually be at odds with budget-maximization. Siegelman (1986) noted that bureaucrats intent on promotion sometimes do better by gaining a reputation as a budget-cutter rather than maximizer. Using a more formal theoretical framework, Dunleavy (1991) advanced the bureau-shaping hypothesis, which proposes that rational bureau chiefs will often seek to minimize responsibilities to focus on the policy areas of most interest to them.

Public-spirited Budget-Maximizers?

The relationship between self-interest and budget-maximization is the central causal logic of the budget-maximization model, the mechanism that explains why the predicted behavior will occur. Weaknesses to this basic assumption undermines the entire theory. But it is possible that while Niskanen was wrong about the assumptions of self-interest, his contention that bureaucrats

try to maximize budgets could be defended on the basis of more public-spirited motives. Why is a public-spirited budget-maximizer more plausible? Bureaucrats might seek to maximize budgets because they sincerely believe in the benefit of their programs. Siegelman (1986, 53) suggests that budget maximization is more likely to occur among bureaucrats who have a positive view of the state underpinned by a “conviction that agency programs can help solve pressing societal problems.”ⁱⁱ Public service motivation is also more plausible simply because it appears to be a common characteristic of public employees. Studies of preferences of public and private employees find higher levels of public service motivation among those who opt for public sector work (Rainey 2009).

One advantage of assuming PSM might result in budget-maximization is that it restores some of the potential explanatory power of the original budget-maximizing model, providing a logic for budget-maximizing that is not limited to the discretionary part of the budget, or to contexts in which promotions are tied to budget expansions. Instead, well-intentioned bureaucrats may significantly raise the size of budgets beyond what the median voter is willing to pay simply because they believe in trying to use government as an instrument to help others. This hypothesis is also more consistent with some evidence (reported by Dolan 2002, 43) that has been used to make the case for the budget-maximizing hypothesis: surveys have shown that public sector employees are more likely than private employees to support government expansion, and to support political parties who seek to expand government spending. Assuming such preferences for aggregate higher spending are accurate, the potential extrinsic benefit to the individual public employee is tenuous. This is particularly the case when it can be shown that employees at lower levels of government support higher spending at the federal level (Garand,

Parkhurst and Seoud 1991). On the other hand, for those who believe in the potential of government to help others, preferences for higher aggregate public spending make sense.

Testing a theory of public-spirited budget-maximizers is relevant not just for reevaluating Niskanen's theory, but also for the burgeoning PSM literature, for two main reasons. First, there is relatively little evidence on how PSM affects decision-making (Moynihan and Pandey 2008). Second, if PSM is significant, it would suggest a previously unexplored "dark side" to PSM. The general findings on PSM have been almost uniformly positive, portraying it as a tool associated with more admirable individual behavior – such as charitable giving, or whistleblowing; and greater organizational benefits – through higher job satisfaction, performance, commitment, and organizational citizenship (see Pandey and Stazyk 2008 for a review, also Brewer 2003; Houston 2006; Pandey, Wright, and Moynihan 2008). If PSM is indeed associated with budget-maximizing it reflects what Niskanen characterized as a loss of democratic control over government.

Data and Method

To test the hypothesis that PSM might be associated with maximization, I employ a basic version of vignette experiment methodology (Finch 1987). Vignettes provide short descriptions of a context and choice for a respondent to deal with, controlling for the variety of potential influences, and isolating the effect of hypothesized causal factors in a systematic way. To complete the vignettes, one hundred and thirty five University of Wisconsin-Madison graduate students taking courses in public affairs, social work and business school curricula were asked to complete a survey. Each survey was introduced in the same way, with the respondents given a short hypothetical scenario. In the scenario, they were asked to take on the role of adviser to the

County Executive in a hypothetical county, and to make budget recommendations on a series of programs.

Our approach responds to a long-standing call made by Bretschneider, Straussman and Mullins (1988) for more extensive use of experiments to understand budget outcomes: “In our view, complexity-based budgetary research and practice is enhanced by complementary results from control oriented designs – especially if the experiment focuses on individual level attributes that are likely to be part of the decision-makers behavioral repertoire” (308-309). While this and other work (such as Thurmaier 1992) has used experiments to demonstrate the relative role of individual psychological factors, roles, objective data, and political information in shaping budget outcomes, experiments remain an underutilized resource in understanding budget outcomes, and no prior work has modeled the effect of PSM.

The survey then introduced a series of vignettes that present a scenario for different public programs. Each vignette offers a one-paragraph description of the program, describing its function. Appendix A provides examples of the vignettes used. A full listing of all of the appendixes can be found online at [*link provided upon acceptance of manuscript*]. All vignettes contain the program budget allocations for the previous three years in order to provide the respondents with a base budget that serves as a reference point for future allocations. For many of the vignettes some form of performance data is also provided. All of the vignettes are based on real county government programs, but no actual government names are mentioned. A range of basic local functions were represented in the vignettes: water, parks, health, social services, roads, policing, economic development, welfare, housing and tourism. At the end of each vignette, respondents were asked to make a budget decision for the coming year, based on the

information provided to them. The order of vignettes received was random, in order to prevent responses to earlier vignettes systematically shape responses to later vignettes.

In order to replicate one basic characteristic of actual budget decisions – resource constraints – respondents were told that the County Executive expects the upcoming budget to increase by approximately 3% overall, although some programs might see larger budget increases, and some might be reduced.

At the conclusion of the survey, respondents were asked a series of demographic questions, and questions about their PSM. The measurement of PSM scale has been the subject of debate. Because of convenience or concerns with validity of some items, researchers have generally not utilized the full PSM scale (Perry 1997). Here, the measure of PSM is taken from Coursey, Perry, Brudney and Littlepage (2008), which employed a careful effort to validate three dimensions of PSM – compassion, self-sacrifice, and sense of civic duty – using a subset of Perry’s original items. The items employed are provided in appendix B. Because of concerns that recruiting only students in social work and public affairs program would result in a truncated distribution of the PSM scale, thereby generating a non-result because of insufficient variation on the independent variable, business school students were also recruited. The descriptive statistics (see table 1) confirm a reasonable distribution of the PSM scale. The mean of the scale, 51.7, falls between the midpoint of the 27-72 point scale range. There is a relatively high standard deviation, 8.1, and a histogram of the scale closely mirrors a normal distribution. The strategy of including MBA students to increase spread on the PSM scale appears to have been successful – the average PSM score for business students is 48, compared to 55 for social students, and 52 for both international and domestic public affairs students.

Insert table 1 here

Because each respondent received multiple vignettes, the sample includes multiple responses from the same individual.ⁱⁱⁱ To control for this standard errors are clustered by individual in the regression models that follow. In some versions of the regression models, I also use fixed effects by vignette in order to control for whether particular vignettes elicit the response.

The dependent variable is the percentage budgetary change from the previous budget year that the respondent makes for each vignette. This variable is operationalized in three ways. First, I use the unadjusted recommended budgetary changes as the dependent variable. Next, I attempt to control for outliers on the dependent variables. I do this by converting recommended budgetary changes that are above 25% to 25% for the second dependent variable, and then converting budgetary changes that are above 10% to the 10% level for the third dependent variable. These outliers simply be excluded, but this would eliminate data that can instead be usefully adjusted to reflect the intent of the respondent.

External Validity and Limitations

A particular advantage of the approach is the focus on individual-level behavior. As Siegelman (1986) notes, the theory of the budget-maximizing bureaucrat is essentially one focused on the individual, even though much of the research that followed has modeled outcomes at higher levels (such as program budgets) that inferred individual behavior consistent with those outcomes. An experimental approach provides an ideal setting for focusing on the individual, and offers high internal validity, but also raises questions about

external validity. In this section, I consider the external validity of the experiment, drawing on a variety of types of evidence that provide some reassurance of external validity, but also acknowledging aspects of the real world that the experiment simply cannot replicate.

A first area to examine is the size of the recommended budget increases – do they fall in a realistic range? As noted above, respondents were advised that their supervisor expected an average increase of 3% on aggregate. However, in all versions of the dependent variable, the recommended average increase is markedly lower than that, and is at odds with notions of budget maximizing. For the unadjusted budget recommendations, the average proposed change is 0.7%. For the second and third dependent variables (where outliers individual responses for are adjusted to a maximum of a 25% change and 10% change), the recommended average budget change are .9% and 1% respectively. For the purposes of the regression analyses executed below variation on the dependent variable is more important than its mean, and the relatively high standard deviation (18.3 for the measure of budget change with outliers) suggests that there is adequate variation to explain.

Why are the respondents reluctant to give larger increases? Because the respondents are students, this might raise concerns about external validity of the experiment. But it is worth repeating that the students came from a variety of backgrounds in terms of their interests, and that they faced vignettes about a variety of different services. This makes it difficult to sustain the claim that there is something unusual about the sample, or about the types of programs they had to make a decision on. The most obvious explanation is that respondents were influenced by the broader administrative and cultural environment. At the time that the experiment was conducted (between spring of 2009 and 2010), local governments were facing intense budgetary pressures, and were looking at little growth, or reductions. For example, the local county

government for the respondents, Dane County, imposed a 5% pay cut on local employees mid-way through 2009. Overall, the actual budget increase for Dane County from 2009 to 2010 was 0.1%, which is quite close to the estimates generated by the respondents. Under these conditions, respondents may have been internalizing the general sense of cost pressures that local governments faced in a way they would not do in more prosperous times. The fact that respondents are generating aggregating outcomes similar to actual governments provides some confidence in the external validity of the results. On the other hand, because respondents were making budget during a time of intense political debate about the role of government, this may have influenced the perceptions of respondents in an unusual and non-random way that otherwise affects the validity of the analysis.

Other indicators of external validity come from questions directly asked of respondents. One possible objection to the vignette technique is that it provides too little information, and in practice decision-makers can access more data. But it is also true that information is always incomplete, and decision-makers rarely seek out all potentially useful data. To assess how serious the problem of incomplete information respondents were asked at the conclusion of each vignette to assess how confident they felt about the decisions they made, on a 1-3 scale, where 1 was “not at all confident: I do not have adequate information to make a reasonable decision,” 2 was “somewhat confident: I can make a reasonable decision, but would like to have additional information,” and 3 was “very confident: I have the information I need to make a reasonable decision.” The mean response was 1.9, closest to the “somewhat confident” response. Since contestation of choice is a basic function of budgeting, especially for budget officers who oversee a range of programs (Wildavsky and Caiden 2003), scoring on the mid-point of this scale offers an appropriate response. Certainly, there would be greater concern if respondents were

absolutely confident in the choices they made (suggesting that they were underestimating the complexity of their task), or were not at all confident (suggesting that the structure of the vignette was inadequate).^{iv}

Of course, the above responses are self-reported, and this raises the question of whether respondents know enough to be able to validly assess if they had the right amount of information, and if the experience was unrealistic. There is one more way to deal with the external validity problem that draws from the actual experience of individuals. Respondents were asked how many years of full-time work experience they had prior to starting their graduate degree. The mean was 3.3 years. By including experience as a variable in the regression analyses reported below, it is possible to understand if individuals with a good deal of experience make different type of decisions than those who do not. The experience variable included in the regression model is not significant (see results below). This suggests that the vignettes were realistic enough that more experienced respondents did not respond to them in different ways.

The selection of students in a public affairs and social work program provides a reasonable approximation for public officials who make such decisions in politics, budget offices, or in the implementation process. Such students have a closer understanding to the role of public officials than a random sample of the general public would.^v One seemingly obvious way to further foster external validity would be to survey actual budget decision-makers. But the risk of such an approach is that the results could be impacted by some institutional factor that has not been controlled for. This reflects the advantage of surveying student respondents, since it allows us to focus on how basic individual traits such as PSM are associated with decisions, absent the complicating factors of environmental and institutional factors. Other experimental

work on budget decisions has found that while actual budget officials are more politically aware than students, the net effect on budget outcomes is not significant (Thurmaier 1992).

There are also limitations specific to the experimental approach employed. There are aspects of actual budget decision-making that the experiment simply cannot reflect. For example, in actual resource decisions, political and institutional factors are likely to play an important role (Wildavsky and Caiden 2003).^{vi} This has one important implication for budgetary theory, which is that individuals may become zealots: they closely identify with and promote their own program or agency (Downs 1967), and come to advocate for their own particular agency. Advocacy may be a factor distinct from PSM, or may overlap with it (high PSM individuals may be more likely to become advocates). In an experimental setting, it is quite difficult to try to replicate the effects of advocacy, since it is likely the product of years of experience with and/or strong personal identification with a particular service. Another possible limitation with the experimental approach is that budget maximizing is a function of organizational and political climate that cannot be well-simulated in an experiment. It may also be that the specific scenario in the experiment (asking the respondent to take on the role of budget advisor rather than an agency representative) mutes the potential for PSM to shape the dependent variable. This is certainly a testable hypothesis, and future research could more carefully model how institutional role interacts with PSM to affect behavior. There are surely other ways to design an experimental approach to test how PSM might affect spending preferences, such as requiring respondents to make trade-offs between tax and spending choices.

It may also be the case that budget-maximizing simply too distant from fulfilling PSM. In some sense, spending for the sake of spending might be perceived as at odds with PSM. Current research on PSM increasingly suggests that PSM is often likely to exert an indirect on

outcomes, depending on other mediating factors. In particular, the sense of fit an employee feels between their values and that of the organization is an important mediator of PSM (Bright, 2007; Steijn, 2008; Taylor, 2008; Vandenabeele, 2009). To the limited extent that it was possible to test mediating variables, none were significant, but the nature of the sample made it impossible to test for person-organization fit.^{vii}

Findings and Robustness Checks

A simple correlation between PSM and the three indicators of budget changes reveal a relatively weak relationship, ranging between .046 to .054. The results of the regression analysis provides little support for the notion that PSM leads to budget maximization. The test operationalized the dependent variable in three different ways, and employed models that both included and excluded fixed effects. In none of the models below does the PSM variable achieve statistical significance.

Insert table II

To further test the robustness of the findings I operationalized the model in a variety of other ways, all producing the same basic result. First, I consider whether PSM might be useful in just explaining more dramatic budget responses. In the results in table II, the closest that PSM came to reaching statistical significance were in models I and model IV (P=.241, and P =.247 respectively). Since these are the models where the outliers of the dependent variable have not been adjusted, this suggests that PSM might have some explanatory power for outliers, that is,

that individuals with higher levels of PSM will be more likely to make extreme budget recommendations. This possibility was tested by converting the dependent variable into dummies, where outliers (again treated as changes of 10% and 25%) were one and all other changes were zero, and running the same basic regressions as above. There was no significant relationship between PSM and the outliers. Overall, the results do not offer compelling evidence that PSM is systematically associated with outliers.

The results utilize an overall index of PSM, which produces a Cronbach alpha of .87. This provides for a simple summary measure of PSM, though Coursey et al. (2008) recommend that it is preferable to use specific sub-scales. With this in mind, I also extracted the specific aspects of PSM in the scale (compassion, self-sacrifice, and civic duty) and ran them as separate independent variables, excluding other PSM sub-scales from the regression. In none of the models tested did any of the sub-scales of PSM achieve statistical significance. I also tested an extended version of the model, which included additional measures such as trust, political ideology, age, gender, and degree of study. I controlled for the rates of budgetary change that respondents are provided in each of the vignettes, as well as the wave in which the respondent received the student. Again, in these models PSM did not achieve statistical significance, and in fact generally performed slightly worse in terms of P-values.

I also ran the regressions for each of the vignettes to see if PSM appeared in particular types of vignettes. The same basic regression as above was used, though with a much reduced N, and without the need for clustered standard errors or fixed effects. In only three of the eighteen vignettes (listed in Appendix A) was PSM close to statistical significance, and in one of those cases PSM was negatively correlated with budget increases.^{viii}

Another potential concern with the analysis is that it lacks sample size to detect a real relationship between PSM and budget maximization, resulting in a Type II error, i.e. incorrectly accepting the null hypothesis. A power analysis can assess if this is a serious threat (Cohen 1988). A power analysis can be used to estimate what a given N in a sample should be to detect a significant finding, given an estimated population effect size. Power tests can be done in an ex ante or in ex post fashion (Faul et al. 2007). Ex post analyses make it “possible to assess whether or not a published statistical test in fact had a fair chance of rejecting an incorrect H₀” (Faul et al 2007, 176). To conduct a power analysis, the researcher must estimate a priori the expected effect size for the theoretical variable. This is the most difficult part of the power analysis, especially in an exploratory study such as this, which cannot rely upon previous research on PSM and budget decisions that would offer a range of expected sizes. Indeed, there is virtually no research on PSM and decision-making in general. To generate reasonable estimates of the effect size, I took two datasets that contained PSM and reported decision-making behavior in the form of performance information use. There were three measures of performance information use (reported in Moynihan and Pandey 2010, and Moynihan, Wright and Pandey in press), and I regressed PSM on each of these, using the nearest control to experience (years in position) as the control in order to create a close equivalent to the model pursued here. The marginal effect size of PSM on the R-squared was between .07, and .15, classifying it as between a small (.02) and medium size (.15) effect size for a regression analysis (Faul et al. 2007, 180). Using these estimates as a range for the power analysis, the findings show that the N included in the regression is sufficient to identify if such an effect exists. The non-finding is therefore unlikely to be the result of insufficient power resulting in a Type II error.^{ix}

There remain, of course, limitations to the study. In addition to those discussed above the actual R-squared reported in the results is quite low, suggesting that the model does not do a very good job in identifying relevant variables to explain budgetary change. Even with the inclusion of the other variables listed above, this measure does not improve much.

Conclusion: A Significant Non-Significant Result?

Despite training its members to think carefully about matters of epistemology, social science has certain biases that undermine the accumulation of knowledge. One of these is a bias against findings where key variables fail to achieve statistical significance. Most of us have experienced the sinking feeling when a statistical output shows that a variable of interest fails to achieve significance. The result is a “file-drawer” problem of indeterminate size: papers featuring non-significant results are rarely sent out, and perhaps even more rarely written up, because scholars believe that such papers cannot be published in mainstream journals (Rosenthal 1979). Recently, some journals have been established just to publish such research (e.g., *The Journal of Non-significant Results in Education*), but the fact that such special journals are needed is perhaps the best proof that nonsignificant findings face an uphill battle for publication in other outlets.

Ultimately, the quality of the scholarly contribution should be determined by the importance of the question and the rigor of the research design, rather than the results. The bias toward significant results can undermine the development of knowledge by ensuring that “journals are filled with the 5% of the studies that show Type I errors, while the file drawers are filled with the 95% of the studies that show nonsignificant results” (Rosenthal 1979, 638).

The findings presented here represent a significant non-significant finding. Niskanen's original assumption that self-interest should lead to budget-maximization had obvious logical flaws. The assumption that PSM might lead to maximization does not suffer from the same obvious weaknesses, and the presence of PSM among public servants is based on stronger empirical evidence than the self-interest assumption that Niskanen relied upon. The assumption of the public-spirited budget-maximizer therefore offers a more plausible theoretical basis for budget-maximization than self-interest. Testing this assumption, and finding it wanting, dismantles another pillar for the budget-maximization model.

As we close another potential theoretical avenue to explain budget-maximization, it pushes us to ask whether the theory itself captures an actual empirical phenomenon. Some survey-based research of the types of senior officials that are the subject of Niskanen's model have found little evidence of budget maximization. A cross-time survey of bureau chiefs in US states revealed marked heterogeneity in budgetary preferences, undermining claims of consistent budget-maximization (Bowling, Cho and Wright 2004). The survey evidence also suggested that the budgetary aspirations of bureau chiefs have declined over time. Other research finds that the type of senior US federal managers that inspired Niskanen's model prefer less spending than the public, even on issues that fall within their own departments' jurisdictions (Dolan 2002). These findings suggest that bureau chiefs have accommodated their preferences to fit in an era where more conservative politics and tax limitations have slowed the growth of government, and made scarcity and cutbacks a new norm (Bartle, 2001). The findings from these surveys also suggest that bureau chiefs are operating in an environment where they must be increasingly focused on generating efficiency from their limited allocations.

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Table 1: Descriptive Statistics

Variable	Mean	Std. dev.	Minimum	Maximum
Unadjusted budget change	.674	18.314	-100	446
Outliers adjusted to 25%	.921	6.616	-25	25
Outliers adjusted to 10%	1.002	4.159	-10	10
Public Service Motivation	51.392	8.1891	27	72
Experience	3.316	1.314	1	6

Table 2: Regression Analyses of Percentage Budget Change

							Fixed effect models					
Dependent variable	Model I Unadjusted change		Model II Outliers adjusted to .25 change		Model III Outliers adjusted to .10		Model IV Unadjusted change		Model V Outliers adjusted to .25 change		Model VI Outliers adjusted to .10	
	Coef.	P value	Coef.	P value	Coef.	P value	Coef.	P value	Coef.	P value	Coef.	P value
	(std. error)		(std. error)		(std. error)		(std. error)		(std. error)		(std. error)	
Public Service Motivation	.109 (.092)	.241	.026 (.032)	.425	.010 (.227)	.663	.115 (.095)	.227	.032 (.034)	.348	.015 (.024)	.520
Experience	-.231 (.369)	.531	-.084 (.167)	.618	-.003 (.105)	.974	-.290 (.403)	.472	-.105 (.169)	.535	-.307 (.106)	.773
Constant	-3.839 (3.969)	.335	-.352 (1.624)	.829	.278 (1.137)	.807	-5.021 (4.280)	.243	-1.544 (1.709)	.368	-.997 (1.210)	.411
	R2=.0024		R2=.0014		R2=.0004		R2=.0285		R2=.0558		R2=.0838	
	F Statistic = .72		F Statistic = .40		F Statistic = .10		F Statistic = 3.78		F Statistic = 4.68		F Statistic = 6.55	
Robust standard error are clustered at individual level); N=1182; Fixed effect by vignette included but not reported in fixed effect models												

Appendix A: Examples of Vignettes

Home Downpayment Initiative

The Department of Social Services delivers a program called the Home Downpayment Initiative. Using a mix of federal, state, and local resources, the program seeks to increase the homeownership rates among low-income and minority initiatives. To do so, it provides financial assistance to first-time homebuyers for downpayment and closing costs.

	2007	2008	2009
Home Downpayment funding	723,000	747,000	769,000

At-Risk Teen Counseling

The Department of Social Services funds a program to support counseling for at-risk teens. These individuals may have had run-ins with the law, or have faced familial problems, and have been judged by an evaluation team as needing professional help. For over a decade the county has contracted with a non-profit, Teen Help, to run the program. Teen Help provides a mixture of home visits, and out-patient treatment programs

	2007	2008	2009
At-risk teen program funding	412,000	444,000	496,000
Number of home visits	843	935	1012
Number of outpatient appointments	1,466	1,297	1,308
Total number of individuals served	214	246	222

Parks and Recreation

The Division of Parks and Recreation offers access to a variety of parks in the county. Most parks feature a staffed welcome center, and provides a number of recreation programs, such as Nature for Kids, which introduces children to the outdoors and physical activities. The Director of the Division points to the positive assessments that users of the park service provide. "People who come to the parks really enjoy it, and that shows in the data," she says.

	2007	2008	2009
Program funding	1,225,000	1,301,000	1,342,000
Number of visits to county parks per year	122,489	119,987	126,629
Customer satisfaction ratings with park programs (1 = very dissatisfied, 5 = very satisfied)	4.23	4.36	4.30

Appendix B: PSM Scale

1= strongly disagree; 6 = strongly agree

I seldom think about the welfare of people I don't know personally (reversed).

I have little compassion for people in need who are unwilling to take the first step to help themselves (reversed).

Most social programs are too vital to do without.

It is difficult for me to contain my feelings when I see people in distress.

I am often reminded by daily events about how dependent we are on one another.

Much of what I do is for a cause bigger than myself.

I am one of those rare people who would risk personal loss to help someone else.

Making a difference in society means more to me than personal achievements.

I think people should give back to society more than they get from it.

I unselfishly contribute to my community.

Meaningful public service is very important to me.

I consider public service my civic duty.

Notes

ⁱ At of April 16 2011 Niskanen's original theory, presented in *Bureaucracy and Representative Government* (1971), had been cited almost 420 times in published journal articles included in the Web of Science, and 4,981 times in the broader array of scholarly work featured in Google Scholar.

ⁱⁱ We do not know the degree to which PSM correlates with more general measures of altruism (although the Wright et al piece. in this issue suggest there is clearly some overlap). Some of the items in PSM scales are specifically about public services, while others are broader references to helping others. It does seem fair to characterize PSM as a specific form of altruism, one which rests on a belief about the particular role of public services.

ⁱⁱⁱ All respondents received 17 common vignettes. Some of the very first and last respondents received an 18th vignette. Individuals who received an extra vignette did not vary from other respondents.

^{iv} A similar secondary check on level of confidence is provided by a question at the conclusion of the survey. Respondents were also asked to determine how realistic the choices they had to make in the survey, on a scale of 1-4, where 1 was "absolutely unrealistic", 2 was "somewhat unrealistic", 3 was "somewhat realistic" and 4 was "absolutely realistic." The mean score was 2.8, closest to the "somewhat realistic" score. Again, scoring around the midpoint of the scale seems appropriate. Given the abbreviated nature of the information provided, it would be misguided for respondents to experience the experiment as "absolutely realistic." On the other hand, if respondents found the experiment to be "absolutely unrealistic" this suggests that in some basic way the experiment failed

^v A related concern might be that students dealing with hypothetical problems are unlikely to have PSM invoked in the same way that individuals working in actual organizations facing real decisions. This is a plausible concern, though some of the founding work on PSM depended upon student responses (Perry 1996). In our sample, some of the basic differences in mean PSM scores between students from different programs suggests that PSM differences exist even in the absence of actual engagement with public service.

^{vi} The inability to model environmental factors might be considered a fatal flaw, if we accept Niskanen's claim that that the individual characteristics of bureaucrats were irrelevant; what mattered was the institutional incentives they faced (Niskanen 2008, 194). If true, it makes little sense to focus on individual characteristics, as this study does. But Niskanen's claim is disingenuous at best, since it ignores the degree to which his original model is built on the assumption of individual self-interest. Incentives may shape the behavior of bureaucrats, but unless Niskanen seeks to abandon the standard economic assumption of exogenous preferences, those incentives are effective in large part because they coincide with individual self-interest. Indeed, in his original book, he is careful to warn us that bureaucrats are a class of individuals unlike others: "As individuals, bureaucrats are not inherently superior or inferior, but it is unwise not to recognize that they have differentiating characteristics" (Niskanen 1971, 23). As noted above, one of the few empirically validated differentiating characteristic between public and private employees is PSM.

^{vii} We can also offer some tests of the potential indirect effects of PSM via interaction measures. To tests this we sought if the affect of PSM might be mediated by characteristics of the information provided. One thing not mentioned in the text is that the vignettes tested are part of a larger set of vignettes that also provided treatments for each of the vignette. (For the sake of

simplicity, these treatments were excluded from the analysis reported in the tables). The vignettes were in terms of whether the treatment provided positive information, negative information, quantitative information, more information. These codes were interacted with PSM, but the interactions were not significant. I also tested interactions between PSM and area of study (whether the student was an MBA, MPA etc), and ran regressions containing these interactions. In no case were these interactions significant. .

^{viii} The first vignette (the Home Downpayment program) was significant at the 5% level for all the unadjusted change, and $p=.052$, and $p=.142$ for the second and third specifications of the models. The second vignette (the Teen Help Program) was $p=.140$ for the first specification of the model, significant at the 5% level for the second specification and $p =0.055$ for the third. The vignette where we found a negative association between PSM and the budget recommendation (Parks and Recreation) was significant only at the 10% level for the first two specifications, and $p=.163$ for the third.

^{ix} Using a power standard of .8, the required N for a finding at the 5% significance level is 112 for the lowest effect size estimate; for the highest estimate, an N of only 46 is necessary. The N in the regression tested in table 2 is 1193 (the number of completed vignettes tested). However, if one were to take a more conservative approach and assume that $N=135$ (the number of participants), that is still above what is suggested as necessary by the power analysis. We employed the powerreg function from Stata, detailed here <http://www.ats.ucla.edu/stat/stata/dae/powerreg.htm>. Additional details on the power analysis can be provided by the author upon request. My thanks to Professor Sanjay Pandey for providing us access to two datasets in order to run the power analyses attempted here, and to Professor Lotte Bøgh Andersen for suggesting this test.