Did 9-11 Increase Public Sector Job Satisfaction in the US? A Difference in Differences Study

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Abstract

Public sector job satisfaction has been shown to be determined by various individual, job and organizational characteristics, but negative stereotyping of public employees in the larger society may also play a role. Because the events of 9-11 boosted the American public’s image of government, at least temporarily (according to polling data), it is instructive to examine how this event may have influenced the everyday job satisfaction of US government workers. Using a difference-in-differences analytical strategy and data from the General Social Survey, this study compares change in job satisfaction of government workers to that of private-sector workers before and after the attacks. The findings indicate that 9-11 and its aftermath increased government job satisfaction about 5-10 percentage points above where it would have been, had the attacks not occurred, representing about 1-2 million additional satisfied government workers nationwide. These findings provide empirical support for the notion that societal images of government can causally influence public sector job satisfaction in nontrivial ways.
Job satisfaction is a key outcome of interest in the study of organizations, including public sector organizations. There is evidence that satisfied workers are more committed to their organizations (Meyer et al 2002), less likely to leave (Freund 2005; Rubult et al 1988; Tett & Meyer 1993; Vinokur-Kaplan, Jayaratne & Chess 1994), and more productive (Judge et al 2001). In the public sector, some studies suggest that job satisfaction may be a factor in public-private sector switching (Kankaanranta et al. 2007) and in the overall performance of government agencies (Kim 2005).

As a result, researchers over the years have paid careful attention to the determinants of job satisfaction. Some studies have examined various individual determinants, such as age, gender, race, education, organizational tenure, and other background factors (Brush, Moch & Pooyan 1987; Greenhaus, Parasuraman, & Wormley 1990), work-family balance, (Saltzstein, Ting, & Saltzstein 2001), work motivations (Taylor 2007), and person-organization fit (Bright 2008; Vigoda-Gadot & Meir 2008). Attention has been given also to the influence on satisfaction of various job characteristics, such as task variety, routineness, and autonomy (Wright & Davis 2003). And research in the field has examined organizational determinants of job satisfaction, such as organizational climate (Mikkelsen, Ogaard & Lovrich 2000), participative management (Kim 2002; Wright & Kim 2004), red tape (DeHart-Davis & Pandey 2005), and organizational politics (Vigoda 2000).
But evidence suggests that the social status, or prestige, of a person’s work or sector of employment may also play a role in determining an individual’s job satisfaction (Pichler & Wallace 2009; Weaver 1977). For example, a study by Cho and Lee (2001) found that, because of the unique historical and cultural traditions in Korea, public managers in that country scored higher on self-perceived job prestige than private sector managers, and that in turn this higher job prestige predicted greater organizational commitment and other work attitudes. But in the US and other western societies, the opposite pattern tends to prevail, with the public sector being seen as generally less prestigious than the private sector (Goodsell 2004; Kilpatrick, Cummings & Jennings 1964).

Indeed, since the time of White’s (1932) early surveys on public attitudes toward civil servants, scholars in the field have documented the existence of a generally negative stereotype in the US and other western democracies about government workers (Goodsell 2004; Kilpatrick, Cummings & Jennings 1964; Van de Walle 2003). The popular phrase, “good enough for government work,” captures the popular sentiment of many that public sector employees do not work as hard or perform as well as their private sector counterparts. As Goodsell points out in the opening of his book *The Case for Bureaucracy* (2004): “Our government’s administrative agencies and those who work in them are commonly portrayed as inefficient, incompetent, and wasteful—and often uncivil and devious as well” (p. xi). Data from the International Social Survey Program suggest that only about 1 in 4 citizens across 33 countries believe that “most civil servants can be trusted to do what is best for the country” (Van Ryzin 2011), evidence of a clearly low level of trust of government administrators worldwide.
It is plausible that such negative attitudes and stereotypes act to depress job satisfaction levels among public sector employees, although studying the causal effects of such broad and amorphous societal influences is difficult.

The post 9-11 shift in public attitudes

The terrorist attacks of September 11, 2001, stunned the US population and profoundly altered the American people’s perspective on their government, at least for a period of time afterwards as they viewed and reflected on images and new stories of the attacks and the uncertain implications for the nation. Prominently featured in both images and stories about 9-11 were first responders, as captured in a famous photo of three New York City fire fighters solemnly raising the US flag on a mound of debris from the collapsed World Trade Center (see Figure 1). Police officers, paramedics, and public officials were widely depicted as playing heroic roles in responding to the attacks and in protecting and informing a fearful citizenry in the aftermath.

Polling data clearly suggests that a profound shift occurred in public attitudes toward government institutions in the wake of the attacks. As Figure 2 shows, presidential approval ratings (as measured by the Gallup Poll) skyrocketed from about 50 percent just prior to 9-11 to about 90 percent in the months just after the attacks (PollingReport.com n.d.). Presidential job approval ratings remained above 70 percent for much of 2002, after which they began a steady
decline (reaching lows of around 30 percent by the end of George W. Bush’s presidency in late 2008). Congressional approval, which had hovered at levels below 50 percent just before 9-11, shot up to over 80 percent for a short time after the attacks. The public’s approval rating of congress began to decline more rapidly (as can be in Figure 2), returning to the 50 percent level about a year after the attacks (again according to the Gallup Poll). Nevertheless, it is clear from these polling data that a profound shift occurred, for approximately one year after 9-11, in the American public’s view of government.

Thus, it is plausible that public sector workers, in the period after 9-11, became cognizant of a renewed meaning and societal prestige in their everyday work, reinforced by the widely publicized positive images as well as expressions of gratitude for public service in the larger society at the time, and that this may have influenced their everyday job satisfaction. To the extent this may have occurred, we would expect to see an increase in job satisfaction among public sector workers, compared to private sector workers, in the period following 9-11. Thus, this study examines the following empirical question: Did the events of 9-11 produce an increase the everyday job satisfaction of public sector employees, compared to their private-sector counterparts?
Data and method

To answer this question, data from the General Social Survey (GSS) are used to compare the job satisfaction of public and private sector workers before and after September 11, 2001. Begun in 1972, the GSS is an ongoing social survey of the US adult population (25 years of age or older) based on rigorous probability sampling and involving household interviews covering a core set of questions as well as special topics that vary from year to year. Since 1994, the GSS has been conducted every other year (in even-numbered years) using a split sample design. In this study, responses from the 2000 GSS, representing the pre-9-11 period, are compared to responses from the 2002 and 2004 GSS, combined, representing the post-9-11 period. The 2002 and 2004 GSS were combined because of the smaller sample sizes for the job satisfaction question (satjob), the dependent variable, for these years. There were 1,513 full-time workers who answered the GSS job satisfaction question in the 2000 GSS, but there were only 722 full-time workers who answered the same question in the 2002 GSS, and 953 in the 2004 GSS. The job satisfaction question was asked as follows: *On the whole, how satisfied are you with the work you do—would you say you are very satisfied, moderately satisfied, a little dissatisfied, or very dissatisfied?*

To identify government workers, the following dichotomous question from the GSS (wrkgovt) can be used: *Are you employed by the federal, state or local government—or by a private employer (including non-profit organizations)?* Again, only full-time employees are included in this study, as most government workers are full-time workers, and thus it makes sense to
compare them analytically to full-time private sector workers. It is not possible to make any distinctions among types of government employees, both because of the limitations of the GSS government employment question (which lumps together federal, state and local government) and because of the limited size of the sample. Of the total sample of n=3,188 full-time employees in the 2000-2004 waves of the GSS, only 544 are government employees, including 250 in the 2000 GSS (representing the pre-9-11 period) and 294 in the combined 2002-2004 GSS (representing the post-9-11 period).

The analysis proceeds in two steps. First, the basic trends in levels of job satisfaction are examined graphically, with a comparison of public and private sector workers before and after the 9-11 attacks. Second, a difference-in-differences regression analysis is used to estimate the quantitative impact of 9-11 on public sector job satisfaction, and to test for statistical significance, holding constant demographic, income, and job characteristics that may have changed over time in differential ways for public and private employees. In particular, because the 9-11 attacks triggered a sell-off in stocks and at least a temporary slowdown in economic activity (particularly in the New York metropolitan area), which might have affected private-sector workers more than government workers, it is important to control for income, work hours, and other job conditions and characteristics. It should be noted, however, that according the Congressional Research Service (Makinen 2002) the economic consequences of 9-11 were largely local in scope and quite limited in duration and severity at the national level. The available control variables in the GSS are: age, sex, education, respondent’s own income, total household income, hours worked last week, and a measure of occupational prestige.
(prestg80), which is based on the US Census classification system of occupations and industries (and is not a self-reported or perceived measure of prestige). For both the descriptive (graphical) and inferential (regression) analysis, the data are weighted (using the GSS weight variable, wtssall) and robust standard errors (as calculated in Stata 11) are employed for statistical inference.

**Results**

Figure 3 shows the mean levels of satisfaction with work (on a 1-4 scale) for both government and private workers during the period before and after the attacks of 9-11, 2001. As the graph shows, compared to private-sector workers, mean satisfaction levels of government workers started out in 2000 at a slightly lower level but—after the 9-11 attacks—increased notably by 2002 and 2004. In contrast, the mean satisfaction level of private-sector workers remained fairly flat from 2000 to 2004. Figure 4 in turn shows the proportion who were “satisfied” with their work (that is, *moderately or very satisfied*, as opposed to *a little or very dissatisfied*) and the pattern is similar. Compared to private-sector workers, the proportion of government workers who were satisfied with their work was clearly lower before 9-11, 2001, but rose sharply after the attacks. In contrast, the proportion of private-sector workers who were satisfied with their work declined modestly and gradually over the same period. Thus, these graphical results clearly suggest a pattern of distinctly heightened job satisfaction for government workers, compared to private-sector workers, in the period following the 9-11 attacks.
To put these results into more precise quantitative terms, as well to account for changes in income and other control variables, a difference-in-differences regression analysis was performed. Table 1 shows the ordinary least squares (OLS) results for mean job satisfaction, which starts with a basic model that includes a dummy variable for being a government-sector (as opposed to private-sector) worker, a dummy variable for the post (versus pre) 9-11 period, and an interaction term that captures the difference in differences. In this kind of difference in differences analysis, the sector dummy variable represents the difference between government and private-sector job satisfaction before 9-11, which is negative (because government workers were less satisfied, on average, in the pre-9-11 period). The post dummy variable represents the trend in job satisfaction for private-sector workers, which is slightly negative (because of the gradual decline during the period in job satisfaction for private-sector workers). And the interaction term represents the difference in differences, or the change in job satisfaction for government workers relative to private-sector workers (Remler & Van Ryzin 2011). This first model, which does not have any control variables, suggests an estimated change in government job satisfaction of about a quarter (.26) of one point on the 1-4 satisfaction scale (90% confidence interval [CI], .14-.39). The second, more complete model in Table 1 adds a set of control variables available from the GSS to the model, including demographic, income, and job characteristics. With these variables held constant, the estimated difference in differences remains almost exactly the same, about a quarter (.26) of one point increase on the 1-4 satisfaction scale (90% CI .14-.39), indicating that the estimated effect is not influenced much at all by these potentially confounding factors.
To put the results in more interpretable units, Table 2 shows a probit regression analysis of the proportion (or percentage) of workers who are “satisfied” with their work (either moderately or very satisfied). Again, the sector dummy variable indicates that the proportion of government workers satisfied with their jobs was 5.6 percentage points lower on average in the pre-9-11 period, compared to private-sector workers. And the post dummy variable indicates that private-sector job satisfaction declined 3.8 percentage points, on average, over the period. The estimated difference in differences is a net gain of 7.8 percentage points (90% CI 4.9-10.6 percentage points). With the control variables in the model, the difference in differences is still 7.6 percentage points (90% CI 4.9-10.3 percentage points). In other words, relative to private-sector workers with similar demographic, income, and job characteristics, government workers were 5 to 10 percentage points more satisfied with their work after 9-11 relative to what would be expected, had they followed the trend of statistically similar private-sector workers during this same period.

Because the GSS is a rigorous, probability sample of the US adult population, we can extrapolate the results to the 21 million government workers in the US in 2002 (according to the US Census Bureau, 2004). Thus, the estimates from this analysis suggest that about 1 to 2 million more government workers were satisfied with their jobs than what would have been the case, had the 9-11 attacks—and the resulting positive boost in the public’s view of government—not occurred.
Discussion

Another way to interpret the findings of this study is to suggest that, in more normal times in the US when negative stereotypes and opinions of government prevail, there are about 1 to 2 million dissatisfied government workers who—if US culture and public opinion had a more positive view of government (similar to that which occurred for a period after the 9-11 attacks)—would otherwise be satisfied with their work. This represents a significant level of depressed morale in the government workforce. And to the extent job satisfaction is in turn related to other important organizational attitudes (such as commitment) as well organizational outcomes (such as productivity), these findings raise some concerns. Thus, there may well be an institutional cost, in terms of lower morale among several million government workers, to the broadly negative climate of beliefs about and attitudes toward government in US society.

Still, it is uncertain what can be done about such broad societal attitudes, and indeed some would even argue that a skeptical view of government and public servants may be a health thing in a democratic society. But from the perspective of those studying and practicing public administration, these results give some indication of the magnitude of the external, downward pressure on government workers’ morale coming from American society’s generally negative images of the public sector.

The data and method of this study, however, have some limitations that should be mentioned. To begin with, it remains uncertain what aspect of 9-11 and its aftermath might have influenced
the rise in government job satisfaction. The interpretation put forward here is that the
determining feature was the elevated outlook of the American public toward government,
which is certainly plausible (as well as consistent with polling data and media images at the
time), but the statistical analysis itself cannot isolate this specific aspect of the complex series
of events surrounding the 9-11 attacks and their aftermath as the causal agent. In other words,
the analysis demonstrates that something about the events of 9-11 appears to have triggered
an increase in government job satisfaction—but theory and interpretation must fill in what that
something might have been. Perhaps qualitative research, such as interviews with government
workers or an examination of their writings and reflections about their work experiences after
9-11, could shed some more light on this question. Another limitation is that some other event
occurring at the same time as the 9-11 attacks could have produced the upward shift in
government job satisfaction. However, it is somewhat hard to identify another event in 2001
that would have had such a pronounced influence.

The GSS—although an extremely useful and important survey—has limitations in that it
provides only a limited range of variables that can be used to control for work-related factors
that may have differentially affected government and private-sector workers during this period.
The demographic, income, and job characteristics available in the GSS and used in this analysis
provide some level of statistical control for such influences (and with these the results did not
change much), but still the possibility of omitted variable bias remains (Remler & Van Ryzin
2011). Finally, the limited sample size of the GSS and its question about government
employment do not allow for a more detailed analysis of different types of government
employees, such as federal versus state and local government employees, or those working in public safety versus other areas of public service. As such, the analysis here lumps all government workers into one broad category.

Despite these limitations, this study does provide evidence consistent with the notion that the events of 9-11 caused an increase in job satisfaction among government workers, compared to private-sector workers, and that this increase was not trivial, as it may have affected several million government workers. In turn, this implies that during more normal times, these several million government workers would remain dissatisfied with their work because of the prevailing stereotypes and attitudes toward government. At the very least, this study suggests that more research should be done on the possible consequences of America’s negative cultural and societal images of government on public organizations and their workers. And public managers should be aware of how the morale of their employees, and in turn the performance of their organizations, may be influenced by the way in which the surrounding culture and society sees them.
References


Smith, Tom W, Peter Marsden, Michael Hout, and Jibum Kim. General social surveys, 1972-2010 [machine-readable data file] /Principal Investigator, Tom W. Smith; Co-Principal Investigator, Peter V. Marsden; Co-Principal Investigator, Michael Hout; Sponsored by National Science Foundation. --NORC ed.-- Chicago: National Opinion Research Center [producer]; Storrs, CT: The Roper Center for Public Opinion Research, University of Connecticut [distributor], 2011.


Figure 1. New York City firefighters at the World Trade Center after the 9-11 attacks
Figure 2. Approval ratings of the president and congress before and after the 9-11 attacks (the Gallup Poll)

Source: PollingReport.com (Gallup)
Figure 3: Mean levels of satisfaction with work

Note: Vertical line indicates the 9-11 attacks. Weighted results from the General Social Survey (GSS).
Figure 4: Proportion moderately or very satisfied with the work they do

Note: Vertical line indicates the 9-11 attacks. Weighted results from the General Social Survey (GSS).
### Table 1. OLS regression analysis of mean job satisfaction rating (on 1-4 scale)

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>Sig.</th>
<th>[ 90% CI ]</th>
<th>Coef.</th>
<th>Sig.</th>
<th>[ 90% CI ]</th>
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<tbody>
<tr>
<td>Sector (1=public, 0=private)</td>
<td>-0.068</td>
<td>-0.164</td>
<td>0.027</td>
<td>-0.112</td>
<td>*</td>
<td>-0.208</td>
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<tr>
<td>Post (1=post 9-11, 0=pre-9-11)</td>
<td>-0.014</td>
<td>-0.066</td>
<td>0.038</td>
<td>-0.028</td>
<td></td>
<td>-0.080</td>
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<tr>
<td>Interaction (sector x post)</td>
<td>0.262</td>
<td>***</td>
<td>0.136</td>
<td>0.388</td>
<td>0.264</td>
<td>***</td>
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<tr>
<td>Age (years)</td>
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<td></td>
<td></td>
<td>0.004</td>
<td>***</td>
<td>0.002</td>
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<tr>
<td>Sex (1=female, 0=male)</td>
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<td></td>
<td></td>
<td>-0.019</td>
<td></td>
<td>-0.070</td>
</tr>
<tr>
<td>Education (years completed)</td>
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<td></td>
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<td>**</td>
<td>-0.027</td>
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<td>Personal income (000)</td>
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<td>Household income (000)</td>
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<td></td>
<td></td>
<td>0.001</td>
<td>*</td>
<td>0.000</td>
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<tr>
<td>Work hours</td>
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<td></td>
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<td>0.003</td>
<td>**</td>
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<tr>
<td>Occupational prestige score</td>
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<td></td>
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<td>***</td>
<td>0.005</td>
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<tr>
<td>Constant</td>
<td>3.339</td>
<td>***</td>
<td>3.306</td>
<td>3.373</td>
<td>2.874</td>
<td>***</td>
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<tr>
<td>R-squared</td>
<td>0.006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>3188</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Weighted results; significance tests and CIs based on robust standard errors; * p < .10  ** p < .05  *** p < .01
**Table 2. Probit regression analysis of proportion satisfied with their work**

<table>
<thead>
<tr>
<th></th>
<th>Coef. Sig.</th>
<th>[ 90% CI ]</th>
<th>Coef. Sig.</th>
<th>[ 90% CI ]</th>
</tr>
</thead>
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<tr>
<td>Sector (1=public, 0=private)</td>
<td>-0.056 **</td>
<td>-0.102 -0.010</td>
<td>-0.066 ***</td>
<td>-0.114 -0.019</td>
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<tr>
<td>Post (1=post 9-11, 0=pre-9-11)</td>
<td>-0.038 **</td>
<td>-0.059 -0.017</td>
<td>-0.042 ***</td>
<td>-0.062 -0.021</td>
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<td>Interaction (sector x post)</td>
<td>0.078 ***</td>
<td>0.049 0.106</td>
<td>0.076 ***</td>
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<tr>
<td>Age (years)</td>
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<td>0.000 0.001</td>
<td>0.001</td>
<td>0.000 0.001</td>
</tr>
<tr>
<td>Sex (1=female, 0=male)</td>
<td>-0.022 *</td>
<td>-0.042 -0.002</td>
<td>-0.004</td>
<td>-0.009 0.000</td>
</tr>
<tr>
<td>Education (years completed)</td>
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<td>-0.009 0.000</td>
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<tr>
<td>Personal income (000)</td>
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<td>0.000 0.001</td>
<td>0.000</td>
<td>0.000 0.001</td>
</tr>
<tr>
<td>Household income (000)</td>
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<td>0.000 0.001</td>
<td>0.001 *</td>
<td>0.000 0.001</td>
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<tr>
<td>Work hours</td>
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<td>0.000 0.002</td>
<td>0.001</td>
<td>0.000 0.002</td>
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<tr>
<td>Occupational prestige score</td>
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<td>0.000 0.002</td>
<td>0.001 **</td>
<td>0.000 0.002</td>
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<td>Observed proportion</td>
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<td>Pseudo R-squared</td>
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<td>0.030</td>
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<tr>
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<td>3188</td>
<td>3171</td>
<td>3188</td>
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*Note: Weighted results; significance tests and CIs based on robust standard errors; * p < .10  ** p < .05  *** p < .01*