Research Article

Journal of Public and Nonprofit Affairs
Vol. 7, No. 3

Do NPM Strategies Lead to Negative Organizational Behavior? Lessons from the Differential Effects of Contracting Out on Voluntary Turnover

Gyeo Reh Lee – The National Assembly Budget Office, Seoul, Korea

While public sector organizations have increasingly utilized New Public Management (NPM) strategies as a means of increasing the values of the market, a growing body of literature suggests that market-based reforms may generate indirect costs associated with negative organizational behaviors in the public sector. Focusing on probable consequences of government contracting out for the public workforce, this study examines the relationship between contracting out and voluntary turnover relying on a panel data of U.S. federal agencies from 2010 to 2017. The results present that contracting activity is associated with voluntary quits in the opposite direction depending on the level of job satisfaction. This finding disentangles the previous discussion on the relationship between NPM strategies and employee behavior.

Keywords: Contracting Out, New Public Management, Turnover, Job Satisfaction

Introduction

Market-based reforms to make public organizations more business-like have been global phenomena for several decades. In particular, New Public Management (NPM) was the most salient movement as public sector organizations encountered increased pressure and competition because of an increasingly challenging and rapidly changing environment (Ellis, 1998; Newton, 2003). The primary goal of NPM is "commodification of services under the slogan of 'value for money'" (Diefenbach, 2009, p. 894). Indeed, the NPM's strategic objective, the shift to output controls from input controls, helps public administration improve in many ways, including increased efficiency and productivity of public organizations (Freiberg, 2005; Hoggett, 1996; Pollitt, 1990; Wilenski, 1988). Among a variety of forms of market-based management reforms in the public sector, a popular effort is contracting out, which delegates the provision of public goods and services to other organizations (Hodge, 2000). Scholars have long observed that contracting out has played a significant role in infusing market-based values into all levels of government in the United States (Frederickson, 1997; Kettl, 1993; Milward, 1994).

In the meantime, the public administration literature suggests that a growing use of market-like arrangements has massive consequences for employees (e.g., Diefenbach, 2009). However, while studies on the effects of market-based reforms often focus on a few aspects or

Lee, G. R. (2021). Do NPM strategies lead to negative organizational behavior? Lessons from the differential effects of contracting out on voluntary turnover. *Journal of Public and Nonprofit Affairs*, *7*(3), 369–389.
https://doi.org/10.20899/jpna.7.3.369–389

areas of outcome, such as economic consequences (e.g., Domberger & Jensen, 1997; Hodge, 2000; Iseki, 2010; Ohlsson, 2003; Williamson, 1985, 1991), the literature provides limited discussion and mixed evidence on the consequences of contracting out for public personnel. Thus, its effects on employees' turnover behavior remain to be explored.

This study investigates the effects of contracting out on the voluntary turnover rate in the U.S. federal bureaucracy. In doing so, this study tries to contribute to the literature of both contracting out and turnover. Understanding turnover rate as a probable consequence of the practice of contracting out is important because high turnover rate results in talent loss, which in turn hinders organizational outcomes, such as organizational performance (Hausknecht & Trevor, 2011). In addition, this study develops and tests a model that examines not only the independent effect of contracting out on employees' voluntary turnover, but also the relationship given the levels of job satisfaction in organizations. This would help public managers find appropriate strategies to address probable effects of those practices. Further, this study employs panel-data analyses along with eight years of data from the Federal Employee Viewpoint Survey, Fedscope, and the Federal Procurement Data System from 2010 to 2017. This longitudinal study allows better analyses in terms of causal inferences by allowing for more efficient estimation with increased variability, temporal priority of explanatory variables over outcomes, and reduced omitted variable bias, controlling for time-invariant factors (Baltagi, 2005; Kennedy, 2008; Wooldridge, 2010; Lee et al., 2018).

This study begins with a brief background regarding the importance of examining market-based reforms and the impacts on remaining employees. Next, based on reviewing the literature, the hypothesized relationships between contracting out and turnover are suggested. In the third section, the discussion moves to the data, variables, and methods used to test the empirical models. Next, the study presents the results of the empirical models, contributions to the literature, and practical implications. The paper then concludes by offering suggestions for future research in the area.

Literature Review

While a growing body of the literature suggests the probable consequences of contracting out for the workforce, empirical research on the relationship between contracting out and employee attitudes has shown mixed evidence. As a result, how contracting out affects the attitudes and behavior among public employees and their unions still remains a contentious issue. Nonetheless, the mixed evidence underscores that contracting out provokes many changes within the organization.

A number of possible advantages of contracting out for public employees have been suggested. Government contracting out may lessen red tape (Moynihan & Pandey, 2007) and provide public employees with learning opportunities from private contractors (Lindholst et al., 2018), which in turn bring higher levels of public sector motivation (Davis & Stazyk, 2014). As such, earlier studies have reported positive effects of contracting out, such as higher job satisfaction (Cunha & Cooper, 2002; Nuppenau, 2009), less stress (Cunha & Cooper, 2002), and more flexibility in work practices (Camp & Gaes, 2002; Dube & Kaplan, 2010; Flecker & Hermann, 2011).

Recent studies, however, dominantly find negative consequences of contracting out for employees. These studies offer abundant negative impacts of contracting out on employee attitudes and their working conditions, such as more stress and burnout (Hansen et al., 2009), reduced job satisfaction (Engstrom & Axelsson, 2010; Falkenberg et al., 2009; Flecker & Hermann, 2011; Lee et al., 2019; Lee et al., 2021; Park, 2004; Yang & Kassekert, 2010), and less job security (Cunningham & James, 2009; Dube & Kaplan, 2010; Engstrom & Axelsson, 2010; Ferrie et al., 2001; Hebdon, 2006; Park, 2004; Zuberi, 2011). In particular, Johnston

and Seidenstat (2007) present evidence that low bidding contracting leads to high turnover of a private firm's employees.

Hence, the literature has not explored the actual behavior of *remaining* employees—i.e., *turnover*—as one of the probable consequences of contracting out practices while examining the impact of contracting out on the size of the workforce as a whole (Fernandez et al., 2007), minority employment (Brown & Kellough, 2020), or contracted employees' performance (Johnston & Seidenstat, 2007). Among the types of turnover, this study focuses on *voluntary turnover*, in which employees hold higher human and social capital as compared to those who are involuntarily terminated from their positions by their employers for their poor performance or misconduct. For this reason, high voluntary turnover is an expensive loss to organizations considering the loss of human and social capital (Hausknecht & Trevor, 2011), whereas involuntary turnover is assumed to provide benefits for organizational performance (Dalton et al., 1983; Holtom et al., 2008). Though it is often evidenced that contracted employees perform better in some aspect (e.g., Christensen et al., 2011; Mikesell, 2004), understanding the potential effects of contracting out on voluntary turnover is important as personnel stability in an organization facilitates organizational performance and managerial quality (O'Toole & Meier, 2003).

Contracting Out and Turnover in the Public Sector

The turnover literature, which is increasingly emphasizing the importance of understanding turnover at the organizational level, groups key antecedents of turnover into three major categories: human resource systems and practices, aggregate levels of employee attitudes and perceptions, and collective characteristics. Among many others, a notable antecedent the turnover literature identifies is *downsizing* or *organizational change*, which is necessarily involved in implementing market-based reforms or contracting out. O'Toole and Meier (2004) suggested that high levels of turnover of teachers are positively associated with contracting in the public education field, but Rho's (2013) longer period of data analyses do not support the relationship between teacher turnover and contracting. However, if the purpose of delegating government functions to the private sector is to save operating costs, many of these may come at the expense of public employees (Donahue, 1989). Saving operating costs is inevitably linked to reducing the number of employees given that state and local government spending is concentrated on personnel costs (Kettl, 1993). Evidence shows that contracting with private firms results in significant reductions in the public workforce in some municipal agencies (Stein, 1990).

Vrangbaek et al. (2015, pp. 5-6) further argue that "if savings are to be realized through contracting out, this is likely to also involve staff reductions, which may in turn put more pressure on the remaining employees." Relatedly, Trevor and Nyberg (2008) provided evidence that voluntary turnover rates were associated with a 36% increase in response to a 2% downsizing in the workforce as compared to companies which did not reduce the size of the workforce. Batt and his colleagues (2002) also found that downsizing in telecommunications establishments was positively associated with voluntary turnover rates, thereby suggesting that downsizing lowers job security and discourages its workforce. It is difficult to fire public employees as compared to private contract workers due to various civil service rules and constraints (Greene, 2002), but contracting with private sector operators provides public managers with opportunities for hiring temporary workers without enlarging public employment (Mastracci & Thompson, 2005).

The psychological contract theory explains the possible relationship between contracting out and employees' turnover by predicting the situations in which employees withdraw themselves from their work (Lee et al., 2021). Fernandez et al. (2007) indicate that contracting out public services to for-profit entities decreases full-time employment but generates more part-time employment in the public sector; and public sector unions oppose privatization initiatives in

part due to the potential threat of job loss (Fernandez & Smith, 2006). Indeed, job security is an important incentive for individuals who choose to work for the government (Hur & Perry, 2019). Therefore, when the organization does not meet an employee's expectations, the psychological contract is violated. Consequently, public employees consider the job insecurity resulting from contracting out as a violation of the psychological contract between employee and employer (Lee et al., 2021). The violation of the psychological contract leads employees to leave their workplace (Datta et al., 2010).

Government contracting also seems to negatively affect psychological contracts established in employer-employee relationships in terms of public service motivation (PSM). Public employees are less supportive of privatization and contracting out (Fernandez & Smith, 2006), as the public workforce considers the market-based reforms undermining the public service values they uphold (Perry & Wise, 1990). Perry and Wise (1990) reasoned that individuals with high PSM are attracted to public organizations for their prosocial and altruistic orientations. Research on PSM found that public employees more highly valued public service than their counterparts (Lewis & Frank, 2002; Rainey, 1982; Steijn, 2008); a significant portion of individuals transitioned from the private sector to the public sector to fulfil their PSM (Georgellis et al., 2008); and the effect of PSM on public employees' intentions to stay in their workplace was stronger when they felt that their work was useful to society (Steijn, 2008). Further, research on attrition from public organizations presents that PSM is linked to lower turnover (Crewson, 1997; Naff & Crum, 1999; Steijn, 2008). To sum up, remaining public employees may withdraw from their work as the organization contracts out more services they have provided.

Lee et al. (2021) found higher employee turnover intention after increased contracting out. However, turnover intention is not always linked to turnover behavior when controlling for confounding factors (Lee et al., 2018). Thus, it is meaningful to further investigate the following hypothesis on the impact of contracting out on public employees' voluntary turnover.

> *Hypothesis 1:* Contracting out will be positively associated with voluntary turnover rate.

Moderating Effect of Job Satisfaction on Contracting Out and Employee Turnover

As the turnover literature reveals that the relationship between turnover rate and its antecedents are contingent upon certain moderators, this study proposes that the relationship of contracting out to turnover rate may be moderated by job satisfaction. Job satisfaction may not only relate to turnover, but also may moderate the relationship between organizational change and employee behavior. Hobfoll (2001) suggests that job satisfaction can protect employees who face loss of resources or lack of resources and assist them to recover from loss and to maintain optimal functioning. In a survey of employees in higher education institutions in the U.S., job satisfaction was found to buffer and alleviate job stress and burnout among them (Khalid et al., 2012).

Job satisfaction plays an important role in contracting out research. For example, Yang and Kassekert (2010) investigated employee job satisfaction as a consequence of contracting out; Lee et al. (2019) examined an intermediary role of job satisfaction in the relationship between contracting out and organizational performance; and Lee et al. (2021) found that job satisfaction mediates the effect of contracting out on employee turnover intention. Job satisfaction is also one of the most common predictors in turnover research. Fisher and Hanna (1931) note that "the prominence of emotional factors in the separation of the individual from his job is no longer open to doubt" (pp. 231-232). Bluntly speaking, if job satisfaction is low, individuals are apt to search for another job. Instead, if job satisfaction is high, they are more likely to stay in their current organizations (Mitchell et al., 2001). Studies linking job

satisfaction to organizational turnover rate also indicate that organizations which consist of more satisfied and committed members tend to have lower turnover rates as compared to their counterparts (Hausknecht & Trevor, 2011). In particular, Porter and his colleagues (1974) studied the relationship between job satisfaction and turnover among a sample of psychiatric technicians across time. Their discriminant analysis indicates that the various aspects of job satisfaction were found to discriminate between stayers and leavers. More specifically, leavers are characterized by lower levels of the diverse components of job satisfaction than stayers. Turnover researchers have also empirically evidenced with a variety of models that job satisfaction is an intermediate antecedent of turnover as well as a direct antecedent (e.g., Ali, 2019; Lee et al., 2018; Mobley et al., 1979; Muchinsky & Morrow, 1980).

Nevertheless, some critical questions remain. Griffeth et al.'s (2000) meta-analysis found a modest correlation, -0.19, between job satisfaction and turnover. Other meta-analyses, however, present substantially different correlations between job satisfaction and turnover. For example, Carsten and Spector (1987) presented correlations ranging from -0.51 to 0.09. While there exist several alternative explanations, including temporal differences and inconsistencies across studies in the operationalization of variables, Hausknecht and Trevor (2011) explain that the reason the relationship is not universally supported is the multiplicative effects among a variety of variables.

Given the importance of context in organizational behavior, many authors of turnover research have investigated interaction effects. For example, Trevor and Nyberg (2008) suggest that the effects of downsizing on voluntary turnover—e.g., contracting out often involves downsizing and making government smaller and raises personnel management concerns—are dissipated in the presence of internal management practices, such as promoting job embeddedness.

As such, enhancing job satisfaction as an internal management practice can moderate the relationship between contracting out and employees' voluntary turnover behavior. Porter and Steers (1973) suggest that job satisfaction is a moderating variable in the relation between an organizational situation and voluntary turnover. While many studies point to the significance of job satisfaction as a predictor of turnover, the thorough review of the literature presents that turnover appears to be subject to the various facets of organizational structure and personal factors, and that a multiplicity of work, organization, and demographic factors can be associated with the decision to remain or leave (Porter & Steers, 1973). When employees appear to place varying importance on potential 'rewards' available from their job, the turnover process can be considered as a process of balancing potential or received rewards with desired expectations. If the expectation sets are substantially met, employees would remain with the organization. If not, they would leave.

In line with this notion, this study hypothesizes that the contracting out-voluntary turnover rate relationship is subject to the level of job satisfaction at the organizational level. Though previous research often finds that contracting out directly affects both job satisfaction (e.g., Yang & Kassekert, 2010) and turnover intention, and indirectly influences turnover intention as mediated by job satisfaction (Lee et al., 2021), it is also possible that contracting out affects turnover contingent upon the level of job satisfaction. Understanding the role of job satisfaction as a moderator in the relationship between contracting out and turnover is important as it may offer a solution to reduce the probable negative effects of contracting out, which is often an essential instrument in government operations. The hypothesis is to explore the effects of contracting out by investigating the possible moderating role of job satisfaction in the relationship between contracting out and turnover rate.

> *Hypothesis 2:* The relationship between contracting out and voluntary turnover rate will be moderated by job satisfaction.

Method

Data

Despite several advantages of longitudinal investigations over cross-sectional analyses, empirical tests of the temporal dynamics have been neglected in both contracting out and turnover research. In particular, the turnover literature commonly examined the relationship between turnover rates and antecedents across a one-year period, either concurrently or relying on a time-lagged design. Proper understanding of the temporal priority of antecedents over outcomes is obviously central to making causal inferences (Mitchell & James, 2001). Longitudinal studies can bolster causal inferences, as the stable aspects (e.g., an absenteeism control policy) contributing to turnover can be isolated from dynamic influences, such as changes in leadership and economic fluctuations, which are responsible for sudden turnover changes.

The unit of analysis for this study is the federal agency, including both cabinet departments and independent agencies. The data for this study are drawn from the following sources: Federal Procurement Data System-Next Generation (FPDS-NG), Federal Employee Viewpoint Survey (FEVS), Fedscope, and the Budget of the United States. Those datasets are not perfectly matched. For example, the FPDS provides information on 41 agencies from 2010 to 2017 while the Budget of the United States includes panel data for 60 agencies at the organizational level. However, only 28 agencies are common across the four datasets. After excluding agencies with incomplete information on either dependent or independent variables in each dataset, merging four different data sets generated an unbalanced panel data structure, which consists of 28 agencies and 192 observations between 2010 and 2017.

Dependent Variables

The focus of this study is on each agency's *voluntary turnover rate*. Since voluntary and involuntary turnover differ with respect to their causal explanations for outcomes, combining the two into a measure of total turnover can hinder theoretical discussions and empirical inferences which are specific to either type of voluntary or involuntary turnover. Also, this study analyzes two types of voluntary turnover rates, quit rate and transfer rate, as the dependent variables, since each one has different functions. The employee quit rate represents an employee's voluntary departure from the federal government in search for employment outside the federal government, while employee transfer rate indicates an employee's moving to other agencies within the federal government. Public sector research on turnover has suggested that leaving to seek employment within and outside the federal government are different forms of voluntary turnover and have distinct antecedents (e.g., Lee et al., 2018).

Employee turnover measures are obtained from Fedscope, which provides quarterly statistics including quit rates and transfer rates for each federal agency. Each one is measured by the proportion of federal employees who voluntarily left the federal government for another agency (transfer) or to seek work elsewhere (quit) during a 12-month period after independent and control variables are measured. For example, since the 2010 FEVS was administered between February and March of 2010, employee quit rate for each federal agency is calculated by counting the number of employees who voluntarily left the federal government from April 2010 to March 2011 and divided by the total number of employees in April of 2010.

Independent Variables

The main independent variable of interest is contracting activity by each federal agency. Though contracting out is a common tool in public service provision, and there is a built-in expectation toward the reality of governance among federal employees, employees may consider increases in the level of contracting out as threats to their job security (Nigro &

Kellough, 2006). Contracting activity is measured by the ratio of total dollars spent on contracts with external organizations to the appropriation on discretionary spending. Data for the measure comes from the FPDS-NG (award amounts) and the Budget (appropriation on discretionary spending).

Job satisfaction is measured as the proportion of employees who are satisfied with their job in each federal agency. This research measures job satisfaction as a global measure of job satisfaction using the FEVS survey item, "Considering everything, how satisfied are you with your job?" As a global measure, this variable captures an employee's overall level of satisfaction with the job. Some studies use multiple survey items to measure job satisfaction, but scholars have listed satisfaction relations are stronger when it is based on a global measure (e.g., Ironson et al., 1989; Tett & Meyer, 1993; Wanous et al., 1997). A multivariate measure, especially, may omit important aspects of overall job satisfaction (Scarpello & Campbell, 1983). The response is recoded to indicate both satisfied and strongly satisfied with his or her job as 1; other responses (including neutral, dissatisfied, and strongly dissatisfied with his or her job) are recoded as 0. The measure is computed from individual respondents by the agency and then aggregated to the agency level.

Control

The key antecedents of turnover rate are grouped into three major categories: human resource management systems and practices; employee attitudes and perceptions; and employee characteristics. These factors include average perception of federal employees on trust in supervisor (FEVS, Q51), cooperation among coworkers (FEVS, Q20), resource sufficiency (FEVS, Q9), knowledge sharing (FEVS, Q26), and pay satisfaction (FEVS, Q70). All these controls are measured at the organizational level. The relevant survey indicators tap into respondents' perceptions and are measured with a Likert-type response set, anchored at strongly disagree and strongly agree. The responses are recoded to indicate both agree and strongly agree with the questionnaires as 1, while other responses (including neutral, disagree, and strongly disagree with the questionnaires) are recoded as 0. These measures are computed from individual respondents by the agency and then aggregated to the agency level. Therefore, the control variables represent the proportion of employees who stated agreement (agree and strongly agree) with the survey items.

The study also controls for each agency's demographics obtained from Fedscope, including the number of total employees, proportions of employees who are supervisors and males, and proportion of employees who belong to minority groups. With respect to supervisor status, Bhatti et al. (2009) suggest that public employees have heterogeneous interests towards municipal contracting. The authors found a negative correlation between the number of public employees in general and contracting out, while the number of administrative professionals is positively related to contracting out due to their bureau-shaping interests. In addition, agency independence is controlled: Independent agencies have long been viewed as different from executive-branch agencies. For example, the President lacks authority to fire their leaders for political reasons, such as failure to follow administration policy (Vermeule, 2013). Also, personal dynamics are quite different across agency types, cabinet departments, and independent agencies. Likewise, agency independence may result in differences in the extent of the turnover rate. Finally, this study controls for agency fixed effects as well as year fixed effects. Table 1 presents the descriptive statistics. Table A-1 describes the measures for variables and the data sources.

Model

For this study, ordinary least square models may not be appropriate as the dependent variable is a ratio with a finite range between 0 and 1. An ordinary least square regression model has a poor predictability due to predicted values by the OLS below 0 and beyond 1. In addition, a

Table 1. Descriptive Statistics

Variables	Mean	SD	Min.	Max.
Transfer Rate	0.01	0.01	<0.01	0.04
Quit Rate	0.04	0.02	<0.01	0.14
Contracting Activity	0.28	0.21	0.03	0.97
Job Satisfaction	0.70	0.06	0.56	0.86
Trust in Supervisor	0.71	0.06	0.57	0.91
Coworker Cooperation	0.77	0.05	0.66	0.93
Resource Sufficiency	0.48	0.09	0.26	0.75
Knowledge Sharing	0.77	0.05	0.62	0.93
Satisfaction with Pay	0.64	0.07	0.40	0.83
Total Employees	52,855.05	77,830.63	705	381,457
Agency Type (Cabinet)	0.57	-	0	1
Supervisor/Manager	0.22	0.08	0.07	0.65
Minority	0.36	0.14	0.10	100
Gender (Male)	0.49	0.11	0.15	0.70

Note: *N*=192.

fractional logit approach developed by Papke and Wooldridge (2008) is not applicable since it requires a balanced panel data structure. Therefore, using generalized estimation equation (GEE) models for panel data with a binomial distribution is more appropriate as GEE models can address the potential issue of a finite range of the dependent variable between 0 and 1. Indeed, it is widely recommended to apply the binomial distribution when the dependent variable is a ratio or proportion or rate given that the distribution is bounded between 0 and 1 (Agresti, 2015; 2019). In order to estimate beta, this study utilizes GEE with the Huber-White Sandwich estimator for robustness. The Huber-White Sandwich estimator is appropriate for the unbalanced data structure of this study and also can fix some possible issues related to working covariance structure misspecification.

The models test the relationship between contracting out and voluntary turnover rate (both quit rate and transfer rate) in U.S. federal agencies, as well as the moderating effect of job satisfaction on the relationship, by including an interaction term between the contracting out measure and job satisfaction measure to determine if job satisfaction moderates the effects of contracting out on turnover rate. In addition, in order to control for the state of the organization in previous years, the models with and without autoregressive terms—the lagged dependent variables—are compared. Including the lagged dependent variables helps account for the influences of unobserved variables associated with the turnover rate on the coefficient estimates of this study (O'Toole & Meier, 1999).

Results and Discussion

Table 2 presents the results of the GEE models examining the relationship between contracting out and turnover rate. The dependent variable in Models 1 and 2 is employee quit rate and the one in Models 3 and 4 is employee transfer rate. Models 1 and 3 are the base models, while Models 2 and 4 are with the autoregressive term (turnover rate *t*-1). Beta represents the effects of the explanatory variables on the population average. Autoregressive models present similar findings with the base models, though the sizes of magnitude are slightly bigger in the models, which imply long-term effects distributed across time periods. While a direct comparison between the base model and the autoregressive model is difficult, the models display similar findings. Thus, the discussion focuses mainly on the base models in order to ease interpretation.

Table 2. Results of Generalized Estimation Equation Models for Contracting Out and Turnover Rate (Baseline Models)

	Quit Rate		Transfer Rate	
	(1) Base Model	(2) Autoregressive Model	(3) Base Model	(4) Autoregressive Model
Contracting Activity (CA)	0.016*	0.114*	0.089	0.104
	(0.014)	(0.195)	(0.266)	(0.169)
Job Satisfaction (JS)	-1.196*	-3.067***	-1.778	-1.340
	(1.003)	(1.113)	(1.693)	(1.419)
Trust in Supervisor	4.552	1.193	1.188	0.861
	(4.611)	(1.471)	(2.091)	(1.240)
Coworker Cooperation	2.782	1.882	-2.586	-3.593***
	(3.500)	(1.382)	(2.563)	(1.352)
Resource Sufficiency	1.855	0.863	-0.564	-0.177
	1.034)	(0.685)	(0.541)	(0.467)
Knowledge Sharing	-7.791***	-2.128**	0.994	0.568
	(3.037)	(1.568)	(2.209)	(1.164)
Satisfaction with Pay	-5.543***	0.501	-1.607*	-0.256
	(1.626)	(0.825)	(0.923)	(0.622)
Total Employees (Log)	-0.068	0.025	-0.315***	-0.213***
	(0.060)	(0.035)	(0.042)	(0.046)
Agency Type (Cabinet)	0.370	0.116	0.549***	0.397***
	(0.207)	(0.143)	(0.140)	(0.088)
Supervisor/Manager	1.197*	0.873**	0.231	0.032
	(0.596)	(0.390)	(0.445)	(0.267)
Minority	-1.544*	-0.468	0.107	-0.701*
	(0.853)	(0.433)	(0.608)	(0.403)
Gender (Male)	-2.439**	-1.254***	-0.644	-0.462
	(0.971)	(0.389)	(0.705)	(0.501)
Lagged Dependent Variable		20.908***		33.853***
		(1.436)		(6.794)
Constant	1.306	-3.183***	-0.977	-1.527
	(1.805)	(0.779)	(1.399)	(1.040)
Year control	Yes	Yes	Yes	Yes
Agency control	Yes	Yes	Yes	Yes
Observations	192	165	192	165
Groups	28	28	28	28
Wald chi-square	275.99***	4427.39***	1711.81***	2351.69***

Note: Robust standard errors are in parentheses. * p<0.1, ** p<0.05, *** p<0.01

The models partially support the hypothesis arguing a relationship between contracting out and the employee voluntary turnover rate (Hypothesis 1). In Table 2, the results show a statistically significant (p<0.05), positive relationship between contracting activity and employee quit rate while finding no relationship between contracting activity and transfer rate. This suggests that an increase in contracting out is positively associated with the quit rate but may not be associated with the transfer rate. Since GEE models do not present marginal effects of explanatory variables directly, Table 3 provides estimated marginal effects of

Table 3. Marginal Effects of Contracting Out and Job Satisfaction on Turnover Rate (Baseline Models)

	Quit Rate	
	(1) Base Model	(2) Autoregressive Model
Contracting Activity (CA)	0.001*	0.004*
	(0.001)	(0.006)
Job Satisfaction (JS)	-0.040*	-0.101***
	(0.001)	(0.037)

contracting activity and job satisfaction on the outcome variables based on the Table 2 results. The estimated coefficient for contracting activity is 0.016 (marginal impact 0.001, $p<0.05$) in Model 1 and 0.114 (marginal impact 0.004, $p<0.01$) in Model 2, indicating that growth in contracting activity increases the quit rate in federal agencies. Focusing on Model 1, an additional one percentage point increase in contracting activity (measured by the ratio of total dollars spent on contracts to the appropriation on discretionary spending) would lead to an increase of 0.001 percentage points in the quit rate. In other words, as contracting activity increases, federal employees tend to leave their agencies to seek employment outside the federal government (employee quits). This supports previous arguments that managing workplace attitudes and behaviors should become a concern in contracting out (Bowman & West, 2006).

Considering Models 1 and 3, job satisfaction is negatively associated with the quit rate and statistically significant, whereas it is not statistically significant in the transfer rate model. This is not surprising because, while several studies have found negative relationships between job satisfaction and turnover (Harter et al., 2002; Hurley & Estelami, 2007; Ryan et al., 1996; Sellgren et al., 2007), others have reported null findings (Dittrich & Carrell, 1979; Koys, 2001; Riordan et al., 2005). However, it may be due to the data issue with the lack of variation in the transfer rate variable in this study, and a future study with different data would be helpful to disentangle the relationship.

In sum, turnover rate should also be considered in any benefit-cost analysis of contracting out, as high turnover rate is linked to the loss of human and social capital, disruptions in operations and collective function, socialization and training for new employees, and increases in recruitment and selection costs (Bluedorn, 1982; Dess & Shaw, 2001; Mobley, 1982; Osterman, 1987; Price, 1977; Staw, 1980). Therefore, managers and supervisors should be aware of the urgency to reduce anticipated increasing turnover rate when they decide to increase contracting activity as it is a direct antecedent of employee quits.

The study also hypothesizes that job satisfaction would moderate the effect of contracting activity on turnover rate (Hypothesis 2). As shown in Table 4, including an interaction term in each model helps the study determine whether job satisfaction moderates the effect of contracting on turnover rate. The interaction term in each model has a negative and statistically significant coefficient ($p<0.05$), thereby offering evidence that job satisfaction moderates the relationship between contracting activity and turnover rate. Estimated coefficients of -9.955 ($p<0.01$) in Model 5 and -8.783 ($p<0.01$) in Model 7 imply that the impact of contracting activity on turnover rate is contingent on the proportion of employees who are satisfied with their job in organizations.

On the other hand, both Models 5 and 7 show that the job satisfaction variable is not statistically significant when an interaction term of contracting and job satisfaction is added. One possible explanation for this is that the effect of job satisfaction on turnover rate may

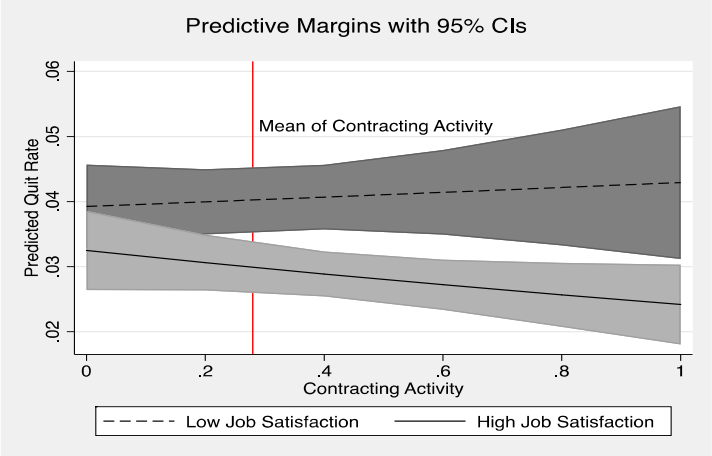
Table 4. Results of Generalized Estimation Equation Models for Contracting Out and Turnover Rate (Moderation Models)

	Quit Rate		Transfer Rate	
	(5) Base Model	(6) Autoregressive Model	(7) Base Model	(8) Autoregressive Model
Contracting Activity (CA)	6.992**	2.443*	6.257***	4.517***
	(2.683)	(1.449)	(1.156)	(1.116)
Job Satisfaction (JS)	4.270	-1.807	4.230	3.220
	(3.183)	(1.381)	(1.561)	(1.442)
CA x JS	-9.955***	-3.664*	-8.783***	-6.611***
	(3.628)	(2.081)	(1.692)	(1.630)
Trust in Supervisor	4.200	1.139	0.956	0.810
	(4.239)	(1.364)	(1.821)	(1.042)
Coworker Cooperation	4.075	2.187*	-1.685	-3.102**
	(3.098)	(1.333)	(2.242)	(1.250)
Resource Sufficiency	1.384	0.696	-0.866**	-0.376
	(1.077)	(0.677)	(0.418)	(0.365)
Knowledge Sharing	-7.638***	-2.024	1.207	-0.876
	(2.936)	(1.466)	(2.009)	(1.021)
Satisfaction with Pay	-5.496***	-0.420	-1.499**	-0.320
	(1.544)	(0.798)	(0.744)	(0.565)
Total Employees (Log)	-0.047	0.029	-0.304***	-0.209***
	(0.058)	(0.035)	(0.039)	(0.042)
Agency Type (Cabinet)	0.313	0.118	0.520***	0.385***
	(0.196)	(0.095)	(0.119)	(0.076)
Supervisor/Manager	1.053*	0.834**	0.078	-0.033
	(0.603)	(0.369)	(0.379)	(0.225)
Minority	-1.291	-0.385	0.291	-0.533
	(0810)	(0.434)	(0.536)	(0.354)
Gender (Male)	-2.303**	-1.204***	-0.511	-0.360
	(0.932)	(0.397)	(0.635)	(0.439)
Lagged Dependent Variable		20.478***		32.280***
		(1.513)		(6.673)
Constant	-1.808	-4.272***	-3.507***	-3.383***
	(1.842)	(1.207)	(1.368)	(0.978)
Year control	Yes	Yes	Yes	Yes
Agency control	Yes	Yes	Yes	Yes
Observations	192	165	192	165
Groups	28	28	28	28
Wald chi-square	346.02***	7146.96***	1109.65***	3418.76***

Note: Robust standard errors are in parentheses. * p<0.1, ** p<0.05, *** p<0.01

dissipate as an external event measure (i.e., contracting out variable) is included in the regression model. As Porter et al. (1974) suggests that the degree of "job satisfaction appears to be largely associated with specific and tangible aspects of the work environment…", the relationship is occasionally sensitive to the inclusion of covariates (p. 608).

Figure 1. Effects of Contracting Activity on Employee Quit Rate at Different Levels of Job Satisfaction in U.S. Federal Agencies



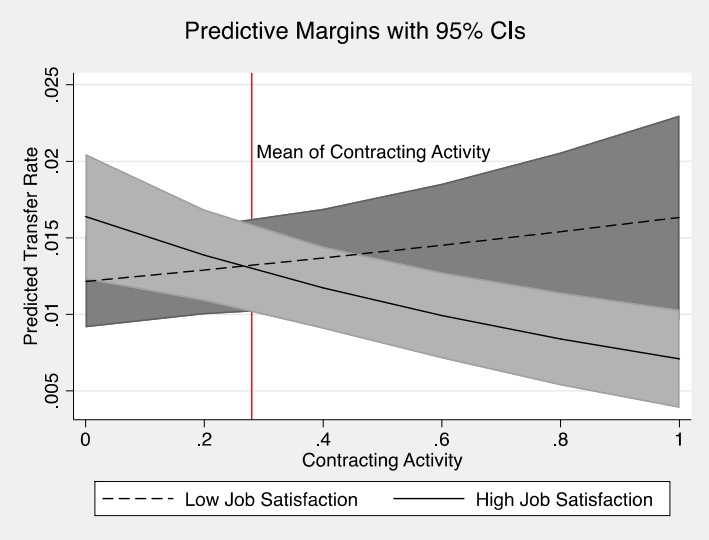
Since the effect of the interaction term is difficult to interpret as the term involves two continuous variables, plots of the slops for the interaction term are presented to demonstrate the relationship (Jaccard et al., 1990). Figures 1 and 2 illustrate the effects of contracting out on turnover rate across different levels of job satisfaction at the organizational level. The lines indicate the estimated marginal effects of contracting activity on the employee quit rate (Figure 1) and transfer rate (Figure 2) at the different levels of job satisfaction—the mean ± the standard deviation—at the organizational level (based on the results from Models 1 and 3). The figures show that the effects of contracting out on the outcomes, quit rate, and transfer rate, are heterogeneous across the levels of job satisfaction. Further, the figures show an inverse relationship between contracting out and turnover given the favorable level of job satisfaction. When more employees are satisfied with their job, contracting activity is negatively associated with quit rate. When less employees are satisfied with their job, on the other hand, contracting activity is positively associated with the outcome.

The findings provide implications that policy makers and public managers should be attentive to remaining employees expressing job dissatisfaction as this leads to employees quitting an agency, contingent upon the levels of contracting activity. On the other hand, by increasing job satisfaction, the use of contracting out practices can lessen quit rate. Regarding transfer rate, however, Figure 2 shows that two statistics have overlapping confidence intervals. It does not necessarily mean that they are not significantly different, but the t-statistic for comparing two means failed to reject the null hypothesis at the α=0.05 level. As the lack of variation in the transfer rate variable (the mean <0.01 and the standard deviation <0.01) might cause this, it would be meaningful to continue investigating the relationship between contracting out and transfer rate with different data.

Considering Models 5 and 7, control variables including knowledge sharing, satisfaction with pay, supervisor status, and gender are statistically significant (p<0.1 to p<0.01), while the relationships with supervisor and coworker, resource sufficiency, and most of the organization characteristics (i.e., organization size, agency type, and minority status) are all insignificant for the quit rate model. In the transfer rate model, the variables of resource sufficiency and satisfaction with pay, agency type, and organization size are statistically significant (p<0.05 to p<0.01), but others are not. This presents that two types of turnover rate—quitting or transferring—have difference antecedents as previous literature has suggested (Lee et al., 2018; Pitts et al., 2011; Whitford & Lee, 2011).

Additional models were tested as a robustness check. First, this study conducted regression models with alternative measures of job satisfaction and other control variables from FEVS,

Figure 2. Effects of Contracting Activity on Employee Transfer Rate at Different Levels of Job Satisfaction in U.S. Federal Agencies



including less stringent measures that consider even a neutral response (neither satisfied nor dissatisfied) as a positive response. Second, regression models with standardized explanatory variables were conducted. Additional models using an aggregated arithmetic average in measuring both dependent and independent variables were also tested. The results present similar levels-of-fit statistics and statistical significance of the independent variables with the same direction.

Conclusion

Diefenbach (2009) discusses that NPM-oriented reforms lead to a deterioration of the organizational culture, traditional work ethos, and values in many workplaces, and thus, the majority of public employees suffer because of greater workload and stress, declining motivation and work satisfaction, and tighter regimes of management. As such, contracting out may involve indirect costs and tradeoffs, including the effects on the workforce. However, very few studies investigated how contracting out affects the actual turnover rate, while extensive studies have shed light on how contracting out may influence government performance (Hodge, 2000; Lee et al., 2019).

This study provides empirical evidence of the impact of contracting activity on turnover rate and a moderating effect of job satisfaction on the relationship between contracting out and turnover rate. Growth in contracting activity increases the indirect costs of federal agencies in terms of higher turnover rate. However, job satisfaction moderates the relation between contracting out and turnover rate. Specifically, contracting out was found to have a positive association with turnover rate when less employees are satisfied with their job and a negative association to turnover rate when more employees are satisfied with their jobs.

This research is also critical because of its subsequent potential to reduce the negative effects of contracting out in relation to turnover. The heterogeneous effects of contracting out on turnover rate across different levels of job satisfaction at the organizational level suggests that contracting out is not necessarily harmful in terms of voluntary turnover in organizations where more employees are satisfied with their job. Therefore, policy makers and managers should be aware of the potential stress and dissatisfaction contracting out brings to employees and design appropriate policies to combat such threats, as personnel stability facilitates organizational performance and managerial quality (O'Toole & Meier, 2003).

There are successful implementation stories out there. The key is to understand what conditions can fulfill their design principle, closely monitor employee reactions, and implement those practices in a gradual change process. This is consistent with previous research arguing that combinations of certain internal management practices can enhance workforce skills, motivation and empowerment, and therefore, lead to higher retention (Wright & Boswell, 2002). When considering contracting out, for example, decision makers can try to increase job satisfaction to eliminate the negative consequences of contracting out in terms of turnover or to increase remaining employee retention rates.

This study also contributes to the literature of turnover. Though there is a rich history of turnover research focusing on some industries (e.g., health care, education, and restaurants), research should extend into other domains, including the public sector. The findings of this study have implications for public sector organizations and the people working there. As demonstrated in this study, there is at least one reason to study public sector turnover under the concept of the NPM: Employees in public organizations are expected to develop 'business-like' attitudes, while employees' tasks, attitudes, and performance appraisals are differently defined and controlled. Also, it bolsters previous research in turnover by developing longitudinal data in order to determine how downsizing or organizational change affects organizational behavior over time given that the cross-sectional nature of the data poses concerns about causality.

Despite the contributions, the limitations of this study should be noted for future study. This study does not use sub-agency level data. The current data prevent research from fully assessing the influence of contracting out on turnover rate. In order to control for aggregation bias, future research would be meaningful to gather data for sub-agencies and test the hypotheses. Moreover, the aggregated data structure of this study subsumes individuals' information into organizational values, and thus, the findings from the organizational level analyses call for care to avoid making inferences about individual employees' behavior.

Another limitation to this study should also be noted that while the analyses focus on voluntary turnover, federal managers and supervisors may use the strategies to encourage potential subjects of involuntary turnovers to do voluntary turnovers because of the due process entailing formal grievance and internal administrative processes in federal civil service employment, which leads to the situation that completion of the involuntary turnover process may take a few months or even a year (Lee, 2018; Truss, 2013). Though the administrative and legal challenges anticipated in the involuntary turnover process are quite plausible, the measure of voluntary turnover rate in the current data is limited from addressing this potential concern.

In this study, all possible moderating effects between the major independent variables were not tested because the major research question of this study was the effect of contracting out on voluntary turnover rate. Future studies may expand the range of variables used in this study to explore the potential mediating and moderating effects among different contracting out practices to reveal the complex, nuanced relationships. For example, this study supports linking contracting out and turnover rate, but it does not answer whether the relationship is caused by an increased sense of job insecurity due to layoff threats (Nigro & Kellough, 2006), added accountability confusion coupled with a sense of lack of control (Agranoff, 2006), or reduced person-organization fit because of the diminished public service ethos (Terry, 2006).

As discussed, the study of moderators identifies boundary conditions for the relationships between turnover and its antecedents. This work should continue, as there is much to learn about why certain organizations barely develop undesirable experience in the face of increasing contracting activity, while in others, the consequences are more destabilizing.

Disclosure Statement

The author declares that there are no conflicts of interest that relate to the research, authorship, or publication of this article.

References

Agranoff, R. (2006). Inside collaborative networks: Ten lessons for public managers. *Public Administration Review*, *66*(December), 56-65. https://doi.org/10.1111/j.15406210.2006.00666.x

Agresti, A. (2015). *The foundations of linear and generalized linear models*. Wiley.

_____. (2019). *An introduction to categorical data analysis* (3rd ed.). Wiley.

Ali, S. B. (2019). Politics, bureaucracy, and employee retention: Toward an integrated frame work of turnover intent. *Administration & Society*, *51*(9), 1486-1516. https://doi.org/10.1177/0095399718760589

Baltagi, B. H. (2005). *Econometric analysis of panel data*. John Wiley.

Batt, R., Colvin, A. J. S., & Keefe, J. (2002). Employee voice, human resource practices, and quit rates: Evidence from the telecommunications industry. *Industrial and Labor Relations Review, 55*(4), 573-594. https://doi.org/10.1177/001979390205500401

Bhatti, Y., Olsen, A. L., & Pedersen, L. H. (2009). The effects of administrative professionals on contracting out. *Governance*, *22*(1), 121-137. https://doi.org/10.1111/j.1468-0491.2008.01424.x

Bluedorn, A. C. (1982). A unified model of turnover from organizations. *Human Relations*, *35*(2), 135-153. https://doi.org/10.1177/001872678203500204

Bowman, J., & West, J. (2006). Ending civil service protections in Florida government. *Review of Public Personnel Administration, 26*(2), 139-157. https://doi.org/10.1177/0734371X06286978

Brown, L. A., & Kellough, J. E. (2020). Contracting and the bureaucratic representation of minorities and women: Examining evidence from federal agencies. *Review of Public Personnel Administration*, *40*(3), 447-467. https://doi.org/10.1177/0734371X18822051

Camp, S. D., & Gaes, G. G. (2002). Growth and quality of U.S. private prisons: Evidence from a national survey. *Criminology & Public Policy, 1*(3), 427-450. https://doi.org/10.1111/j.1745-9133.2002.tb00102.x

Carsten, J. K., & Spector, P. E. (1987). Unemployment, job satisfaction, and employee turnover: A meta-analytic test of the Muchinsky model. *Journal of Applied Psychology*, *72*(3), 374-381. https://doi.org/10.1037/0021-9010.72.3.374

Christensen, R. K., Goerdel, H. T., & Nicholson-Crotty, S. (2011). Management, law, and the pursuit of the public good in public administration. *Journal of Public Administration Research and Theory, 21*(suppl_1), i125-i140. https://doi.org/10.1093/jopart/muq065

Crewson, P. E. (1997). Public service motivation: Building empirical evidence of incidence and effect. *Journal of Public Administration Research and Theory*, *7*(4), 499-518. https://doi.org/10.1093/oxfordjournals.jpart.a024363

Cunha, R. C., & Cooper, C. L. (2002). Does privatisation affect corporate culture and employee wellbeing? *Journal of Managerial Psychology, 17*(1), 21-49. https://doi.org/10.1108/02683940210415915

Cunningham, I., & James, P. (2009). The outsourcing of social care in Britain: What does it mean for voluntary sector workers? *Work, Employment and Society, 23*(2), 363-375. https://doi.org/10.1177/0950017009102863

Dalton, D. R., Toder, W. D., & Krackhardt, D. M. (1983). Turnover overstated: The functional taxanomy. *Academy of Management Review*, *7*(1), 117-123.

Davis, R. & Stazyk, E. (2014). Making ends meet: How reinvention reforms complement public service motivation. *Public Administration, 92*(4), 919-936. https://doi.org/10.1111/j.1467-9299.2012.02112.x

Datta, D. K., Guthrie, J. P., Bausil, D., & Pandey, A. (2010). Causes and effects of employee downsizing: A review and synthesis. *Journal of Management*, *36*(1), 281-348. https://doi.org/10.1177/0149206309346735

Dess, G. G. & Shaw, J. D. (2001). Voluntary turnover, social capital, and organizational performance. *Academy of Management Review, 26*(3), 446-456. https://doi.org/10.5465/amr.2001.4845830

Diefenbach, T. (2009). New Public Management in public sector organizations: The dark sides of managerialistic 'enlightenment'. *Public Administration, 87*(4), 892-909. https://doi.org/10.1111/j.1467-9299.2009.01766.x

Dittrich, J. E., & Carrell, M. R. (1979). Organizational equity perceptions, employee job satisfaction, and departmental absence and turnover rates. *Organizational Behavior and Human Performance, 24*(1), 29-40. https://doi.org/10.1016/0030-5073(79)90013-8

Domberger, S., & Jensen, P. (1997). Contracting out by the public sector: Theory, evidence, prospects. *Oxford Review of Economic Policy, 13*(4), 67-78. https://doi.org/10.1093/oxrep/13.4.67

Donahue, J. D. (1989). *The privatization decision: Public ends, private means*. Basic Books.

Dube, A., & Kaplan, E. (2010). Does outsourcing reduce wages in the low-wage service occupations? Evidence from janitors and guards. *Industrial & Labour Relations Review, 63*(2), 287-306. https://doi.org/10.1177/001979391006300206

Ellis, S. (1998). A new role for the post office: An investigation into issues behind strategic change at royal mail. *Total Quality Management, 9*(2-3), 223-34. https://doi.org/10.1080/0954412989081

Engstrom, A. K., & Axelsson, R. (2010). The double spiral of change—experiences of privatization in a Swedish hospital. *International Journal of Health Planning and Management, 25*(2), 156-168. https://doi.org/10.1002/hpm.968

Falkenberg, H., Näswall, K., & Sverke, M. (2009). How are employees at different levels affected by privatization? A longitudinal study of two Swedish hospitals. *Journal of Occupational and Organizational Psychology*, *82*(1), 45-65. https://doi.org/10.1348/096317908X289990

Fernandez, S., & Smith, C. R. (2006). Looking for evidence of public employee opposition to privatization: An empirical study with implications for practice. *Review of Public Personnel Administration*, *26*(4): 356-381. https://doi.org/10.1177/0734371X05281629

Fernandez, S., Smith, C. R., & Wenger, J. B. (2007). Employment privatization, and managerial choice: Does contracting out reduce public sector employment? *Journal of Policy Analysis and Management*, *26*(1), 57-77. https://doi.org/10.1177/0734371X05281629

Ferrie, J. E., Martikainen, P., Shipley, M. J., Marmot, M. G., Stansfeld, S. A., & Smith, G. D. (2001). Employment status and health after privatization in white collar civil servants: Prospective cohort study. *British Medical Journal, 322*(7287), 647-651. https://doi.org/10.1136/bmj.322.7287.647

Flecker, J., & Hermann, C. (2011). The liberalization of public services: Company reactions and consequences for employment and working conditions. *Economic and Industrial Democracy*, *32*(3), 523-544. https://doi.org/10.1177/0143831X10389201

Fisher, V. E., & Hanna, J. V. (1931). *The dissatisfied worker*. Macmillan.

Frederickson, G. H. (1997). *Spirit of public administration*. Jossey-Bass.

Freiberg, A. (2005). Managerialism in Australian criminal justice: RIP for KPIs? *Monash University Law Review, 31*(1), 12–36. https://search.informit.org/doi/10.3316/ielapa.200802263

Georgellis, Y., Gregoriou, A., & Tsitsianis N. (2008). Adaptation towards reference values: A non-linear perspective. Journal of Economic Behavior & Organization, *67*(3-4), 768-781. https://doi.org/10.1016/j.jebo.2007.08.007

Greene, J. D. (2002). *Cities and privatization: Prospects for the new century*. Prentice Hall.

Griffeth, R. W., Hom, P. W., & Gaertner, S. (2000). A comparison of different conceptualizations of perceived alternatives in turnover research. *Journal of Organizational Behavior*, *9*(2), 103-111. https://doi.org/10.1002/job.4030090202

Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology, 87*(2), 268-279. https://doi.apa.org/doi/10.1037/0021-9010.87.2.268

Hansen, N., Sverke, M., & Näswall, K. (2009). Predicting nurse burnout and resources in three acute care hospitals under different forms of ownership: A cross-sectional questionnaire survey. *International Journal of Nursing Studies*, *46*(1), 96-107. https://doi.org/10.1016/j.ijnurstu.2008.08.002

Hausknecht, J. P. & Trevor, C. O. (2011). Collective turnover at the group, unit, and organizational levels: Evidence, issues, and implications. *Journal of Management, 37*(1), 352-388. https://doi.org/10.1177/0149206310383910

Hebdon, R. (2006). Contracting public services in New York State. *Industrial Relations*, *61*(3), 513-529. https://doi.org/10.7202/014188ar

Hobfoll, S. E. (2001). The influence of culture, community and the nested-self in the stress process: Advancing conservation of resources theory. *Journal of Applied Psychology, 50*(3), 337-396. https://doi.org/10.1111/1464-0597.00062

Hodge, G. A. (2000). *Privatization: An international review of performance*. Westview Press.

Hoggett, P. (1996). New modes of control in the public service. *Public Administration, 74*(1), 19-32. https://doi.org/10.1111/j.1467-9299.1996.tb00855.x

Holtom, B. C., Mitchell, T. R., Lee, T. W., & Eberly, M. B. (2008). Turnover and retention research: A glance at the past, a closer review of the present, and a venture into the future. *The Academy of Management Annals*, *2*(1), 231-274. https://doi.org/10.5465/19416520802211552

Hur, H., & Perry, J. L. (2020). Job security rule changes and employee organizational commitment. *Review of Public Personnel Administration*, *40*(4), 641-668. https://doi.org/10.1177%2F0734371X19842622

Hurley, R. F., & Estelami, H. (2007). An exploratory study of employee turnover indicators as predictors of customer satisfaction. *Journal of Services Marketing, 21*(3), 186-199. https://doi.org/10.1108/08876040710746543

Ironson, G. H., Smith, P. C., Brannick, M. T., Gibson, W. M., & Paul, K. B. (1989). Construction of a job in general scale: A comparison of global, composite, and specific measures. *Journal of Applied Psychology, 74*(2), 193-200. https://doi.org/10.1037/0021-9010.74.2.193

Iseki, H. (2010). Effects of contracting on cost efficiency in US fixed-route bus transit service. *Transportation Research Part A, 44*(7), 457-472. https://doi.org/10.1016/j.tra.2010.03.003

Jaccard, J., Wan, C. K., & Turrisi, R. (1990). The detection and interpretation of interaction effects between continuous variables in multiple regression. *Multivariate Behavioral Research, 25*(4), 467-478. https://doi.org/10.1207/s15327906mbr2504_4

Johnston, V. R., & Seidenstat, P. (2007). Contracting out government services: Privatization at the millennium. *International Journal of Public Administration*, *30*(3), 231-247. https://doi.org/10.1080/01900690601117713

Khalid, A., Murtaza, G., Zafar, A., Zafar, M. A., Saqib, L., & Mushtaq, R. (2012). Role of supportive leadership as a moderator between job stress and job performance. *Information Management and Business Review, 4*(9), 487-495. https://doi.org/10.22610/imbr.v4i9.1004

Kettl, D. F. (1993). *Sharing power: Public governance and private markets*. Brookings Institution Press.

Kennedy, P. (2008). *A guide to econometrics*. Blackwell.

Koys, D. J. (2001). The effects of employee satisfaction, organizational citizenship behavior, and turnover on organizational effectiveness: A unit-level, longitudinal study. *Personnel Psychology, 54*(1), 101-114. https://doi.org/10.1111/j.1744-6570.2001.tb00087.x

Lee, G., Lee, S., Malatesta, D., & Fernandez, S. (2019). Outsourcing and organizational performance: The employee perspective. *The American Review of Public Administration*, *49*(8), 973-986. https://doi.org/10.1177/0275074019855469

Lee, G., Fernandez, S., & Lee, S. (2021). An overlooked cost of contracting out: Evidence from employee turnover intention in U.S. federal agencies. *Public Personnel Management*, *50*(3), 381-407. https://doi.org/10.1177/0091026020944558

Lee, S. 2018. Employee turnover and organizational performance in U.S. federal agencies. *The American Review of Public Administration*, *48*(6), 522-534. https://doi.org/10.1177/0275074017715322

Lee, S., Fernandez, S., & Chang, C. (2018). Job scarcity and voluntary turnover in the U.S. federal bureaucracy. *Public Personnel Management*, *47*(1), 3-25. https://doi.org/10.1177/0091026017732798

Lewis, G. B., & Frank, S. A. (2002). Who wants to work for the government? *Public Administration Review*, *62*(4), 395-404. https://doi.org/10.1111/0033-3352.00193

Lindholst, A. C., Hansen, M. B., Randrup, T. B., Persson, B., & Kristoffersson, A. (2018). The many outcomes from contracting out: The voice of public managers. *Environment and Planning C: Politics and Space*, *36*(6), 1046-1067. https://doi.org/10.1177/2399654417733992

Mastracci, S. H., & Thompson, J. R. (2005). Nonstandard work arrangements in the public sector: Trends and issues. *Review of Public Personnel Administration, 25*(4), 299–324. https://doi.org/10.1177/0734371X04273054

Mikesell, J. L. (2004). Equity impacts of a non-market property assessment standard: Evidence from the Indiana administrative formula approach. *Journal of Property Tax Assessment and Administration, 1*(1), 15-30. https://researchexchange.iaao.org/jptaa/vol1/iss1/2

Milward, B. H. (1994). Implications of contracting out: New roles for the hollow state. In P. Ingraham & B. Romzek (Eds.), *New paradigm for government: Issues for the changing public service* (pp. 41-62). Jossey-Bass.

Mitchell, T. R., & James, L. R. (2001). Building better theory: Time and the specification of when things happen. *Academy of Management Review, 26*(4), 530-547. https://doi.org/10.5465/amr.2001.5393889

Mitchell, T. R., Holtom, B. C., Lee, T. W., Sablynski, C. J. & Erez, M. (2001). Why people stay: Using job embeddedness to predict voluntary turnover. *Academy of Management Journal*, *44*(6), 1102-1121. https://doi.org/10.5465/3069391

Mobley, W. H. (1982). *Employee turnover: Causes, consequences, and control.* Addison-Wesley.

Mobley, W. H., Griffeth, R. W., Hand, H. H., & Meglingo, B. M. (1979). Review and conceptual analysis of employee turnover process. *Psychological Bulletin, 86*(3), 493-522.

Moynihan, D. P., & Pandey, S. K. (2007). The role of organizations in fostering public service motivation. *Public Administration Review, 67*(1), 40-53. https://doi.org/10.1111/j.1540-6210.2006.00695.x

Muchinsky, P. M., & Morrow, P. C. (1980). A multidisciplinary model of voluntary employee turnover. *Journal of Vocational Behavior*, *17*(3), 263–290. https://doi.org/10.1016/0001-8791(80)90022-6

Newton, J. (2003). Implementing an institution-wide learning and teaching strategy: Lessons in managing change. *Studies in Higher Education, 28*(4), 427–41. https://doi.org/10.1080/03075070320000122279

Naff, K. C., & Crum, J. (1999) Working for America: Does public service motivation make a difference? *Review of Public Personnel Administration*, *19*(4), 5-16. https://doi.org/10.1177/0734371X9901900402

Nigro, L. G., & Kellough, J. E. (2006). Civil service reform in Georgia: A view from the Trenches. In J. E. Kellough & L. G. Nigro (Eds.) *Civil service reform in the states: Personnel policy and politics at the subnational level,* (pp. 117-144). State University of New York Press.

Nuppenau, C. (2008). *Marketizing municipal park management organizations in Denmark—A study of policymaking and organizational change in the period 1985-2005.* Forest & Landscape, University of Copenhagen.

Ohlsson, H. (2003). Ownership and production costs: Choosing between public production and contracting-out in the case of Swedish refuse collection. *Fiscal Studies, 24*(4), 451-476. https://doi.org/10.1111/j.1475-5890.2003.tb00091.x

Osterman, P. (1987). Turnover, employment security, and the performance of the firm. In M. M. Kleiner, R. N. Block, M. Roomkin, & S. W. Salsburg (Eds.), *Human Resources and the Performance of the Firm* (pp. 275-317). Madison, WI: Industrial Relations Research Association.

O'Toole, L., & Meier, K. J. (1999). Modeling the impact of public management: Implications of structural context. *Journal of Public Administration Research and Theory*, *9*(4), 505-526. https://doi.org/10.1093/oxfordjournals.jpart.a024421

_____. (2003). Plus Ça change: Public management, personnel stability, and organizational performance. *Journal of Public Administration Research and Theory, 13*(1), 43-64. https://www.jstor.org/stable/3525616

_____. (2004). Parkinson's law and the new public management? Contracting determinants and service-quality consequences in public education. *Public administration review*, *64*(3), 342-352. https://doi.org/10.1111/j.1540-6210.2004.00378.x

Papke, L. E., & Wooldridge, J. M. (2008). Panel data methods for fractional response variables with an application to test pass rates. *Journal of Econometrics*, *145*(1-2), 121-133.

Park, S. J. (2004). Contracting out in Korean local governments: Current situation and challenges ahead. *International Review of Administrative Science, 70*(3), 497-509. https://doi.org/10.1177/0020852304046204

Perry, J. L., & Wise, L. R. (1990). The motivational bases of public service. *Public Administration Review, 50*(3), 367-373. https://doi.org/10.2307/976618

Pitts, D., Marvel, J., & Fernandez, S. (2011). So hard to say goodbye? Turnover intention among U.S. federal employees. *Public Administration Review, 71*(5), 751-760. https://doi.org/10.1111/j.1540-6210.2011.02414.x

Pollitt, C. (1990). *Managerialism and the public services–The Anglo-Saxon experience*. Oxford: Basil Blackwell.

Porter, L. W., & Steers, R. M. (1973). Organizational, work, and personal factors in employee turnover and absenteeism. *Psychological Bulletin*, *80*(2), 151-176. https://doi.org/10.1037/h0034829

Porter, L. W., Steers, R. M., Mowday, R. T., & Boulian, P. V. (1974). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. *Journal of Applied Psychology*, *59*(5), 603-609. https://doi.org/10.1037/h0037335

Price, J. L. (1977). *The study of turnover*. Ames, IA: Iowa State University Press.

Rainey, H. G. (1982). Reward preferences among public and private managers: In search of the service ethic. *The American Review of Public Administration*, *16*(4), 288-302. https://doi.org/10.1177/027507408201600402

Rho, E. (2013). Contracting revisited: Determinants and consequences of contracting out for public education services. *Public Administration Review*, *73*(2), 327-337. https://doi.org/10.1111/j.1540-6210.2012.02682.x

Ryan, A. M., Schmit, M. J., & Johnson, R. (1996). Attitudes and effectiveness: Examining relations at an organizational level. *Personnel Psychology, 49*(4), 853-882. https://doi.org/10.1111/j.1744-6570.1996.tb02452.x

Scarpello, V., & Campbell, J. P. (1983). Job satisfaction: Are all the parts there? *Personnel Psychology, 36*(3), 577-600. https://doi.org/10.1111/j.1744-6570.1983.tb02236.x

Sellgren, S., Ekvall, G., & Tomson, G. (2007). Nursing staff turnover: Does leadership matter? *Leadership in Health Services, 20*(3), 169-183. https://doi.org/10.1108/17511870710764023

Stein, R. M. (1990). *Urban alternatives: Public and private markets in the provision of local services*. Pittsburgh, PA: University of Pittsburgh Press.

_____. (2008). Person-environment fit and public service motivation. *International Public Management Journal*, *11*(1), 13-27. https://doi.org/10.1080/10967490801887863

Staw, B. M. (1980). The consequences of turnover. *Journal of Occupational Behaviour*, *1*(4), 253-273. https://www.jstor.org/stable/3000143

Terry, L. D. (2006). The thinning of administrative institutions. In D. H. Rosenbloom & H. E. McCurdy (Eds.), *Revisiting Waldo's Administrative State* (pp. 109-128). Washington, DC: Georgetown University Press.

Tett, R. P., & Meyer, J. P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. *Personnel Psychology, 46*(2), 673-686. https://doi.org/10.1111/j.1744-6570.1993.tb00874.x

Trevor, C. O., & Nyberg, A. J. (2008). Keeping your headcount when all about you are losing theirs: Downsizing, voluntary turnover rates, and the moderating role of HR practices. *Academy of Management Journal, 51*(2), 259-276. https://doi.org/10.5465/amj.2008.31767250

Truss, C. 2013. The distinctiveness of human resource management in the public sector. In R. J. Burke, A. J. Noblet, & C. L. Cooper (Eds.). *Human Resource Management in the Public Sector* (pp. 17-36). Cheltenham, UK: Edward Elgar.

Vermeule, A. (2013). Conventions of agency independence. *Columbia Law Review*, *113*(5), 1163-1238. https://www.jstor.org/stable/23479725

Vrangbaek, K., Petersen, O. H., & Hjelmar, U. (2015). Is contracting out good or bad for employees? A review of international experience. *Review of Public Personnel Administration, 35*(1), 3-23. https://doi.org/10.1177/0734371X13511087

Wanous, J., Reichers, A., & Hudy, M. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology, 82*(2), 247-252. https://doi.org/10.1037/0021-9010.82.2.247

Whitford, A. B., & Lee, S. (2011). Exit, voice, and loyalty with multiple exit options: Evidence from the US federal workplace. *Journal of Public Administration Research and Theory, 25*(2), 373-398. https://doi.org/10.1093/jopart/muu004

Wilenski, P. (1988). Social change as a source of competing values in public administration. *Australian Journal of Public Administration, 47*(3), 213-22. https://doi.org/10.1111/j.1467-8500.1988.tb01062.x

Williamson, O. E. (1985). *The Economic institution of capitalism*. Simon and Schuster.

_____. (1991). Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly, 36*(2), 269-296. https://doi.org/10.2307/2393356

Wright, P. M., & Boswell, W. R. (2002). Desegregating HRM: A review and synthesis of micro and macro human resource management research. *Journal of Management, 28*(3), 247-276. https://doi.org/10.1016/S0149-2063(02)00128-9

Wooldridge, J. M. (2010). *Econometric analysis of cross-section and panel data*. MIT Press.

Yang, K., & Kassekert, A. (2010). Linking management reform with employee job satisfaction: Evidence from federal agencies. *Journal of Public Administration Research and Theory*, *20*(2), 413-436. https://doi.org/10.1093/jopart/mup010

Zuberi, D. (2011). Contracting out hospital support jobs: The effects of poverty wages, excessive workload, and job insecurity on work and family life. *American Behavioral Scientist*, *55*(7), 920-940. https://doi.org/10.1177/0002764211407835

Author Biography

Gyeo Reh Lee is a tax analyst at the National Assembly Budget Office of Korea. Her research interests include public finance and public management often with an application to government contracting. She holds a Ph.D. in Public Affairs from the O'Neill School of Public and Environmental Affairs at Indiana University. She has recently published in the *American Review of Public Administration*, *Asia Pacific Journal of Public Administration*, *Journal of Budget and Policy*, and *Public Personnel Management*.

Appendix

Table A-1. Measures for Dependent and Control Variables

Variables	Measure	Source
Transfer Rate	The proportion of federal employees who voluntarily left the federal government to another agency	Fedscope
Quit Rate	The proportion of federal employees who voluntarily left the federal government to seek work elsewhere	Fedscope
Contracting Activity	The ratio of total dollars spent on contracts with external organizations to the appropriation on discretionary spending	FPDS; The Budget
Job satisfaction	Considering everything, how satisfied are you with your job?	FEVS, Q69
Knowledge sharing	Employees in my work unit share job knowledge with each other	FEVS, Q26
Pay Satisfaction	Considering everything, how satisfied are you with your pay?	FEVS, Q70
Trust in Supervisor	I have trust and confidence in my supervisor	FEVS, Q51
Cooperation among Coworkers	The people I work with cooperate to get the job done	FEVS, Q20
Resource Sufficiency	I have sufficient resources (for example, people, materials, budget) to get my job done	FEVS, Q9
Supervisory Status	Proportion of supervisors	Fedscope
Gender	Proportion of male employees	Fedscope
Minority	Proportion of non-white employees	Fedscope
Total employees	Logarithmically transformed total employees in each agency	Fedscope

Note: Ordinal survey items obtained from 2010 to 2017 FEVS were converted to proportions.