DETERMINANTS AND CONSEQUENCES OF EMPLOYEE TURNOVER IN THE U.S. FEDERAL BUREAUCRACY

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Shinwoo Lee
To Jonghyup Lee and Jaeheung Lee, my parents and my foundation

To Gyeo Reh Lee and Daniel Sahn Lee, my wife and son, and the reason why I live
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Employee turnover, which means employees’ departure from their current workplace, has long been a critical managerial concern for public sector organizations, in particular for the U.S. federal bureaucracy. Scholars in the public sector have strived to identify critical antecedents of public employees’ turnover behaviors in demographic, managerial, workplace satisfaction, employee relational and organizational contexts. Despite the previous literature’s theoretical and practical contributions to the research on public employee turnover, however, the current state of employee turnover research in the public management field leaves some critical issues unexplored. First, the potential effects of external and environmental context on employee turnover behaviors have rarely been investigated. Second, both scholars and practitioners have traditionally treated employee turnover as detrimental to organizational performance, but their long-standing belief stands with no theoretical or empirical supports.

This dissertation aims to investigate the following questions: (1) how changes in external and environmental context make an effect on federal employees’ turnover behaviors, with a specific focus on job scarcity in a labor market and government contracting out and (2) what consequences employee turnover brings to organizational performance. First, this dissertation confirms that changes in job scarcity (or alternative job opportunities) play a critical role as a moderator in predicting federal employee quit behavior: when alternative job opportunities are more abundant, a federal agency can expect that dissatisfied employees will quit their agency and leave the federal government at higher rates. Second, empirical results of this dissertation
confirm two critical effects of contracting out on employee turnover intention: not only increases it the proportion of employees with turnover intention, but also contracting out lowers job satisfaction among employees which in turn leads to increase the proportion of employees with turnover intention. Lastly, this dissertation suggests that the effects of employee turnover on organizational performance differ by the type of employee turnover. The findings imply that both employee transfers and involuntary turnovers can be beneficial for organizational performance.

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CHAPTER 1
INTRODUCTION

Employee turnover is defined as employees’ decisions to leave their current workplace for many different reasons. Employees leave for jobs with higher salaries or because of low work satisfaction. They may move to a place that is located nearer to their family. They may quit their job and stay unemployed while taking care of their family. Or, they may be fired by their employer for poor performance or for many other reasons.

From an employer’s perspective, employee turnover is expensive since it incurs both pecuniary and non-pecuniary costs. For example, an employer in general spends between 50 percent and 200 percent of the new employee’s annual salary for hiring costs (Partnership for Public Service & Booze Allen Hamilton, 2010). More importantly, employee turnover involves a loss of organizational human and social capital, which will eventually lead to lower organizational productivity and performance (Dalton & Todor, 1979).

Scholars and practitioners have endeavored to identify critical antecedents and consequences of employee turnover in different sectors including the public, private and nonprofit sectors. In particular, public management scholars have explored and identified a set of factors in the organizational, managerial, and demographic contexts of public sector organizations as key determinants in understanding public employees’ turnover behavior. This chapter presents the status of research concerning employee turnover in the public sector. First, this chapter presents recent trends in employee turnover in the federal government. Next, on the basis of a review of the literature on employee turnover in the public sector, it summarizes empirical findings in terms of critical determinants affecting public employees’ turnover.
behavior, and identifies critical issues that should be resolved for a better understanding of turnover behavior in the public sector.

Clarifying the scope of the analysis in this dissertation is essential. First, the federal government is the primary object of analysis in this dissertation. The federal government is the largest employer across a variety of sectors. As of 2017, the federal government employs about 2.1 million civilian employees: that is more than double of the number of employees who work for Walmart which is the largest employer in the private sector. The findings of this dissertation, therefore, will deliver critical implications for a large employee population. Next, among the various types of employee turnover, this dissertation focuses on both voluntary and involuntary turnover. Voluntary turnover in the public sector is initiated by employees due to personal reasons such as job or pay dissatisfaction, and involves 1) decisions to transfer to other governmental agencies (or employee transfer) and 2) decisions to find alternative workplaces outside the public sector (or employee quit). Involuntary turnover in the public sector is, on the other hand, initiated by employers due to their employees’ poor performance or misconduct. This dissertation excludes reduction-in-force, a related type of involuntary turnover, in its analysis. Reduction-in-force is initiated by an employer as a tool for employee downsizing. While an employer fires employees for their incompetence or corruption, employee downsizing is a result of the decision to reorganize an organization due to certain external forces such as fiscal constraints, changes in priorities among organizational programs and goals, and employee overages (Phay, 1980).
Recent Trends in Employment and Separation in the Federal Government

Figure 1-1 below displays the annual number of total federal civilian employment and separations between 2005 and 2017. The total federal employment gradually increased from about 1.9 million in 2005 to about 2.1 million in 2017. On the other hand, the total number of employees annually leaving the government workplace lightly decreased from 254,989 in 2005 to 225,204 in 2017. Overall, however, a steady level of total separations is observed.

An additional analysis, shown in Figure 1-2, presents fluctuations in the annual rate of each employee turnover over the past decade. One interesting finding is that those fluctuations, whether an increase or a decrease, occurred during the great recession between 2008 and 2011. After an increase between 2005 and 2007, voluntary turnover in the federal government rapidly decreased during the great recession between 2007 and 2010. The total number of federal employees who left their workplace voluntarily (including both employee transfer and quit) decreased from 120,618 in 2007 to 97,667 in 2010. The federal government again experienced increases of voluntary turnover since 2011: more than 102,000 federal employees left their agencies between 2011 and 2017.

While a rapid decrease in the annual number of voluntary turnovers was observed during the great recession, the opposite trend was also noticed for involuntary turnover in the federal government: the annual number of employees who left their workplace due to their poor performance or reduction-in-force decisions increased from 68,687 in 2009 to 77,762 in 2011. Both before and after the great recession, however, the annual number of employees who left their workplace involuntarily shows a decreasing trend.

Next, the annual number of employees who retired voluntarily had been stable at around 61,000 before the recession. After the occurrence of a big decline from a high of 62,366 in 2007
to a low of 46,100 in 2009, the federal government experienced a continuing increase in the number of retiring employees. Finally, the rate of other types of turnover behavior in the federal government was stable between 2005 and 2017.

[Figure 1-1]

[Figure 1-2]

A Review of the Literature

While retaining employees has been treated as one of the major concerns among scholars and practitioners since early 1900s (White, 1948; Merit Systems Protection Board, 1989), real efforts to conduct empirical studies on turnover in the public management field had yet to be examined until Lewis and Park (1989) and Lewis (1991) published their works. These two early works focused on demographic factors that affect federal white-collar employees’ turnover behavior. Based on a sample of federal employees’ personnel records, their empirical results show that age, salary, and work experience are negatively related to turnover decisions made by federal white-collar employees. On the other hand, there is no difference in turnover probability between male and female employees.

Since these seminal works, subsequent studies in the public management field have made an effort to identify critical factors besides demographic factors affecting public employees’ turnover. For example, Kellough and Osuna (1995) test their empirical model to find determinants of the variation in quit rates in the federal agencies. Their empirical model includes selected organizational and individual characteristics, and identifies a list of critical determinants of quit rates in the federal agencies. Workforce composition variables, such as the proportion of young workers (i.e., 31 years of age or less) or clerical employees, seem to have a critical and
positive association with agency quit rates. Two additional variables, agency size and union strength, appear to be crucial in explaining the variation in quit rates across federal agencies. While the effect of agency size on agency quit rates is negative, the agencies with a higher proportion of employees who are involved in collective bargaining units are more likely to have higher quit rates than their counterparts. The proportion of temporary employees also seems to have a positive relationship with agency quit rates.

On the basis of turnover research in both the public and private sector, Selden and Moynihan (2000) developed a model of voluntary turnover behavior in state governments. While focusing on voluntary turnover rates, their model includes three broad categories of factors affecting voluntary turnover behavior: 1) environmental factors (state unemployment and geographical region); 2) organizational factors (unionization, size, and internal structure); and 3) human resource management factors (average salaries, family-friendly policies, and training opportunities). Empirical findings confirm that family-friendly policies are effective in reducing voluntary turnover rates. State governments with more training opportunities and higher average salaries are more likely to have lower voluntary turnover rates. Contrary to Kellough and Osuna (1995), however, Selden and Moynihan’s empirical findings support the negative impact of union status on turnover rates in state governments.

While these two empirical studies focus on presenting determinants of the variation in turnover rates across governments and public agencies, individual employees and their motivations to decide to leave for a new workplace have gained considerable attention from later scholars. There are commonalities among these latter empirical studies on turnover in the public sector. First, due to pragmatic reasons, turnover research in the public management field (and the generic management field as well) traditionally uses turnover intention as a proxy for an actual
turnover decision, and therefore infers the relationship between an actual turnover decision and its correlates on the basis of analyses of employees’ turnover intentions (Cohen, Blake & Goodman, 2016). Second, a vast majority of these studies empirically test the effect of selected variables on public employees’ turnover decisions or intentions; only a few studies (e.g., Selden & Moynihan, 2000; Pitts, Marvel & Fernandez, 2011) attempt to set up a comprehensive model of public employees’ turnover behavior.

A review of previous empirical findings categorizes these factors into 1) demographic factors; 2) managerial practices (or human resource management practices); 3) workplace satisfaction factors; 4) employees’ relational factors; and 5) organizational/institutional factors. First, a list of demographic factors, which include age, work experience, gender, race, and minority status, are regarded as critical in determining employees’ turnover (or turnover intention) in the public sector. Both age and work experience are typically found to have a negative association with employees’ turnover behavior. If employees are younger or spend fewer years at their organizations, they are more likely to leave their workplace (Balfour & Neff, 1993; Cho & Lewis, 2012; Jung, 2010; Lewis, 1991; Moynihan & Landuyt, 2008; Pitts, Marvel & Fernandez, 2011; Wynen, Op de Beeck & Hondeghem, 2013). On the other hand, while empirical evidence on the difference in turnover probabilities or intentions by gender and racial groups is quite mixed and inconclusive (Cho & Lewis, 2012), traditional beliefs suggest that female and minority employees are more likely to leave their workplace.

Second, numerous managerial practices are found to be key factors affecting employees’ turnover behavior. Some practices send a positive signal on managerial and organizational efforts to commit to employee development and well-being (Cho & Lewis, 2012), and these practices are expected to increase loyalty and decrease the desire to quit (Cho & Lewis, 2012;
Gould-Williams, 2004). Public management scholars have empirically investigated the potential impacts of a list of managerial practices on employees’ turnover behavior, including empowerment, performance-oriented pay and incentives, family-friendly policies, and job- (or career-) related opportunities. Empowerment practices that aim to share authority and encourage participation in the decision-making process have a critical effect on reducing the probability of employees’ turnover (Kim & Fernandez, 2017; Moynihan & Landuyt, 2008; Pitts, Marvel & Fernandez, 2011). Family-friendly policies (e.g., on-site childcare system, child care subsidies, alternative work schedules, and telework) are also regarded as having a negative association with employees’ turnover (Lee & Hong, 2012; Selden & Moynihan, 2000). Numerous training opportunities to develop job-related skills are also found to have a negative relationship with employee turnover (Kim, 2012; Pitts, Marvel & Fernandez, 2011). While the proponents of performance-oriented management practices (e.g., performance-pay and incentive systems) traditionally argue that these practices will increase employee work-attitudes and performance, empirical findings have produced mixed results (e.g., Lee & Jimenez, 2011; Pitts, Marvel & Fernandez, 2011).

Third, empirical findings have typically confirmed that workplace satisfaction is likely to lower employees’ turnover behavior and intentions. In particular, job satisfaction theory traditionally treats employees’ satisfaction with their job as a critical correlate of employees’ work attitudes: a higher level of employee job satisfaction is connected to more positive work attitudes including organizational commitment, extra-role behavior, and decreased turnover intention. Empirical findings consistently confirm the positive impact of employees’ job satisfaction in reducing the probability of turnover (Lewis, 1991; Pitts, Marvel & Fernandez, 2011; Wang, Yang & Wang, 2012; Wayne, Op de Beeck & Hondeghem, 2013). Another critical
workplace satisfaction variable is pay satisfaction. As both Bertelli (2007) and Lewis (1991) note, one of the major reasons public employees give for their decision to leave is a higher salary available for comparable work in the private sector.

Fourth, employees’ relational factors focus on the potential impacts of interactions among employees, colleagues, and supervisors/managers. In particular, empirical findings consistently support the fact that employees under cooperative relationships with their coworkers are less likely to leave their workplace (Pitts, Marvel & Fernandez, 2011; Wayne, Op de Beeck & Hondeghem, 2013) and that a higher level of trust in a supervisor is linked to a lower probability of turnover (Pitts, Marvel & Fernandez, 2011).

Fifth, organizational/institutional factors include the variables that define the distinctive characteristics or context of each organization. For example, availability of promotion/advancement opportunities in the workplace is predicted to have a positive effect in increasing employees’ job satisfaction and reducing turnover (Cohen, Blake & Goodman, 2016). Empirical evidence supports the supposition that as employees perceive more promotion/advancement opportunities they are less likely to leave their workplace (Kim, 2012; Cohen, Blake & Goodman, 2016; Wayne, Op de Beeck & Hondeghem, 2013). Organizational justice as perceived by current employees is also predicted to have a positive impact on employees’ work attitudes which, in turn, positively contribute to reducing their turnover behavior (Choi, 2011). Empirical studies in the public sector (e.g., Choi, 2011; Hassan, 2012) support the negative association between organizational justice and employees’ turnover.

While all of these previous empirical studies have contributed to identifying a list of critical determinants affecting employees’ turnover behavior, they neglect to differentiate between different types of voluntary turnover behavior. An emerging trend in this research
emphasizes that determinants of employees’ turnover behaviors may vary across turnover types (or turnover intentions). For example, two recent empirical studies by Pitts, Marvel, and Fernandez (2011) and Wayne, de Beeck, and Hondeghem (2013) have empirically tested whether or not antecedents of federal employees’ turnover intentions are different between the intention to transfer to other federal agencies and the intention to leave for another job outside the federal government. Their empirical findings confirm that different turnover types are affected by different determinants.

Further Issues and Outline of Dissertation

Although previous empirical studies on turnover in the public management field have made meaningful contributions to our understanding of public employees’ turnover behavior, there are several issues that still need to be resolved. First, these studies have extensively investigated internal factors affecting public employees’ turnover behavior while disregarding the potential effects of external factors such as alternative job opportunities in the labor market. Second, except for a few studies (e.g., Hassan, 2013; Kellough & Osuna, 1995; Selden & Moynihan, 2000), most turnover research in the public sector has been conducted at the individual level. As observed in previous studies (Hassan, 2013; Jung, 2010; Kellough & Osuna, 1995), however, there is a variation in turnover rates within and across federal agencies over time. Focusing on the organizational level of analysis of turnover will contribute to identifying critical factors affecting this variation (Cohen, Blake & Goodman, 2016; Jung, 2010). Third, previous studies have traditionally treated turnover behavior as detrimental to organizational performance without sufficient empirical evidence to support this presumption. While Meier and Hicklin in their study in 2008 have opened a significant discussion on the consequences of
employee turnover in organizational performance, no further effort has been made among public management scholars. Finally, in terms of an empirical strategy, a vast majority of turnover research in the public management field (as well as the generic management field) has relied on cross-sectional data approaches that admit limited causal inferences.

This dissertation aims to address these issues by presenting research questions on employee turnover that have not yet been explored in the public management field. This dissertation consists of three empirical chapters. The first two substantive chapters of this dissertation will examine the potential impacts of changes in external or environmental factors on federal employees’ turnover behavior in federal agencies. Chapter 2 develops an integrative turnover process model that incorporates different theoretical perspectives on the potential role of job scarcity in predicting employee turnover behavior. Using panel data from 2006 and 2011, this chapter tests empirical models that predict both the independent and the moderating impact of job scarcity on voluntary turnover behavior in federal agencies.

Chapter 3 explores how government outsourcing, in particular government contracting out, affects federal employees’ turnover intentions. This chapter develops a theoretical framework for a better understanding of the relationship between contracting out and employee turnover intention while relying on multiple theoretical lenses including self-determination theory, psychological contract theory, and job satisfaction theory. This chapter employs panel data analyses with five years of data from 2010 to 2014.

Chapter 4 investigates whether or not employee turnover has any harmful effects on organizational performance in federal agencies. Specifically, this chapter establishes three hypotheses that relate employee turnover and organizational performance in accordance to
different types of employee turnover (employee transfer, quits, and involuntary turnover), and tests these hypotheses using panel data from 2010 to 2014.

In Chapter 5, this dissertation concludes with a summary of main findings from the empirical results, implications for both scholars and practitioners in the public management field, limitations of the current research, and future directions for the fruitful exploration of turnover in the federal government workforce.
Figure 1-1. Total Federal Civilian Employment and Separations, 2005 - 2017

Source: The Fedscope

Figure 1-2. Trend of Voluntary, Involuntary, Retirement, and Other Turnovers, 2005 - 2017

Source: The Fedscope
CHAPTER 2
JOB SCARCITY AND VOLUNTARY TURNOVER
IN THE U.S. FEDERAL BUREAUCRACY

Employee turnover has been an enduring concern of policymakers and public managers in the U.S. federal government since the founding of the American republic. Cabinet officials in the first Washington Administration expressed dismay over the government’s apparent inability to retain skilled clerks (White, 1948). Over the years, major events in the nation’s history have brought about periodic spikes in federal turnover, including the end of two world wars (Appleby, 1948), the Reagan Administration’s assault on the bureaucracy (Lewis, 1991; Volcker, 1989), and efforts by the Clinton Administration to reform and downsize the federal government (Kettl, 2005). More recently, *The Federal Times* reported that from 2010 to 2011, increases in rates of retirement and voluntary turnover contributed to the largest decline in the federal workforce since 1999 (Losey, 2012). According to the Society for Human Resource Management (2012), recent voluntary turnover rates in the federal government are higher than in most private sector industries, a disconcerting development that may signal the arrival of the long anticipated federal human capital crisis. Excessive turnover can be detrimental to organizations in terms of higher costs for recruitment and training, loss of capacity and institutional memory and declining productivity (Dalton & Todor, 1979; Park & Shaw, 2013; Pitts, Marvel & Fernandez, 2011).

In light of these developments, it should come as no surprise that we are witnessing a surge of interest in voluntary turnover among public management scholars. There are several characteristic features of studies of voluntary turnover in the public sector. They have relied almost exclusively on cross-sectional data to explore the causes of turnover. In addition, they
tend to predict either turnover intention or turnover behavior but do not empirically examine the relationship between these related but distinct concepts. Aside from a handful of studies (e.g., Whitford & Lee, 2015; Kim & Fernandez, 2017), research on turnover in the public sector often overlooks the distinction between leaving an agency to seek employment within the federal government (employee transfers) and leaving the federal government (quits). Furthermore, a vast majority of turnover research in public management has been conducted at the individual level, while leaving variation in turnover rates across federal agencies and institutional influences on each employee unexplained (Cohen, Blake, & Goodman, 2016; Hassan, 2013; Jung, 2010). Finally, previous studies largely overlook the role of external or environmental factors in the turnover process (Wynen & Op de Beeck, 2014).

The focus of this study is on the role of job scarcity or alternative job opportunities, one of the key external factors in the voluntary turnover process. This chapter seeks to make several contributions to the literature on voluntary turnover in the public sector. First, this chapter provides an integrative theoretical model by summarizing and clarifying the various roles assigned to job scarcity in turnover models and empirical studies. While the issue of job scarcity or alternative job opportunities is not new to the literature, there continues to be considerable disagreement among researchers as to its independent and moderating effects. Second, this chapter empirically tests a set of hypotheses about the independent and moderating effects of job scarcity on voluntary turnover using panel data methods. These methods offer several advantages over cross-sectional analysis when it comes to making causal inferences, including allowing for temporal priority of antecedents over consequences, increasing variability to make more efficient estimation possible, using fixed effects to account for unobserved time invariant factors in a manner that can reduce omitted variable bias, and allowing for the study of dynamic phenomena.
(Wooldridge, 2010; Baltagi, 2005; Kennedy, 2008). Third, unlike most studies of turnover in the public sector, this chapter includes both turnover intention and turnover behavior in its empirical analysis, with the former serving as an antecedent of the latter.

In addition, empirical models of this chapter are tested at the organizational level, taking institutional influences and context into consideration. Finally, this study adds to an emerging trend in public sector turnover research by analyzing leaving to seek employment within and outside the federal government as different forms of voluntary turnover with distinct antecedents. This chapter hypothesizes that the effects of job scarcity vary according to whether employees leave to work in another federal agency or to work outside the federal bureaucracy.

This chapter begins by reviewing the literature to develop an integrative conceptual model of the voluntary turnover process. The discussion then turns to the data and methods used to test the model and the results of the empirical analysis. This chapter concludes by discussing the study’s contributions to theory, its implications for practice and its limitations.

**Job Scarcity and Voluntary Turnover**

Since Lewis and Park (1989) and Lewis (1991), public management scholars have identified a range of factors affecting public employee turnover. These factors can be categorized into: individual characteristics like gender, employee age and length of employment (Cho & Lewis, 2012; Jung, 2010; Pitts, Marvel, & Fernandez, 2011; Wynen, Op de Beeck, & Hondeghem, 2013); managerial practices such as empowerment, performance-pay and family-friendly policies (Kim & Fernandez, 2017; Lee & Hong, 2011; Moynihan & Landuyt, 2008); satisfaction with various facets of work including job, pay and benefits (Lewis, 1991; Jin & Park, 2016; Wang, Yang & Wang, 2012); relational factors involving coworkers and supervisors (Pitts,
Turnover researchers have also highlighted the influence of change in labor market conditions, particularly the availability of jobs, on the decision to stay or seek work elsewhere, but its influence has been largely overlooked by public management scholars (Wynen & Op de Beeck, 2014). The concept of job scarcity, or alternative job opportunities, is typically conceived of as the extent to which jobs with comparable or superior compensation are available in the labor market (Gerhart, 1990; Trevor, 2001). When searching for a new job, employees often give serious consideration to whether or not there are other employment opportunities available outside of their current workplace, making job scarcity a key variable in many studies of voluntary turnover (March & Simon, 1958; Mobley, 1977; Mobley et al., 1979; Muchinsky & Morrow, 1980; Steers & Mowday, 1981; Hulin, Roznowski, & Hachiya, 1985; Gerhart, 1990).

I turn now to existing models of the voluntary turnover process to develop an integrative theoretical model. March and Simon (1958) proposed one of the earliest models of the turnover process. Their model includes two major factors, easiness of turnover and a job’s perceived desirability. Easiness of turnover is regarded as the availability of comparable jobs in a labor market (Gerhart, 1990). March and Simon (1958) treat easiness of turnover as the most important predictor of voluntary turnover in their model, with it independently affecting voluntary turnover behavior. This can be seen in path 1 in Figure 2-1 in the theoretical model of this study.

A number of scholars have elaborated on March and Simon’s model (Hausknecht & Trevor, 2011; Hulin, Roznowski, & Hachiya, 1985; Michaels & Spector, 1982; Mobley, 1977; Mobley et al., 1979; Muchinsky & Morrow, 1980; Price, 1977). Mobley (1977) and colleagues (Mobley et al., 1979) propose a model of the voluntary turnover process that describes how job
dissatisfaction ultimately leads to turnover behavior. They posit that job satisfaction can indirectly affect turnover behavior through its influence on turnover intention (paths 2 and 3 in Figure 2-1). They also acknowledge, however, that job dissatisfaction can directly lead to someone leaving his or her job when another job offers the potential for greater satisfaction, as seen in path 4 in Figure 2-1 (Mobley, 1977; Mobley et al., 1979).

Muchinsky and Morrow (1980), believing that research on turnover is fragmented, raised the need to build a theoretical model of voluntary turnover based on the unification of models from the fields of psychology, sociology and economics. Like March and Simon (1958), they posit that indicators of economic conditions are the strongest determinant of turnover behavior, with job scarcity directly reducing the likelihood that someone will leave his or her job (path 1 in Figure 2-1). In addition, they consider labor market conditions to moderate the relationship between work-related factors, like job satisfaction, and turnover behavior (path 5 in Figure 2-1). They predict that the negative relationship between job satisfaction and turnover behavior will be attenuated by a less favorable labor market compared to prosperous economic conditions, which would strengthen the relationship (Muchinsky & Morrow, 1980). Hulin, Roznowski and Hachiya (1985) in their voluntary turnover model also stress the interaction between job opportunities and job satisfaction, which precedes turnover behavior. Contrary to Mobley et al. (1979), however, the model by Muchinsky and Morrow (1980) does not consider turnover intention as mediating the relationship between job satisfaction and turnover behavior.

Steers and Mowday (1981) incorporate insights from existing turnover models into their own comprehensive model. They posit that job scarcity or alternative job opportunities has both an independent and a moderating effect on turnover behavior. The availability of jobs elsewhere with equal or superior compensation will motivate employees to leave their workplace regardless
of the level of their job satisfaction or intention to quit (path 1 in Figure 2-1). In addition, they see job scarcity as moderating the relationship between intention to quit and turnover behavior (path 6 in Figure 2-1), with turnover intention more likely to result in turnover behavior when more job opportunities are available (Gerhart, 1990; Hom et al., 1992).

As the previous discussion shows, turnover researchers see job scarcity playing a significant role in the voluntary turnover process but disagree as to whether it has an independent or moderating effect, and if the latter, as to what relationships it moderates. Thus, at least three possibilities emerge, with job scarcity as an immediate antecedent of turnover behavior (path 1 in Figure 2-1, March & Simon, 1958; Muchinsky & Morrow, 1980; Steers & Mowday, 1981); a moderator of the relationship between job satisfaction and turnover behavior (path 5 in Figure 2-1, Mobley, 1977; Mobley et al., 1979; Muchinsky & Morrow, 1980; Hulin, Roznowski, & Hachiya, 1985); and a moderator of the relationship between turnover intention and turnover behavior (path 6 in Figure 2-1, Steers & Mowday, 1981; Gerhart, 1990; Hom et al., 1992). Importantly, not all voluntary turnover models include turnover intention as the direct antecedent of turnover behavior.

At least some support for each of these effects can be found in the literature, although the evidence is mixed, with some studies yielding null findings or even contradictory evidence. The first line of research has examined the independent effect of job scarcity on turnover behavior. Armknecht and Early (1972), using the new hire rate as a proxy measure for job availability, found that variation in the turnover rate over time is caused by changes in economic conditions, especially availability of jobs. Price (1977), using the unemployment rate to measure job scarcity, analyzed organizational-level data and found a negative relationship between the unemployment rate and turnover decisions. Conversely, Michaels and Spector (1982), in their
test of the Mobley et al. (1979) model, failed to find evidence of job scarcity affecting turnover behavior.

Another line of empirical studies has focused on how job scarcity moderates the relationship between job satisfaction and turnover behavior (Carsten & Spector, 1987; Hom et al., 1992; Shikiar & Freudenberg, 1982; Trevor, 2001). In their meta-analysis of research on the Muchinsky and Morrow (1980) model, Carsten and Spector (1987) found empirical evidence indicating that job scarcity moderates the effect of job satisfaction on turnover behavior. They found that “job dissatisfaction was considered a precursor of turnover, but its effect is moderated by economic factors. During periods of high unemployment and low opportunity for alternative employment, relatively few individuals will quit and the correlation between satisfaction and turnover will be low” (p. 374). While previous empirical research has applied a single unemployment rate—either the local, state or national unemployment rate—as a measure of job scarcity, Trevor (2001) constructed a measure that is the linear function of national and local unemployment rates. He found empirical evidence to support the moderating effect of job availability on the job satisfaction-turnover behavior relationship, with the negative impact of job satisfaction attenuated as job scarcity increased. Shikiar and Freudenberg’s (1982) meta-analysis, however, found the opposite result, suggesting that fewer job opportunities will positively moderate the relationship between job satisfaction and turnover behavior.

Perhaps the strongest empirical support is for job scarcity as a moderator of the relationship between turnover intention and turnover behavior. Gerhart (1990) found that when job availability, measured as the unemployment rate in a county, increased for individuals, the estimated impact of turnover intention on turnover behavior was roughly twice as great as when they diminished. Empirical evidence by Michaels and Spector (1982) and Carsten and Spector
Figure 2-1 below presents a theoretical model of the voluntary turnover process that synthesizes all of the potential independent and moderating effects discussed above. The empirical analysis tests all of the following paths depicted Figure 2-1:

Path 1. Job scarcity has an effect on turnover behavior (March & Simon (1997)) also supports the moderating effect of job scarcity on the turnover intention-turnover behavior relationship.

In sum, empirical evidence of the effects of job scarcity is mixed and to some extent inconclusive. I believe this is due to several methodological issues encountered in previous studies of voluntary turnover (see also Hulin, Roznowski, & Hachiya, 1985; Steel & Lounsbury, 2009; Trevor, 2001). First, and most importantly, no single study has integrated and tested all of the probable effects of job scarcity, as summarized in Figure 2-1 (Steel & Lounsbury, 2009). Many studies of voluntary turnover in the public sector, in particular, disregard mediating and moderating variables like turnover intention and job scarcity, respectively (Jeon & Robertson, 2013; Kim, 2005; Pitts, Marvel, & Fernandez, 2011). Second, most of these studies use a single type of unemployment rate as a measure of job scarcity, even though this approach may not be appropriate since it does not account for the possibility of different opportunities across occupations and types of employees (Trevor, 2001). Third, nearly all of the research on voluntary turnover is based on cross-sectional data that does not allow for temporal precedence and is susceptible to omitted variable bias. Finally, and in regards specifically to research on turnover in the public sector, researchers tend to examine only the antecedents of turnover intention, not actual turnover, since it is easier to trace (for exceptions, see Bertelli & Lewis, 2013; Cohen, Blake, & Goodman, 2016; Jung, 2010; Kellough & Osuna, 1995; Lee & Hong, 2011; Lewis, 1991; Selden & Moynihan, 2000).
Path 2 & 3. Turnover intention mediates the relationship between job satisfaction and turnover behavior (Mobley, 1977; Mobley et al., 1979).


Path 5. Job scarcity moderates the effect of job satisfaction on turnover behavior (Hulin, Roznowski & Hachiya, 1985; Mobley, 1977; Mobley et al., 1979; Muchinsky & Morrow, 1980).


[Figure 2-1]

Method

Data

The data were gathered from three sources: The U.S. Office of Personnel Management’s (OPM) Fedscope, OPM’s Federal Employee Viewpoint Survey (FEVS), and the Bureau of Labor Statistics (BLS). FedScope covers most federal agencies, includes information on employment, salary and separations and offers quarterly statistics on different types of employee turnover, including employee transfers, quits, retirements and involuntary turnover for each agency. The FEVS was launched in 2002 and conducted semi-annually until 2010 and annually since then. With responses from more than 250,000 federal employees, the survey includes items related to workplace satisfaction, relationships among employees and supervisors and employees’ perception of managerial practices and the work environment. The annual response rate is about
50 percent. This study uses the FEVS from 2006 to 2011\(^1\) to measure turnover intention and job satisfaction, as well as a range of control variables. For the FEVS, OPM uses a stratified sampling approach to generate representative samples of agencies as well as an overall sample of the federal bureaucracy that is representative of nearly 98% of the federal executive workforce. The annual national and state occupational unemployment rates from the BLS are used to measure job scarcity.

The unit of analysis in this study is the federal agency. This study adopts OPM’s 4-character classification of agencies that includes independent agencies (e.g., Federal Communications Commission) and the sub-units (e.g., administrations, bureaus) within cabinet-level departments (e.g., Veterans Benefit Administration and Veterans Health Administration as sub-units of the Department of Veterans Affairs). Combining data from FedScope and the FEVS, this chapter developed a sample of 165 agencies in 2006, 158 agencies in 2008, 165 agencies in 2010 and 166 agencies in 2011 to create an unbalanced panel data structure.\(^2\) Since the agencies reported in these two sources are not perfectly matched, I exclude the agencies with unspecified names or missing information.

**Dependent Variable**

This study has two dependent variables, the employee transfer rate, or the rate at which employees in an agency leave to search for employment within the federal bureaucracy, and the quit rate, or the rate at which employees in an agency leave to search for employment outside the federal government. They are calculated as the proportion of all employees in an agency who voluntarily transferred to another agency and who voluntarily left the federal government to seek work elsewhere, respectively. Note that incidences of turnover cover a certain period of time (i.e., a year), while the independent and control variables measured using the FEVS, like
turnover intention and job satisfaction, are measured at a given point in time. This study deliberately chose to count the number of employees who left an agency during a twelve-month period starting one month after OPM finished administering the FEVS. For instance, since the 2006 FEVS was conducted in June 2006, I calculated an agency’s employee transfer rate (or quit rate) by counting the number of employees who voluntarily left the agency from July 2006 to June 2007 as a result of a transfer (or a quit), and divided it by the number of all employees in 2006 in the agency. As Table 2-1 shows, the average employee transfer rate and quit rate for the agencies in this study’s sample are 1.8% and 3.4%, respectively. The average employee transfer rate was quite stable at 1.8% with not much fluctuation from 2006 to 2010, but declined to 1.6% in 2011. The average quit rate declined from 4% in 2006 to about 3.2% in both 2010 and 2011.

**Independent Variables**

The independent variables of interest are job satisfaction, turnover intention and job scarcity. Job satisfaction is defined as the proportion of employees in an agency who are not dissatisfied with their job. It is measured using responses to a single FEVS survey item, “Considering everything, how satisfied are you with your job?” A common approach in measuring variables at the organization level is to calculate employees’ arithmetic average response to an ordinal-level survey item. This approach, however, provides only limited information for comparing agencies on job satisfaction due to the lack of consideration of within-variation in each unit; it also makes interpreting regression coefficients somewhat cumbersome. On the other hand, the proportion of those who are not dissatisfied with their job in each agency enables us to compare agency levels of job satisfaction and interpret regression coefficients in a more straightforward manner. Thus, I recoded individual responses to the job satisfaction survey item 1 if the respondent reported being satisfied and strongly satisfied with his or her job;
responses were recoded 0 if the respondent indicated being neither satisfied nor dissatisfied, dissatisfied or strongly dissatisfied with his or her job. I then calculated the proportion of respondents in an agency who are satisfied with their jobs (i.e., were recoded 1) out of all respondents in the agency. Table 2-1 shows that the average proportion of those in an agency who are satisfied with their jobs increased slightly from 68.06% in 2006 to 71.17% in 2011.

Turnover intention is defined as the proportion of employees in an agency who intend to leave their organization within the next year. It is measured using responses to a single FEVS survey item, “Are you considering leaving your organization within the next year, and if so, why?” Two measures of turnover intention are used: the transfer intention rate and the quit intention rate. To create the measure of an agency’s transfer intention rate, this study recoded responses as 1 if the respondent indicated his or her intention to take another job within the federal government; otherwise I recoded as 0. I then calculated the proportion of the respondents in an agency who were recoded as 1 out of all respondents in the agency. Similarly, this study created a measure of an agency’s quit intention rate by recoding responses as 1 if the respondent indicated his or her intention to take a job outside the federal government; otherwise I recoded as 0. This study then calculated the proportion of the respondents in an agency who were recoded as 1 out of all respondents in the agency. The average proportion of employees intending to transfer to other federal agencies was around 20% from 2006 and 2011 with little fluctuation around the mean over time. On the other hand, the average proportion of employees intending to quit their jobs spiked in 2008 (over 6%) beyond the level (around 3%) in other years.

Finally, this chapter created a measure of job scarcity at the agency level. Researchers have traditionally used the unemployment rate as a measure of job scarcity or alternative job opportunities (Trevor, 2001). For example, local unemployment rate is applied to all employees
working in one organization in a particular location. Such an approach, however, overlooks the possibility of different employment opportunities across types of employees or occupations (Gerhart, 1990). As several scholars point out (Trevor, 2001; Terborg & Lee, 1984), job scarcity or availability is contingent on occupation. While white-collar workers are relatively unrestricted in their ability to seek and secure employment across the nation, the mobility of blue-collar workers is more likely to be restricted to the region in which they reside (Trevor, 2001). Following Trevor’s (2001) lead, this study created a job scarcity variable as the weighted combination of national and state occupational unemployment rate for white-collar and blue-collar employees. Specifically, for each agency, this study calculated the summation of the average annual national white-collar unemployment rate and the average annual state blue-collar unemployment rate, weighted by the proportion of white-collar and blue-collar employees, under the assumption that the national unemployment rate applies to more mobile white-collar workers while the state unemployment rate affects blue-collar workers. As an illustration of this measurement approach, an agency with 70 percent white-collar employees and 30 percent blue-collar employees would have the score for job scarcity equaling 0.7 times the average annual national unemployment rate of white-collar employees plus 0.3 times the average annual state unemployment rate of blue-collar employees. Below is the equation for job scarcity. $P_{ij}$ represents the proportion of white-collar employees in agency $i$ in year $j$ and $(1-P)_{ij}$ represents the proportion of blue-collar employees in agency $i$ in year $j$.

$$ \text{Jobscarcity}_{ij} = P_{ij} \times \text{National white-collar unemployment rate}_{ij} + (1-P)_{ij} \times \text{State blue-collar unemployment rate}_{ij} $$

While there are differences in the kinds of jobs and occupations public and private sector employees fill (e.g., the public sector has a higher percentage of white-collar jobs), I believe
federal employees respond to general labor market conditions, like the unemployment rate, when looking for jobs elsewhere, especially outside the federal government. Job switching across sectors appears to be increasing (Piatak, 2017). This is due in part to the blurring of the sectors and growing adoption of private sector practices in government (Rainey, 2014). Postel-Vinay (2015) finds the annual rate of transition for public employees to the private sector is over 5 percent in Denmark, Italy, Netherlands, Spain and UK. In Denmark, nearly one-fifth of all job-to-job switches occur across sectors (Frederiksen & Hansen, 2017). In the United Kingdom, public sector employees are now as likely to switch to a new job in the private sector as they are to take another one in government (Cribb & Sibieta, 2015). Here in the U.S., of the 18% of respondents to the 2011 FEVS who indicated their intention to seek work elsewhere, only a slight majority indicated their intention to transfer within the federal service (OPM, 2011). Importantly for this study, Piatak (2017) finds that federal employees are more likely to switch sectors during recessionary times. Moreover, sector switching seems to be higher among administrators and professionals (Frederiksen & Hansen, 2017; Cribb & Sibieta, 2015), the very kinds of white collar occupations many federal employees are seeking. For these reasons, the unemployment rate sends a signal to federal employees about the availability of jobs elsewhere, although admittedly, this signal is noisy and may be weak.

Table 2-1 shows job scarcity fluctuating noticeably from 2006 to 2011. Availability of alternative job opportunities in the labor market peaked in 2006 and 2008 prior to the great recession, then rapidly decreased in 2010 and 2011.

**Control Variables**

This study controls for a range of potentially confounding variables. These include average age; proportion of employees who are male; average employee tenure; proportion of
employees who belong to a racial or ethnic minority; proportion of employees who have permanent jobs; average salary (not adjusted for inflation); and average employee perception of performance pay, promotion opportunities, trust in supervisors and cooperation among coworkers. All these control variables are measured at the agency level. The predicted direction of the relationship between each of these control variables and turnover behavior is presented in appendix A-1. Importantly, since age and employee tenure were measured as categorical variables in FedScope, average age and average employee tenure were recalculated using the midpoint of each category. Finally, I also include year dummy variables (with the reference year of 2006) to control for macro-level conditions in each year. Table 2-1 presents the descriptive statistics.

[Table 2-1]

Models

This chapter uses two-way fixed effects OLS regression models to analyze this study’s panel of agencies. There are a number of unobserved organizational characteristics, like organizational culture or the prevailing leadership style in an organization, which can influence independent variables like job satisfaction as well as voluntary turnover. Since these organizational characteristics are unlikely to change much over time, especially over the course of just a few years, the use of a fixed effects model with organizational fixed effects helps to control for such unobserved heterogeneity, thereby reducing omitted variable bias. In addition, the Hausman test rejects the null hypothesis ($p < 0.05$) that there is no systematic difference in coefficients between a random effects and a fixed effects model, suggesting that a fixed effects estimator is preferred. The parsimonious fixed effects regression model equations for agency $i$ in year $t$ have the following specifications:
Turnover\_it = \alpha_i + \beta_1 \text{Jobsatis}\_it-1 + \beta_2 \text{Jobscarcity}\_it-1 + \beta_3 \text{Jobsatis}\_it-1 \ast \text{Jobscarcity}\_it-1 \\
+ \gamma_1 Yr_t + \beta X_{it-1} + \epsilon_{it} \quad (1)

Regression equation (1) presents the baseline model. \text{Turnover}\_it is agency i’s turnover rate (either employee transfer or quit rate) in year t. \alpha_i stands for agency fixed characteristics. \text{Jobsatis}\_it-1 represents the proportion of employees who were at least satisfied with their job, and \text{Jobscarcity}\_it-1 represents jobs scarcity for agency i in year t-1. I use an interaction term to determine if job scarcity moderates the relationship between job satisfaction and turnover behavior (\text{JobSatis}\ast\text{Jobscarcity}). Yr_t is a vector of year dummy variables (with 2006 as the reference year), which can control for yearly unobservable or unmeasurable changes in comparison of 2006. X_{it-1} is a vector of control variables mentioned above.

\begin{align*}
\text{Turnover}\_it = \alpha_i + \beta_1 \text{Intention}\_it-1 + \beta_2 \text{Jobsatis}\_it-1 + \beta_3 \text{Jobscarcity}\_it-1 \\
+ \beta_4 \text{Intention}\_it-1 \ast \text{Jobscarcity}\_it-1 + \beta_5 \text{Jobsatis}\_it-1 \ast \\
\text{Jobscarcity}\_it-1 + \gamma_1 Yr_t + \beta X_{it-1} + \epsilon_{it} \quad (2)
\end{align*}

Regression equation (2) adds the variable \text{Intention}\_it-1 to test its mediating effect on the relationship between job satisfaction and turnover. \text{Intention}\_it-1 represents the proportion of employees who expressed an intent to leave their workplace (either transfer to other federal agencies or quit). I also add an interaction term to determine if job scarcity moderates the relationship between turnover intention and turnover behavior (\text{Intention}\ast\text{Jobscarcity}).

**Results**

This chapter now turns to the results of the empirical analysis. Table 2-2 shows the results of this study’s fixed effects models. The employee transfer rate is the dependent variable in regression models 1 and 2, while regression models 3 and 4 have the quit rate as the dependent...
variable. The only difference between regression models 1 and 2, and between regression models 3 and 4, is that the latter include turnover intention (transfer intention rate and quit intention rate) and the interaction between turnover intention and job scarcity as specified in regression equation (2) above. Including these two variables in regression model 2 and model 4 helps us determine if turnover intention mediates the job satisfaction-turnover behavior relationship and if job scarcity moderates the effect of turnover intention on turnover behavior.

[Table 2-2]

Both regression models 1 and 2 show that the estimated coefficient for job scarcity is not statistically significant, thereby offering no evidence in support of path 1. This suggests that job opportunities available outside the current workplace will not affect the proportion of employees who decide to transfer to other federal agencies in the near future. The estimated coefficient for job satisfaction is -0.109 (p<0.05) in regression model 1, indicating that the proportion of employees who are satisfied in an organization has a negative effect on the proportion of those who transfer within the federal government. The estimated coefficient for transfer intention is 0.088 (p<0.05) in regression model 2, indicating that the proportion of employees who intend to transfer positively effects the proportion of those who actually transfer.

For a complete test of the mediating role of transfer intention, this study tested the additional fixed effect model using transfer intention rate as the dependent variable and job satisfaction as a key explanatory variable, with the model showing that job satisfaction is negatively associated with transfer intention (see appendix 2-2). Job satisfaction is negatively associated with the transfer rate without controlling for transfer intention in regression model 1, but this relationship loses its statistical significance when controlling for transfer intention in regression model 2. This suggests that while the proportion of employees who are satisfied with
their job is not the direct antecedent of transfer rates of agencies, it affects how many employees plan to transfer in the near future. These results support path 2 and path 3 in the theoretical model of this study, which state that job satisfaction negatively impacts transfer intention and that transfer intention positively impacts turnover behavior, respectively.

Conversely, the fact job satisfaction fails to achieve statistical significance in regression model 2 when transfer intention is added rejects path 4 that job satisfaction directly impacts the transfer rate. In addition, the results present null findings regarding the moderating effects of job scarcity on the relationship between job satisfaction and the transfer rate (path 5) and the relationship between transfer intention and the transfer rate (path 6). This suggests that in regard to transferring within the federal bureaucracy, job availability is not a critical factor for an agency to consider when attempting to reduce transfers among its employees.

In short, the results of regression models 1 and 2 offer empirical evidence of the direct and mediating effect of intention to transfer on employee transfers (path 2 and path 3) and no evidence of job scarcity having a moderating effect (path 5 and path 6). This finding is consistent with Mobley (1977) and Mobley et al. (1979) that job satisfaction impacts intention to transfer, the immediate antecedent of actually leaving to seek work in another federal agency. While Cohen et al. (2016) are dubious of turnover intention’s role as an antecedent of actual turnover, the findings of this study point to the significance of transfer intention among federal employees in predicting actual transfer behavior observed in federal agencies.

[Figure 2-2]

This study’s attention now shifts to regression models 3 and 4, which have the quit rate as the dependent variable. The results offer evidence that job scarcity does not impact quits (path 1), as the estimated coefficient for job scarcity does not achieve statistical significance. The
results also show that quit intention does not directly impact quit rate (path 3) or that quit intention mediates the relationship between job satisfaction and the quit rate (path 2), since the estimated coefficient for quit intention falls short of achieving statistical significance.

Instead, I find evidence of job satisfaction’s direct effect on the quits (without being mediated by quit intention), as described in path 4. In both regression models 3 and 4, the estimated coefficients of job satisfaction are statistically significant (p<0.10), while the estimated coefficient of quit intention is not. These results suggest that job satisfaction has a direct negative impact on quit decisions without being mediated by quit intention. That is, agencies with a higher proportion of employees who report being satisfied with their jobs will have a lower quit rate. This result provides evidence of job satisfaction’s direct effect on quitting (path 4).

Next, the results show that job scarcity does not have a significant impact on quitting with and without controlling for quit intention. However, the coefficients of the interaction of job satisfaction and job scarcity in regression model 3 and model 4 indicate that job scarcity moderates the relationship between job satisfaction and the quit decision (path 5). An estimated coefficient of 1.123 (p<0.10) implies that the impact of job satisfaction on the quit decision is contingent on the availability of job opportunities in the labor market. The positive sign of the coefficient can be attributed to the multiplication of both negative signs of the estimated coefficients of job satisfaction and job scarcity. Since interpreting interaction terms involving two continuous variables, as in this case, can present some difficulty, this chapter demonstrates this relationship graphically.\(^5\) Figure 2-2 plots the relationship between job satisfaction and the quit rate for different levels of job scarcity: 3.5, 5 and 6.5.\(^6\) Figure 2-2 shows that when job scarcity is at a lower level of 3.5, job satisfaction has a strong negative effect on the quit rate. As the level of job scarcity increases, however, the impact of job satisfaction on the quit rate...
diminishes considerably. As plotted in Figure 2-2, the relationship between job satisfaction and the quit rate flattens from a job scarcity level of 3.5 to 5 and approaches zero when job scarcity reaches a level of 6.5. Thus, the proportion of employees who are satisfied has a negative impact on the quit rate when jobs are relatively abundant but not nearly as much as they become scarce.

In sum, the results of regression models 3 and 4 for quits provide empirical evidence of the direct impact of job satisfaction on quits (path 4) and of a moderating effect of job scarcity on the relationship between job satisfaction and quit rate (path 5). Job satisfaction has a direct impact on federal agencies’ quit rate as March and Simon (1958), Muchinsky and Morrow (1980) and Steers and Mowday (1981) predicted. But this study’s findings suggest that this negative effect appears to be contingent on job scarcity being low; as job scarcity increases, the impact of job satisfaction on quits approaches zero.

Among the control variables, the proportion of employees who have trust in their supervisor and who perceive more opportunities for improving their skills are negatively related to the quit rate. On the other hand, as the proportion of employees who perceive wages are based on performance increases, an agency is more likely to encounter a higher quit rate. All other control variables in regression models 1 through 4 appear to have no effect on either the employee transfer rate or the quit rate in an agency. As a robustness check, I tested additional regression models. First, I tested generalized linear models to address the non-normal distribution of dependent variables. Second, I also tested regression models with alternative measures of this study’s independent variables, including the aggregated average and less stringent measures that consider a neutral response (neither satisfied nor dissatisfied) as positive. These additional regression models present findings consistent with the current ones reported.
Discussion and Conclusion

Voluntary turnover in the public sector has been of growing interest to policymakers, managers and researchers for over a decade. Empirical studies point to a range of factors that can be manipulated to stem the outward flow of scarce human capital from public and private organizations. A firm understanding of the role played by job scarcity in the voluntary turnover process, however, has remained elusive. Although featured in several prominent turnover models and empirical studies of voluntary turnover, scholars disagree on the significance and impact of job scarcity as an immediate antecedent of turnover and moderator of other antecedents. In addition, research has offered mixed evidence of the impact of job scarcity on the decision to voluntarily transfer or quit a job. This study has endeavored to bring some clarity to the issue by summarizing the various roles that have been attributed to job scarcity in the voluntary turnover process and by gathering and analyzing data across time to identify the effects of job scarcity on voluntary turnover in the federal bureaucracy.

This empirical analysis distinguished transferring within the federal bureaucracy to quitting the federal workforce and found that the effect of job scarcity varies across these two distinct forms of voluntary turnover. Job scarcity appears to have no independent impact on turnover decisions, contrary to the argument some have made (March & Simon, 1958; Muchinsky & Morrow, 1980; Steers & Mowday, 1981). Instead, the significance of job scarcity in the voluntary turnover process is as a moderator of the effects of other antecedents of turnover. In regard to transferring, the findings of this study suggest that job scarcity does not play a role in transfer decisions. Job satisfaction affects transferring through its influence on the intention to transfer, but job scarcity does not moderate that relationship. Since transferring is done within the federal bureaucracy, it is not surprising that general labor market conditions like
unemployment do not affect transfers to other federal agencies. This study’s findings are consistent with those from Steers and Mowday (1981) who find that intention to leave is the immediate antecedent of actually leaving the organization.

[Figure 2-3]

The empirical results of this study tell a different story when it comes to quitting or leaving the federal workforce altogether. Job scarcity acts as a moderator of the job satisfaction-quitting relationship. When job scarcity is low (i.e., job opportunities are more abundant), agency leaders can expect that dissatisfied employees will quit their agency and leave the federal workforce at higher rates, as they may perceive they can easily find comparable jobs or those with greater compensation outside the federal government. As job scarcity increases (i.e., jobs become more scarce), however, agency leaders can expect fewer employees to leave their current workplace since dissatisfied or less satisfied employees may become wary of their ability to find comparable jobs and become reluctant to quit. Growing unemployment can cause employees to delay exploring alternative job opportunities, as well as increase the percent of job searches that come up short. In short, job scarcity appears to be a critical factor for federal agencies in predicting departure from the federal workforce. Future studies should take this important situational variable and moderator into account when analyzing quit behavior in the public sector.

I designed this study to overcome limitations of previous research. Specifically, I constructed an integrative theoretical model of the voluntary turnover process that synthesized all the possible roles played by job scarcity in previous studies and tested the full theoretical model using panel data methods to enhance this study’s ability to make causal interpretations. I also took an approach to creating a measure of job scarcity that takes into account differences in
employment opportunities for white- and blue-collar workers. In addition, I also distinguished between two types of turnover – transferring versus quitting – on the assumption that these distinct forms of turnover have different antecedents and found evidence to substantiate this study’s approach. The findings of this study, along with those by Pitts, Marvel and Fernandez (2011), Whitford and Lee (2015) and Kim and Fernandez (2017), should encourage researchers to continue to distinguish between different forms of voluntary turnover and model these as distinct phenomena.

The findings of this study should serve as a cautionary tale to policymakers and managers who are involved in efforts to stem the outward flow of scarce human capital from federal agencies. They should treat employee transfers and quits as distinctive forms of turnover and tailor managerial interventions accordingly. Regarding employee transfers, they should be attentive to employees expressing dissatisfaction with work, as this leads to a desire or readiness to transfer to another agency and ultimately to leaving. In addition, managers and supervisors should feel a heightened sense of urgency to act to reduce quit behaviors when economic conditions become more favorable and unemployment declines. Employees seem to quit with little or no indication of their intention to do so, since quit intention does not have any significant effect on the actual quit rate. The direct antecedent of quitting, and the warning sign managers and supervisors should be on the lookout for, is employee dissatisfaction. Action must be taken fairly quickly to get them to reassess and reconsider their attitudes toward work. When economic conditions are favorable and alternative job opportunities become more abundant, the risk of lower job satisfaction leading to quitting increases significantly, placing a premium on prompt and concerted efforts to enhance job satisfaction and convince employees to stay.
Despite the significance of these findings and their implications for theory and practice, certain limitations to this study should be mentioned. First, the findings would be more robust if this study was able to identify each individual employee in each agency to test this study’s model at the individual level of analysis. Unfortunately, OPM does not provide researchers with unique identifiers for respondents to the FEVS that would allow tracking individuals across time. This is one of the main shortcomings of the FEVS (Fernandez et al., 2015), one that OPM has expressed some interest in addressing in the future but which as of today continues to limit how researchers can use these survey data. The lack of unique identifiers for FEVS respondents also means that their responses cannot be matched to data from the central personnel file. This, as a consequence, hinders this study’s ability to make strong inferences about individual-level decision making resulting in whether someone stays in his or her job or seeks work elsewhere.

Another limitation to this study is that this study is not able to measure job scarcity by specific occupational category. The data sources used in the analysis do not include information on the individual employee’s occupation. As a result, I was only able to account for the percentage of the agency’s workforce that is blue-collar and white-collar, and measure the unemployment rate for only these two broad categories. The ability to measure the unemployment rate for a wide range of occupational categories could produce additional and more precise estimates of the influence of job scarcity on turnover.

Finally, OPM did not begin conducting the FEVS annually until 2011. As a result, the time intervals in the panel of this study are mostly two-year intervals (2006, 2008 and 2010), with the exception of a one-year interval (2010 to 2011). As this study mentioned earlier, the panel data fixed effects analysis is an appropriate method to control for the effects of time-invariant factors, such as organizational culture and climate. However, it is vulnerable to
unexpected variation in factors assumed to be fixed. To study a dynamic process like the voluntary turnover process, shorter time intervals are preferable.
Notes

1. Since 2012 OPM has changed the survey item on turnover intention. As a result, I created a panel from 2006 and 2011.

2. OPM did not conduct the FEVS in 2007 and 2009.

3. This study applied the same period counting method for job scarcity as applied for turnover rates.

4. For the complete examination of the mediating effect of turnover intention (B) on the relationship between job satisfaction (A) and turnover behavior (C), three multiple regression models were tested: 1) a regression model of the significant relationship between A and B, 2) a regression model of the significant relationship between A and C, and 3) a regression model of the significant relationship between B and C (see Kim, Kaye & Wright, 2001).

5. Further details on interpreting interaction terms between continuous variables are available from Jacquard, Wan, and Turrisi (1990).

6. The choice of these numbers is somewhat arbitrary. Each one represents the level of job scarcity at about one standard deviation below the mean, about the mean (4.9%), and about 1-standard deviation beyond the mean. Note that higher values for job scarcity mean less job opportunities available in a labor market.
Figure 2-1. An Integrative Model of Voluntary Turnover Process
Table 2-1. Descriptive Statistics

<table>
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<th></th>
<th>2006</th>
<th>2008</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td><strong>Transfer Rate (%)</strong></td>
<td>1.84</td>
<td>(2.90)</td>
<td>1.72</td>
<td>(1.47)</td>
</tr>
<tr>
<td><strong>Quit Rate (%)</strong></td>
<td>4.00</td>
<td>(2.99)</td>
<td>3.26</td>
<td>(2.53)</td>
</tr>
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<td><strong>Intention to Transfer (%)†</strong></td>
<td>18.00</td>
<td>(7.46)</td>
<td>20.52</td>
<td>(7.74)</td>
</tr>
<tr>
<td><strong>Intention to Quit (%)†</strong></td>
<td>3.49</td>
<td>(1.83)</td>
<td>6.83</td>
<td>(2.06)</td>
</tr>
<tr>
<td><strong>Job Satisfaction</strong></td>
<td>68.06</td>
<td>(6.9)</td>
<td>69.47</td>
<td>(5.24)</td>
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<td>(at least satisfied; %)†</td>
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<td><strong>Job Scarcity</strong></td>
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<td>(0.14)</td>
</tr>
<tr>
<td><strong>Performance Pay (%)†</strong></td>
<td>56.85</td>
<td>(8.76)</td>
<td>60.48</td>
<td>(8.17)</td>
</tr>
<tr>
<td><strong>Opportunities for Training (%)†</strong></td>
<td>82.30</td>
<td>(6.36)</td>
<td>83.45</td>
<td>(5.25)</td>
</tr>
<tr>
<td><strong>Trust in Supervisor (%)†</strong></td>
<td>82.95</td>
<td>(4.28)</td>
<td>83.03</td>
<td>(3.74)</td>
</tr>
<tr>
<td><strong>Cooperation among Coworker (%)†</strong></td>
<td>93.19</td>
<td>(2.56)</td>
<td>93.38</td>
<td>(2.4)</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td>46.20</td>
<td>(2.6)</td>
<td>46.26</td>
<td>(2.71)</td>
</tr>
<tr>
<td><strong>Gender (male, %)</strong></td>
<td>54.70</td>
<td>(14.49)</td>
<td>54.59</td>
<td>(14.64)</td>
</tr>
<tr>
<td><strong>Agency Tenure (years)</strong></td>
<td>15.86</td>
<td>(3.04)</td>
<td>15.51</td>
<td>(2.99)</td>
</tr>
<tr>
<td><strong>Minority (%)</strong></td>
<td>32.26</td>
<td>(13)</td>
<td>32.52</td>
<td>(12.76)</td>
</tr>
<tr>
<td><strong>Permanent Workers (%)</strong></td>
<td>91.22</td>
<td>(11.76)</td>
<td>91.21</td>
<td>(11.76)</td>
</tr>
<tr>
<td><strong>Average Salary (in US $1,000s)</strong></td>
<td>73.49</td>
<td>(17.31)</td>
<td>78.83</td>
<td>(18.59)</td>
</tr>
</tbody>
</table>

Sample Size  165  158  165  166

Note. FHCS = Federal Human Capital Survey; FEVS = Federal Employee Viewpoint Survey.  
† indicates that the data were drawn from the 2006 & 2008 FHCS and the 2010 & 2011 FEVS.
Table 2-2. Results of Two-Way Fixed Effects OLS Models

<table>
<thead>
<tr>
<th>Variables</th>
<th>Transfer Rate</th>
<th>Quit Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td></td>
<td>Coefficient</td>
<td>Coefficient</td>
</tr>
<tr>
<td></td>
<td>(se)</td>
<td>(se)</td>
</tr>
<tr>
<td>Intention to Transfer</td>
<td>0.088**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.048)</td>
<td></td>
</tr>
<tr>
<td>Intention to Quit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.109**</td>
<td>-0.070</td>
</tr>
<tr>
<td></td>
<td>(0.060)</td>
<td>(0.049)</td>
</tr>
<tr>
<td>Job Scarcity</td>
<td>-1.662</td>
<td>-0.303</td>
</tr>
<tr>
<td></td>
<td>(1.206)</td>
<td>(1.297)</td>
</tr>
<tr>
<td>Job Scarcity × Intention to Transfer</td>
<td>-1.463</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.092)</td>
<td></td>
</tr>
<tr>
<td>Job Scarcity × Intention to Quit</td>
<td>2.057</td>
<td>1.255</td>
</tr>
<tr>
<td></td>
<td>(1.483)</td>
<td>(1.704)</td>
</tr>
<tr>
<td>Performance Pay</td>
<td>0.043</td>
<td>0.046</td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>Opportunities for Training</td>
<td>-0.041</td>
<td>-0.033</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.028)</td>
</tr>
<tr>
<td>Trust in Supervisor</td>
<td>-0.022</td>
<td>-0.029</td>
</tr>
<tr>
<td></td>
<td>(0.043)</td>
<td>(0.046)</td>
</tr>
<tr>
<td>Cooperation among Workers</td>
<td>-0.002</td>
<td>0.004</td>
</tr>
<tr>
<td></td>
<td>(0.031)</td>
<td>(0.031)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.008</td>
<td>-0.007</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.062</td>
<td>0.059</td>
</tr>
<tr>
<td></td>
<td>(0.078)</td>
<td>(0.076)</td>
</tr>
<tr>
<td>Agency Tenure</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Minority</td>
<td>-0.006</td>
<td>-0.006</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.018)</td>
</tr>
<tr>
<td>Permanent Workers</td>
<td>-0.056</td>
<td>-0.053</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.018)</td>
</tr>
<tr>
<td>Average Salary</td>
<td>0.003</td>
<td>-0.014</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.461</td>
<td>0.391</td>
</tr>
<tr>
<td></td>
<td>(0.385)</td>
<td>(0.353)</td>
</tr>
<tr>
<td>Agency Fixed-Effect</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Year Fixed-Effect</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>654</td>
<td>654</td>
</tr>
<tr>
<td>Number of Agency</td>
<td>185</td>
<td>185</td>
</tr>
<tr>
<td>F</td>
<td>5.59**</td>
<td>5.98**</td>
</tr>
</tbody>
</table>

Clustered robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
Figure 2-2. Moderating Effect of Job Scarcity on Relationship between Job Satisfaction and Quit Rate
Figure 2-3. Revised Voluntary Turnover Process Models
### Appendix 2-1. Variable Descriptions

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee-Transfer Rate &amp; Quit Rate</td>
<td>Turnover rate. Number of employees who left divided by total number of employees in the agency for the year after the survey was administered</td>
<td>FedScope ‘Agency Transfer-outs,’ and ‘Quits ’</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>Proportion of employees who (at least) are satisfied (strongly satisfied and satisfied).</td>
<td>FEVS, Q: Considering everything, how satisfied are you with your job?</td>
</tr>
<tr>
<td>Turnover Intention</td>
<td>Proportion of employees who intend to leave their organization during the next year (transfer-outs and quits).</td>
<td>FEVS, Q: Are you considering leaving your organization within the next year, and if so, why?</td>
</tr>
<tr>
<td>Job Scarcity</td>
<td>National and state average unemployment rate during the year after the survey was administered.</td>
<td>Bureau of Labor Statistics</td>
</tr>
<tr>
<td>Performance Pay</td>
<td>Proportion of employees who (at least) agree (strongly agree and agree)</td>
<td>FEVS, Q: Pay raises depend on how well employees perform their jobs.</td>
</tr>
<tr>
<td>Opportunities for Training</td>
<td>Proportion of employees who (at least) agree (strongly agree and agree)</td>
<td>FEVS, Q: I am given a real opportunity to improve my skills in my organization.</td>
</tr>
<tr>
<td>Trust in Supervisor</td>
<td>Proportion of employees who (at least) agree (strongly agree and agree)</td>
<td>FEVS, Q: I have trust and confidence in my supervisor.</td>
</tr>
<tr>
<td>Cooperation among Coworkers</td>
<td>Proportion of employees who (at least) agree (strongly agree and agree)</td>
<td>FEVS, Q: The people I work with cooperate to get the job done.</td>
</tr>
<tr>
<td>Age</td>
<td>Employees’ average age in each agency</td>
<td>FedScope</td>
</tr>
<tr>
<td>Agency Tenure</td>
<td>Employees’ average work experience in each agency</td>
<td>FedScope</td>
</tr>
<tr>
<td>Gender</td>
<td>Proportion of male employees</td>
<td>FedScope</td>
</tr>
<tr>
<td>Minority</td>
<td>Proportion of minority employees</td>
<td>FedScope</td>
</tr>
<tr>
<td>Permanent Workers</td>
<td>Proportion of permanent employees</td>
<td>FedScope</td>
</tr>
<tr>
<td>Average Salary (in US $1,000)</td>
<td>Average salary level of each agency</td>
<td>FedScope</td>
</tr>
</tbody>
</table>
Appendix 2-2. Results of the Relationship between Job Satisfaction and Quit Rate

<table>
<thead>
<tr>
<th>Variables</th>
<th>Transfer Intention Coefficient/ (se)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Satisfaction</td>
<td>0.123** (0.104)</td>
</tr>
<tr>
<td>Job Scarcity</td>
<td>0.545 (2.144)</td>
</tr>
<tr>
<td>Performance Pay</td>
<td>-0.037 (0.060)</td>
</tr>
<tr>
<td>Opportunities for Training</td>
<td>-0.334*** (0.075)</td>
</tr>
<tr>
<td>Trust in Supervisor</td>
<td>0.067 (0.115)</td>
</tr>
<tr>
<td>Cooperation among coworkers</td>
<td>0.171** (0.103)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.005 (0.005)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.046 (0.117)</td>
</tr>
<tr>
<td>Agency Tenure</td>
<td>-0.002 (0.003)</td>
</tr>
<tr>
<td>Minority</td>
<td>0.051 (0.053)</td>
</tr>
<tr>
<td>Permanent Workers</td>
<td>-0.084 (0.054)</td>
</tr>
<tr>
<td>Average Salary</td>
<td>0.001 (0.001)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.766*** (0.230)</td>
</tr>
</tbody>
</table>

Agency Fixed-Effect: Y
Year Fixed-Effect: Y
Observations: 654
Number of Agency: 185
F: 40.30***

Clumped robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
CHAPTER 3

AN OVERLOOKED COST OF CONTRACTING OUT:
EVIDENCE FROM PUBLIC EMPLOYEE TURNOVER INTENTION
IN U.S. FEDERAL AGENCIES

Both researchers and practitioners have long criticized the public sector as being inefficient and underperforming. Responding to the criticism, numerous reform attempts dominated by the New Public Management (NPM) movement have been extensively implemented in the public sector across countries since the early 1990s. One such reform effort is the privatization of governmental services. Indeed, the anti-government political climate in the United States has led to privatization--the practice of delegating public duties to private organizations--as a prominent administration policy in all levels of the U.S. government. Among the privatization initiatives, the most popular type is contracting out, in which public organizations shift the provision of public goods and services to other organizations, such as private, non-profit, or other government agencies. Scholars have observed a steady increase in the percentage of public activities carried out indirectly by contractors (Kettl, 1993); a substantial sharing of total federal spending by contractors (Milward, 1994); and more civilian employees on the ‘contract’ payroll than on the actual civilian payroll (Frederickson, 1997).

While contracting out has been playing a significant role in infusing market-oriented efficiency into the public sector, relevant fields of study have paid little attention to the impacts of contracting out on the public workforce and organizational outcomes in the U.S. federal government (Battaglio, 2009). In particular, extant empirical studies on the impact of contracting out have heavily focused on efficiency and the size of organization workforce (Brokner, 1988;
On the other hand, given the importance of the effects of contracting out, relatively little attention has been paid to how contracting out affects the public employees’ attitudes and behavior. A few studies (e.g., Oh & Park, 2011; Yang & Kassekert, 2010) have examined how contracting out may have negative influences on employee work attitudes, with a specific attention to job satisfaction and goal commitment. The previous literature, however, has provided only limited theoretical discussion and empirical evidence for the dynamic impacts of contracting out on public employees’ work attitudes.

This study seeks to expand the understanding of outcomes of privatization by taking a deeper look at how contracting out affects turnover intention at the organizational level in the federal government. Turnover intention is important as it leads to negative consequences in other aspects of employee work attitudes, such as work commitment and organizational citizenship behaviors, and it is also the near antecedent of employees’ actual turnover behavior (Cho & Lewis, 2012; Korunka, Hoonakker, & Carayon, 2007). Because disgruntled or dismissed employees as a probable consequence of government reforms can cause a significant expenditure (Appleby, 1945), this study aims to provide valuable insight in terms of both theoretical and practical discussion by investigating employees’ turnover intention as a consequence of, and the overlooked cost of, contracting out.

This study contributes to the literature on privatization, contracting out, and employee turnover in several ways. First, this study examines the impact of contracting out on turnover intention which has not been explored yet. While the previous literature on turnover intention in public management has extensively focused on internal characteristics within public organizations, changes in environmental or external factors have barely been examined. Second,
This study develops and tests a theoretical model that estimates both the direct and indirect effects of contracting out on turnover intention. This allows for the exploration of the role of the mediating variable—job satisfaction—by which privatization practices lead to changes in employee attitude. Previous contributions to the relevant literature have revealed only the direct impacts of privatization on employee attitude, such as job satisfaction and goal commitment, overlooking the mediating role played by employee cognition and affect. Finally, while previous literature has heavily relied on cross-sectional analyses, this study employs panel-data analyses along with five years of data from the Federal Employee Viewpoint Survey, Fedscope, and the Federal Procurement Data System from 2010 to 2014 that allows for more accurate estimates (Biddle & Marlin, 1987; Gollob & Reichardt, 1987).

This study begins with a brief background regarding the importance of examining contracting out and its probable impacts on employee attitude and behavior. Next, I present the hypothesized relationships between contracting out and employee turnover intention. I set up the relationships between them both directly and indirectly through multiple theoretical lenses including self-determination theory, psychological contract theory, and job satisfaction theory. The discussion then moves to the data, variables, and methods used to test this study’s empirical models. The results of the empirical models are then presented. This chapter concludes by addressing this research’s contribution to the literature, its implications for practice, and its limitations.

**Impacts of Contracting Out on Public Employees**

Many governments have downsized the public sector using various forms of privatization policy to achieve efficiency, in the belief that market provision would provide better managerial
choices, more service options, improved flexibility, and savings in operating costs. With those expected advantages, privatization initiatives have been an attractive option to governments in recent decades. According to Vickers and Yarrow (1991), privatization practices across different countries are categorized into three types: 1) privatization of competitive firms—in specific terms, transfer of government-owned enterprises operating free from substantial market failures in competitive product markets to the private sector; 2) privatization of monopolies—transfer of government-owned enterprises with substantial market power, such as network utilities in telecommunications or electricity, to the private sector; and 3) contracting out of publicly financed services, previously provided by public sector organizations, to the private sector. Although the third form of privatization, contracting out, does not involve the transfer of physical assets, it is a popular type of privatization, in which the asset transferred is a service contract, or franchise agreement, and serves as the benchmark throughout the discussion.

Under the public preference for small government in tandem with a global trend toward the New Public Management (NPM), contracting out has become a popular mode of service delivery at all levels of government in the United States (Van Slyke, 2007). Contrary to the popularity of contracting out over the past decades, however, there have been mixed reviews on the effects of these practices as administrative reforms.

Proponents of NPM-oriented reforms postulate that these reform attempts will improve administrative efficiency and employee commitment in the public sector (e.g., Osborne & Gabler, 1992). They argue that in order to improve public performance managers in public agencies not only have greater discretion, but also have responsibility for the results through flexible and decentralized personnel systems (Oh & Park, 2011). In particular, decentralization of decision-making process has been espoused as a governance tool in order to improve public
employee’s commitment, and thus strengthen their trust. Some extant studies empirically support the positive impact of participatory management on the commitment of public employees (Agyris, 1998; Wright & Kim, 2004).

However, some scholars warn of the possible dark sides of NPM-oriented reforms and argue that these reforms may not improve public organizations’ performance, but rather decrease their outcome (Battaglio & Condrey, 2006; Diefenbach, 2009; Pollitt, 2000). Other authors stress that those reforms emphasize market-oriented values, including performance, cost-reduction, and efficiency, at the expense of traditional public service values (e.g., Bozeman, 2007; Diefenbach, 2009; Waldo, 1948) while ignoring public employees’ intrinsic motivation, which, in turn, strongly correlated to their behavior and organizational outcome (Moynihan, 2008; Perry & Vandenabeele, 2008). The public sector may enjoy the benefits of a decentralized decision-making process at the expense of weakened job security (Savas, 2000), but the weakened job security in turn may lead to a disapproval of contracting out among public employees.

Given that job security and benefits are important incentives for individuals who choose to work for government, the potential for job losses and reduced compensation after contracting out may lead to low levels of job satisfaction and high levels of turnover intention among employees. Low levels of job satisfaction in an organization can be problematic because they increase the likelihood that employees engage in counterproductive behavior while decreasing the probability that employees positively contribute to organizational goals (Spector, 1997). Turnover intention has critical impacts on governance and government service delivery. Turnover intention is important as it affects outcomes, such as employee turnover and organizational performance. Scholars have demonstrated that turnover intention and actual turnover behavior are highly and positively associated (Dalton, Johnson, & Daily, 1999; Steel &
Ovalle, 1984; Tett & Meyer, 1993). High levels of employee turnover often impose significant costs on organizations (Grissom, Nicholson-Crotty, & Keiser, 2012). With respect to these, contracting out may have imposed overlooked costs on the public sector.

**Developing Hypotheses**

Scholars acknowledge that contracting out often involves downsizing and makes government smaller, which raises personnel management concerns regarding job security of remaining employees and settlement of displaced employees (Hodge, 2000). As Appleby (1945) pointed out some years ago, many people have little motivation to enter government while others are strongly attracted to it. Given this self-selection to be a public employee, those in public organizations have different motivations and expectations from their counterparts in the private sector, which is the implied agreement, or psychological contract, between the public organization and its employees. Arguably, job security and benefits are important incentives for individuals who choose to work for government, and therefore, some studies have examined the effect of contracting out on job security in the public sector (Fernandez & Smith, 2005; Fernandez, Smith, & Wenger, 2007).

Psychological research on workplace relationships suggests that privatization or contracting out may generate stressful situations for the remaining employees. In particular, psychological contract theory suggests that employees expect a stable and positive environment at their workplace while fulfilling the obligations that employers expect from employees. From the employees’ standpoint, contracting out may entail the elimination of positions held by former employees which will indicate a loss of job security for the remaining employees (Morrison & Robinson, 1997). Remaining employees may withdraw physically through increased absences or
voluntary turnovers that will incur financial costs for the organization (Datta et al., 2010). Contracting out which encourages government to espouse business-like management can be perceived by public employees as a violation of the psychological contract (Terry, 2006). To sum up, these claims lead us to the first hypothesis:

*Hypothesis 1: Contracting out will be positively associated with turnover intention.*

Furthermore, organization theory implies a complex causal structure with privatization influencing the turnover intentions of public employees both directly and also indirectly as mediated by the attitudes of the employees. Notable areas of research in management, such as self-determination theory, point to a potential indirect relationship, with organizational changes influencing employee attitude, which, in turn, influence employees’ turnover intention. Self-determination theory (SDT) is an empirical evidence-based theory of human motivation and personality, which examines the impacts of extrinsic rewards on intrinsic motivation (Deci, 1971; Deci, Koestner, & Ryan, 1980; 1985). Specifically related to the privatization phenomenon, the theory implies that if events provide need satisfaction, those events tend to increase intrinsic motivation. On the other hand, those that thwart need satisfaction tend to decrease motivation (Deci, Koestner, & Ryan, 1999). In many cases, however, rewards have conflicting effects, being experienced to some extent as controlling, and thus thwarting satisfaction of the need for autonomy, or as informational to some extent, and thus providing satisfaction of the need for competence.

More importantly, SDT propositions also shed light on how environmental factors facilitate or undermine an individual’s sense of volition, initiative, and performance quality. In that manner, SDT takes account of whether the rewards are expected to thwart or provide satisfaction of the need for autonomy and competence in making predictions about the effects of
contracting out on turnover intention as a type of outcomes such as behavior, experience, or development. If employees in federal agencies perceive contracting out as a threat, then contracting out would decrease their job satisfaction and thus increase turnover intention as well.

While there exists an opposite expectation that contracting out provides public employees with job satisfaction when they consider the practice as a reward, empirical evidence predominantly suggests that public employees perceive contracting out as a threat to their need satisfaction that will lower their job satisfaction. The generic management literature provides abundant evidence that contracting out often creates job stress, and thus lowers job satisfaction of the remaining employees (Brockner, 1988; Shah, 2000). Some studies confirm the negative view of the effect of NPM-oriented reforms among public employees (Kellough & Lingo, 2002; Kellough & Nigro, 2005).

Further, extant research suggests that contracting out may undermine organization-individual value fit (Terry, 2006), which leads to lowered job satisfaction (Verquer, Beehr, & Wagner, 2003). Specifically, Fernandez, Smith and Wenger (2007) present evidence that public employees are dissatisfied with the reduction in their role in public services when privatization reduces the number of services directly provided by the public division. In addition, Yang and Kassekert (2009) provide evidence that contracting out is negatively associated with employee job satisfaction. And Oh and Park (2011) reveal the negative relationship between contracting out and organizational commitment.

Next, the effects of job satisfaction on turnover, absenteeism, citizenship behavior, and other organizational attitudes and behaviors are well established (Harrison et al., 2006). Thus, instrumentally, job satisfaction can be said to enhance work motivation and organizational citizenship behavior and by reducing costs associated with negative organizational behavior,
such as turnover, burnout, apathy, and absenteeism (Fernandez & Moldogaziev, 2013; Harrison, Newman, Roth, 2006; Wright & Davis, 2003; Wright & Kim, 2004). In particular, employee job satisfaction has been confirmed as one of the key predictors of turnover intention and behavior. Numerous turnover process models treat job satisfaction as having a direct and negative effect on employee turnover behavior (e.g., March & Simon, 1958; Mobley et al., 1979).

In sum, reduced job security and a reduced role in public services perceived by employees due to contracting out will negatively affect job satisfaction. In turn, reduced job satisfaction will result in an increase in turnover intention. Therefore, this study presents the following two hypotheses:

Hypothesis 2: Contracting out will be negatively associated with job satisfaction.

Hypothesis 3: Job satisfaction will be negatively associated with turnover intention.

Combining those two hypotheses implies that job satisfaction acts as a mediator in the relationship between contracting out and turnover intention. That is, contracting out is hypothesized to have a negative effect on turnover intention through its negative effects on job satisfaction. Therefore, this study sets up the final hypothesis of this study as follows:

Hypothesis 4: Job satisfaction will mediate the relationship between contracting out and turnover intention.

Method

This section presents the data, variables, and empirical modeling approach to test this study’s hypotheses on the probable relationships between contracting out and job satisfaction and between contracting out and turnover intention. This study tests both the direct effect of contracting
out on turnover intention as an organizational outcome and the indirect effect through job satisfaction using panel data for five years between 2010 and 2014.

Data

The data were mainly drawn from the Federal Employee Viewpoint Survey (FEVS), Fedscope, administered by the U.S. Office of Personnel Management (OPM), and from the Federal Procurement Data System (FPDS). While the difficulties in obtaining federal level contracting out data have hindered empirical tests of the impact of contracting out, the FPDS records every single transaction of contracting out that federal agencies have awarded since 1981. The data system provides abundant information not only on each contract but also about the actors--such as the government agency awarding the contract and the contractors--involved in the contract. Among the main variables, contracting spending made by federal agencies was obtained from the FPDS, and turnover intention and job satisfaction were obtained from the FEVS in order to test the research hypotheses presented earlier. The Federal Employee Viewpoint Surveys were administered electronically via the Internet with limited distribution of paper surveys to those without Internet access.

This study empirically tests a set of hypotheses about the effects of contracting out on turnover intention using panel data methods. Panel data methods offer several advantages over cross-sectional data: increasing variability, reducing omitted variable bias, and enabling the study of dynamic phenomena. Because the FEVS does not identify individual respondents, it is not possible to track them over time at the individual level of analysis. However, the panel data method can be tested by aggregating individual respondents to the agency level and estimating relationships among variables across five points in time from 2010 to 2014. Therefore, the unit of analysis in this study is the federal agency. Combining data from FPDS, FEVS, and Fedscope,
a sample of 132 observations from 2010 to 2014 was obtained to create an unbalanced panel data structure. Since the agencies reported in these three sources are not perfectly matched, the agencies with different/unspecified names or missing information were excluded.

**Dependent variable**

This study’s outcome of interest is turnover intention which is measured using responses to the following survey item in the FEVS: “Are you considering leaving your organization within the next year, and if so, why?” This study creates a dependent variable from the responses to this question. This study measures turnover intention as a dichotomous variable, where 1 represents either those who plan to leave their agency to take another job within the federal government (or transfer intention) or those who plan to leave their agency for a job outside the federal government (or quit intention), and 0 represents all others. This study labels this variable *turnover intention* in the tables and find that roughly 25 percent of employees on average plan to leave for another federal job or to leave the federal government altogether for an outside position.

**Independent Variables**

The main interest variable to examine is the contracting out measure. This study focuses on the dollar amount that federal agencies spent for contracting out to other agencies or private parties in a particular year. FPDS provides the spending patterns of the U.S. federal government, such as dollar spending on contracting that agencies report to FPDS. For this study, I obtained the number reported by each federal agency that identifies total dollar spending on contracting including new contracts or modifications to contracts, agreements, or orders. This study includes contract modifications in the measure because nearly 70% of contracts are amended, which are
not simple changes in language but rather substantive changes to work scope or implementation processes (Malatesta & Smith, 2014).

The other main independent variable is job satisfaction. The latent variable job satisfaction is measured using an observed indicator from the FEVS: “Considering everything, how satisfied are you with your job?” The item is Likert-type with five response categories anchored at strongly agree and strongly disagree. Job satisfaction, as well as control variables, is measured as the proportion of all respondent employees who expressed some level of agreement (strongly agree or agree) from an ordinal-level survey item. Note that this study’s measure of job satisfaction is a global measure to capture employees’ overall level of satisfaction with their job in a variety of aspects.¹

**Control Variables**

The extensive literature on turnover and turnover intention reveals a number of common factors with which they are frequently associated, including organizational characteristics, workplace satisfaction, demographic characteristics of employees' perceptions of management and of the work environment (Cotton & Tuttle, 1986; Kellough & Osuna, 1995; Lambert, Hogan, & Barton, 2001; Lewis, 1991; Mobley et al., 1979; Pitts, Marvel, & Fernandez, 2011). Thus, this study controls for three clusters of factors—workplace satisfaction factors, organizational/relational factors, and demographic factors—with data from the FEVS and the Fedscope. The relevant survey indicators tap into respondents’ perceptions and are measured with a Likert-type response set, anchored at strongly agree and strongly disagree. Control measures are computed from individual respondents by agency and then aggregated to the agency level at each yearly interval.
Workplace satisfaction factors include: perceived adequacy of *physical conditions* (Q14); *resource sufficiency* (Q9); and *satisfaction with pay* (Q70). This study also added the following organizational/relational factors: *relationship with supervisor* (Q51); and *relationship with coworker* (Q20), as the research on turnover suggests that an employee’s satisfaction with his or her relationships with other employees and the supervisor is negatively associated with turnover (Cotton & Tuttle, 1986; Grieffeth, Hom, & Gaetner, 2000; Lambert, Hogan, & Barton, 2001).

Demographic characteristics appear to strongly influence employee decisions to exit an organization (Blau & Kahn, 1981; Chetkovich, 2003; Choi, 2009; Ippolito, 1987; Lambert, Hogan, & Barton, 2001; Pitts, Marvel, & Fernandez, 2011; Stark, 2007; Zax, 1989). Accordingly, this study computes yearly agency averages for the proportion of the total agency workforce for: *gender* (DSEX from FEVS), *supervisory status* (DSUPER from FEVS), and *minorities* (from Fedscope), *worker age* (from Fedscope), and also included the total number of *agency employees* (from Fedscope). Finally, the total number of employees is included to control for agency size.

**Model**

For a ratio or percentage dependent variable, a traditional ordinary least square (OLS) model is not preferred since it may generate predicted values that are not bounded between 0 and 1. Instead, a fractional logit model is recommended when the data is a balanced panel data. However, this study’s panel data takes an unbalanced format, and therefore this study uses a generalized estimation equation (GEE) model for panel data with a binomial distribution. Further, to address a potential issue of small sample size, this study uses a bootstrapping technique: this further complements the GEE approach since GEE in general works better with a large data size (Schluchter, 2008). The GEE model of this study also controls for both agency
and year fixed effects. This study allows a time-difference (1-year) between contracting out and turnover intention rate variables.

To test the mediation hypothesis, this study followed the approach of Kenny, Kashy, and Bolger (1998). When using multivariate regression models, a mediating effect is confirmed when the following conditions in this study’s model are met: (1) a statistically significant relationship between contracting spending and job satisfaction; (2) a statistically significant relationship between contracting spending and turnover intention and between job satisfaction and turnover intention; (3) an absolute value of the estimated coefficient of contracting spending that becomes lower or becomes statistically insignificant once job satisfaction is included in the regression model. Therefore, this study tests regression models with three different specifications to confirm the mediating effects of job satisfaction on the contracting-turnover intention relationship:

JobSatisfaction

\[
\text{JobSatisfaction}_{it} = \alpha_i + \beta_1 \text{ContractingSpending}_{it-1} + \gamma_1 \text{Yr}_t + \gamma_2 \text{agency}_i + \beta X_{it} + \varepsilon_{it} \quad (1)
\]

JobSatisfaction

\[
\text{JobSatisfaction}_{it} \text{ represents the proportion of employees who reported the satisfaction with their job in agency } i \text{ in year } t. \text{ ContractingSpending}_{it-1} \text{ represents the total dollar spending of agency } i \text{ for outsourcing per employee in year } t-1. \text{ Regression equation } 1 \text{ is required for a complete confirmation of the mediating effects of job satisfaction on the contracting-turnover intention relationship while including job satisfaction as its dependent variable.}
\]

TurnoverIntention

\[
\text{TurnoverIntention}_{it} = \alpha_i + \beta_1 \text{ContractingSpending}_{it-1} + \gamma_1 \text{Yr}_t + \gamma_2 \text{agency}_i + \beta X_{it} + \varepsilon_{it} \quad (2)
\]

TurnoverIntention

\[
\text{In regression equation } (2), \text{ TurnoverIntention}_{it} \text{ is agency } i \text{'s turnover intention rates in year } t. \text{ Yr}_t \text{ is a vector of year dummy variables (with 2010 as the reference year) to control for unobservable changes between different years. Agency}_i \text{ represents a vector of agency dummy variables to control for unobservable heterogeneity across agencies. X}_{it} \text{ denotes a vector of control variables.}
\]
TurnoverIntention_{it} = \alpha_i + \beta_1 \text{ContractingSpending}_{it-1} + \beta_2 \text{JobSatisfaction}_{it} + \gamma_1 \text{Y}_t + \gamma_2 \text{agency}_i + \beta X_{it} + \epsilon_{it} \quad (3)

Regression equation (3) adds the variable \text{JobSatisfaction}_{it} to confirm whether it mediates the effect of contracting out on employee turnover intention. For a full mediation, the independent variable, outsourcing, must not relate with the dependent variable, organizational performance, when the mediation variable is added to the equation.

**Results**

Table 3-1 presents descriptive statistics, reporting the mean and standard deviation for dependent and independent variables. First, the average rate of employees with an intent to leave their agency in the sample of this study is 25.2 %, with some degree of fluctuations between 2010 and 2014. While a rapid decrease is observed from 21.6 % to 15 % between 2010 and 2011, the average turnover intention rate rebounds to over 30 % in 2012 and 2013. Next, with respect to the contracting spending variable, an agency spends an average of about $246,248 per employee for contracting out with variations over time: the average contracting spending per employee had decreased from $256,527 in 2010 to $226,549 in 2012, but increased to $287,248 in 2014. Given that contracting out is a part of day-to-day operations in general, these variations may have implications for changes in employee attitudes and motivation. Finally, the average proportion of employees who are satisfied with their job in each agency seems to decrease from 69.6 % in 2010 to 64.4 % in 2014. Since job satisfaction is treated as fairly stable over periods, minor fluctuations between years can be a meaningful characteristic (Staw, Bell, & Clausen, 1986).

[Table 3-1]
Table 3-2 presents the results for generalized estimation equation (GEE) models, each with 132 observations, all of which are statistically significant overall (Wald chi-square <.001). This study tests regression models with three different specifications to confirm whether job satisfaction mediates the relationship between contracting out and turnover intention. As a robustness check, this study also tests regression models (Models 4, 5, and 6) with a different measure of contracting spending, namely total dollar spending. Therefore, I discuss the findings of regression models (Models 1, 2, and 3) using contracting spending measured by dollar per employee.

In Table 3-2, Model 1 (and Model 4), this study regresses job satisfaction on contracting spending and other covariates. In Model 2 (and Model 5), this study regresses turnover intention on contracting spending and other covariates, excluding job satisfaction. In Model 3 (and Model 6), this study regresses turnover intention on contracting spending with job satisfaction as a mediator, along with other covariates. Explanatory variables in all models are standardized to allow for a comparison of effects across variables. For a more intuitive interpretation of results, this study will focus on Table 3-3 which presents estimated marginal effects of key independent variables from Models 1-3.

Hypothesis 1 predicts contracting spending as measured by dollar spending per employee is positively associated with turnover intention measured by the proportion of employees who expressed intent to leave the agency. This study finds contracting spending has a positive impact on turnover intention. The estimated marginal effect, -0.012 (p<0.01), of dollar spending on contracting per employee in Model 3 implies that turnover intention increases by about 1.2
percentage points for 1 standard deviation increase ($370,000) in dollar spending on contracting per employee.

Hypothesis 2 predicts *contracting spending* is negatively associated with *job satisfaction* measured by the proportion of employees who presented positive satisfaction with their job. This study finds *contracting spending* has a negative impact. The estimated marginal effect of -0.007 (p<0.01) in Model 1 in Table 3-3 implies that 1 standard deviation increase in total dollar spending on contracting per employee (about $370,000) reduces the proportion of employees satisfied with their job by 0.7 percentage points. Thus, Hypothesis 2 is supported.

Next, Hypothesis 3 predicts a negative association between *job satisfaction* and *turnover intention*. An estimated marginal effect, -0.022 (p<0.01) of Model 3 in Table 3-3, implies that a 1 standard deviation increase (5 percentage points) in the level of employees’ overall job satisfaction will lead to a decrease of about 2.2 percentage points in the proportion of employees who intend to leave the agency. Thus, the result lends strong support to the association between *job satisfaction* and *turnover intention*.

In terms of a mediating effect of job satisfaction, as presented in Table 3-3, the absolute value of an estimated marginal effect of outsourcing decreases from 1.3 percent in Model 2 to 1.2 percent in Model 3. That is, the magnitude of a negative effect of *contracting spending* on *turnover intention* is partially reduced by including *job satisfaction*. This finding supports that *job satisfaction* partially mediates the relationship between *contracting spending* and *organizational performance*.

With regard to the control variables, this study finds that satisfaction with pay, physical conditions in the workplace, relationships with supervisor and coworkers, total employees, proportion of supervisor and male employees, and age do not explain variation in *turnover*
intention (see Table 3-2, Model 3). On the other hand, employee perception of resource sufficiency is negatively associated with and the proportion of minorities are positively associated with turnover intention.

As a robustness check, this study tested additional models. First, this study tested regression models with distinguishing two different turnover intentions: transfer intention and quit intention. Empirical results of two regression models, however, present consistent findings on critical explanatory variables (contracting out and job satisfaction) in terms of the direction and statistical significance. The results are reported in appendix 3-1. Next, the data structure of this study may be subject to common method bias: Model 3 and Model 6 include both a dependent variable (turnover intention) and some of key explanatory variables (job satisfaction and other controls) that are drawn from the same survey instrument (FEVS). Therefore, I took additional steps to rule out the possibility of common method bias, specifically with 1) Harman’s single factor test and 2) Brewer’s split sample method (Jakobsen & Jensen, 2015).² The results from both approaches indicate that using a common source in the analysis of this study does not necessarily lead to a potential of bias in estimated effects of key explanatory variables.

Discussion and Conclusion

Government contracting has long been treated as a means to increase efficiency and the quality of government programs and services. Therefore, researchers of government contracting out, and more broadly privatization, have extensively focused on whether and how contracting out affects organizational performance with an emphasis on efficiency. In the meantime, scholars and practitioners in the public sector alike have pointed out potential negative effects of contracting out on government employees’ work attitudes and behaviors. While a few scholars
have shed light on pieces of the complex puzzle of the relationship between contracting out and employee attitudes, especially job satisfaction, how government contracting makes an impact on public employees’ turnover intention and its probable effects on employees’ behavior have remained to be explored.

Turnover intention has critical impact on government operations and service provision. It strongly affects outcomes, such as increased employee turnover and organizational performance. Considering that the costs of designing and operating a selection procedure in the government are certainly consequential (Grissom, Nicholson-Crotty, & Keiser, 2012), turnover represents lost investment (Bertelli, 2007). For example, private sector employers pay out about six to nine months of an annual employee salary in finding and training a replacement (Society for Human Resources Management, 2017). Also, employees accumulate both general and agency specific human capital valuable to the organization (Jovanovic, 1979; Deere, 1987). Relatedly, high levels of turnover intention can increase the likelihood that employees engage in counterproductive behavior while decreasing the probability that employees positively contribute to organizational goals.

This is the first study to develop and test a model of contracting out in U.S. federal agencies that accounts for the direct effect of contracting out on turnover intention as well as its indirect effects on the outcome as mediated by employee job satisfaction. The empirical results fully support the dynamic model proposed including the four main hypotheses that were tested. The results indicate that contracting out has a direct positive effect on the turnover intention of public employees. As proposed, it is also found that contracting out appears to indirectly affect turnover intention through its influence on job satisfaction. The findings challenge us to go beyond the conventional wisdom of privatization and related policy to reconsider the
methodology and potential consequences of privatization while crafting a new approach to contracting out policy management.

The result is consistent with the findings from research on the negative effects of organizational reforms on employees’ well-being (Korunga et al., 2003; Mikkelsen, Osgard, & Lovrich, 2000; Moynihan & Pandey, 2007; Noblet, Rodwell, & McWilliams, 2006). The framework of self-determination theory informs us that employees perceive contracting out as a threat: increase in contracting out reduces public employees’ job satisfaction and thus increases their turnover intention as well. When considering contracting out, therefore, decision makers should consider the consequences of decreased job satisfaction and increased turnover intention and probable turnover behavior of employees. By increasing job satisfaction or reducing the negative impact of contacting out on job satisfaction, the negative influence of contracting out on turnover intention can be alleviated. Conservation of resources theory also suggests a possible explanation for why public employees develop this negative perception: the reduction in agency personnel, functions, and budgets associated with contracting out may generate discomfort for federal employees who perceive a threat to their job security and the resources available for them to perform adequately (Hobföll, 1998).

The use of panel data and methods and the testing of mediation effects are important steps forward for research on the consequences of contracting out, the antecedents of job satisfaction and turnover intention. With panel methods, this study was able to test the dynamic nature of the processes it hypothesized because this study collected data at different yearly intervals. Panel methods also accommodate the fact that observations over time are unlikely to be independent, which cannot be done with cross-sectional methods. This study traced the relationships between contracting out, job satisfaction, and turnover intention using techniques
prescribed by Kenny, Kashy, and Bolger (1998) and were able to distinguish both direct and indirect effects of contracting out. This approach provided an explanation of the mechanisms underlying the process, showing job satisfaction partially mediated the effect of contracting out on turnover intention.

Several limitations to this study point to the need for additional research on contracting out and turnover. First, the model tested here represents an important step forward in that it goes beyond testing for one year of data. However, the panel model was based on aggregated data which can lead to the loss of information. Further research would be helpful to determine how contracting out influences turnover intention at the individual level with a multilevel analysis. Next, unobservable organizational characteristics, such as leadership and organizational culture, across federal agencies, may affect the relationship between contracting out and other key independent variables. Each agency may differ in its leadership and culture. Yet, these organizational characteristics are treated as time-invariant, in particular within a short period of time: therefore, including an agency fixed-effects estimator in this study’s regression models can address this concern. Finally, this study faces the potential risk of common method bias. This study acknowledged this concern and made an effort to address it using two major tests to confirm whether using a single survey instrument in the analysis of this study leads to a common method bias. Test results indicate that using variables measured from the FEVS did not result in a common method bias.
Table 3-1. Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover Intention</td>
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<td>.150</td>
<td>.292</td>
<td>.303</td>
<td>.313</td>
<td>.252</td>
</tr>
<tr>
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<td>(.058)</td>
<td>(.022)</td>
<td>(.045)</td>
<td>(.050)</td>
<td>(.052)</td>
<td>(.078)</td>
</tr>
<tr>
<td>Contracting Spending (Dollar per Employee, $)</td>
<td>256,527</td>
<td>242,664</td>
<td>226,549</td>
<td>229,791</td>
<td>287,248</td>
<td>246,248</td>
</tr>
<tr>
<td></td>
<td>(411,433)</td>
<td>(317,725)</td>
<td>(348,442)</td>
<td>(344,786)</td>
<td>(412,908)</td>
<td>(412,908)</td>
</tr>
<tr>
<td>Contracting Spending ($ Millions)</td>
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<td>5,890</td>
<td>5,350</td>
<td>5,470</td>
<td>7,010</td>
<td>5,870</td>
</tr>
<tr>
<td></td>
<td>(7,200)</td>
<td>(7,100)</td>
<td>(6,790)</td>
<td>(3,770)</td>
<td>(7,360)</td>
<td>(6,950)</td>
</tr>
<tr>
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<td>.647</td>
<td>.658</td>
<td>.647</td>
<td>.644</td>
<td>.659</td>
</tr>
<tr>
<td></td>
<td>(.050)</td>
<td>(.057)</td>
<td>(.045)</td>
<td>(.057)</td>
<td>(.075)</td>
<td>(.060)</td>
</tr>
<tr>
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<td>.469</td>
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<td>.499</td>
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<tr>
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<td>(.128)</td>
<td>(.129)</td>
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<td>(.129)</td>
<td>(.124)</td>
<td>(.126)</td>
</tr>
<tr>
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<td>.548</td>
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<td>.600</td>
</tr>
<tr>
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<td>(.045)</td>
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<td>(.081)</td>
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<td>.727</td>
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<td>.730</td>
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<td>(.125)</td>
<td>(.116)</td>
<td>(.118)</td>
</tr>
<tr>
<td>Relationship with Supervisor</td>
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<td>.686</td>
<td>.677</td>
<td>.686</td>
<td>.696</td>
<td>.685</td>
</tr>
<tr>
<td></td>
<td>(.059)</td>
<td>(.052)</td>
<td>(.044)</td>
<td>(.052)</td>
<td>(.063)</td>
<td>(.054)</td>
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<td>Relationship with Coworker</td>
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<td>.755</td>
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<td>.760</td>
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<td>(.057)</td>
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<td>(.057)</td>
<td>(.056)</td>
<td>(.055)</td>
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<td>.196</td>
<td>.194</td>
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<td>.208</td>
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<tr>
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<td>(.058)</td>
<td>(.056)</td>
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<td>.371</td>
<td>.378</td>
<td>.339</td>
<td>.374</td>
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<tr>
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<td>(.135)</td>
<td>(.124)</td>
<td>(.135)</td>
<td>(.070)</td>
<td>(.122)</td>
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<tr>
<td>Gender</td>
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<td>.478</td>
<td>.478</td>
<td>.501</td>
<td>.482</td>
</tr>
<tr>
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<td>(.103)</td>
<td>(.110)</td>
<td>(.107)</td>
<td>(.110)</td>
<td>(.099)</td>
<td>(.105)</td>
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<tr>
<td>Age</td>
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<td>46.663</td>
<td>46.816</td>
<td>47.063</td>
<td>46.708</td>
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<td>(2.901)</td>
<td>(2.764)</td>
<td>(2.267)</td>
<td>(2.761)</td>
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</tr>
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<td>Total Employees</td>
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<td>41,392.631</td>
<td>47,056.145</td>
<td>40,827.193</td>
<td>49,327.546</td>
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<tr>
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<td>(65,354.944)</td>
<td>(68,669.532)</td>
<td>(72,296.500)</td>
<td>(70,258.136)</td>
<td>(76,590.977)</td>
<td>(68,231.472)</td>
</tr>
<tr>
<td>Sample Size</td>
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<td>27</td>
<td>28</td>
<td>27</td>
<td>22</td>
<td>132</td>
</tr>
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Table 3-2. Results of Panel Generalized Estimating Equation (GEE) Regression Model

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
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<td>Job Satisfaction</td>
<td>Turnover Intention</td>
<td>Turnover Intention</td>
<td>Job Satisfaction</td>
<td>Turnover Intention</td>
<td>Turnover Intention</td>
</tr>
<tr>
<td>Contracting Spending (Dollar per Employee)</td>
<td>-0.007***</td>
<td>0.073***</td>
<td>0.063***</td>
<td>-0.005***</td>
<td>0.059***</td>
<td>0.050***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.016)</td>
<td>(0.016)</td>
<td>(0.002)</td>
<td>(0.018)</td>
<td>(0.016)</td>
</tr>
<tr>
<td>Contracting Spending (Total Dollar Spending)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.094*</td>
<td>(0.055)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.073)</td>
<td>(0.103)</td>
<td>(0.008)</td>
<td>(0.073)</td>
<td>(0.105)</td>
</tr>
<tr>
<td>Resource Sufficiency</td>
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<td>-0.094**</td>
<td>0.015***</td>
<td>-0.111**</td>
<td>-0.079*</td>
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<tr>
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<td>(0.042)</td>
<td>(0.045)</td>
<td>(0.004)</td>
<td>(0.043)</td>
<td>(0.045)</td>
</tr>
<tr>
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<td>(0.056)</td>
<td>(0.007)</td>
<td>(0.055)</td>
<td>(0.062)</td>
</tr>
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<tr>
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<td>(0.062)</td>
<td>(0.005)</td>
<td>(0.062)</td>
<td>(0.062)</td>
</tr>
<tr>
<td>Relationship with Supervisor</td>
<td>0.045***</td>
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<td>-0.066</td>
<td>0.047***</td>
<td>-0.158**</td>
<td>-0.060</td>
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<tr>
<td></td>
<td>(0.008)</td>
<td>(0.073)</td>
<td>(0.103)</td>
<td>(0.008)</td>
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<td>(0.105)</td>
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<td>(0.102)</td>
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<td>(0.008)</td>
<td>(0.100)</td>
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</tr>
<tr>
<td>Supervisor</td>
<td>0.003</td>
<td>-0.018</td>
<td>-0.014</td>
<td>0.002</td>
<td>-0.013</td>
<td>-0.009</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.026)</td>
<td>(0.025)</td>
<td>(0.002)</td>
<td>(0.024)</td>
<td>(0.024)</td>
</tr>
<tr>
<td>Minority</td>
<td>0.004</td>
<td>0.066</td>
<td>0.073*</td>
<td>0.006*</td>
<td>0.050</td>
<td>0.0618</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.043)</td>
<td>(0.043)</td>
<td>(0.004)</td>
<td>(0.042)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.001</td>
<td>-0.013</td>
<td>-0.013</td>
<td>0.001</td>
<td>-0.0171</td>
<td>-0.016</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.027)</td>
<td>(0.026)</td>
<td>(0.003)</td>
<td>(0.028)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>Age</td>
<td>0.016***</td>
<td>-0.131***</td>
<td>-0.104</td>
<td>0.017***</td>
<td>-0.136**</td>
<td>-0.101</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.058)</td>
<td>(0.066)</td>
<td>(0.005)</td>
<td>(0.058)</td>
<td>(0.066)</td>
</tr>
<tr>
<td>Total Employees</td>
<td>0.002</td>
<td>0.002</td>
<td>0.005</td>
<td>0.006**</td>
<td>-0.042</td>
<td>-0.032</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.025)</td>
<td>(0.024)</td>
<td>(0.002)</td>
<td>(0.027)</td>
<td>(0.026)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.663***</td>
<td>-1.135***</td>
<td>-1.125***</td>
<td>0.666***</td>
<td>-1.160***</td>
<td>-1.142***</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.076)</td>
<td>(0.084)</td>
<td>(0.013)</td>
<td>(0.079)</td>
<td>(0.091)</td>
</tr>
<tr>
<td>Agency and Year Dummy</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>132</td>
<td>132</td>
<td>132</td>
<td>132</td>
<td>132</td>
<td>132</td>
</tr>
<tr>
<td>Wald chi-square</td>
<td>714.57</td>
<td>731.89</td>
<td>793.83</td>
<td>684.22</td>
<td>643.78</td>
<td>752.01</td>
</tr>
</tbody>
</table>

Note: Bootstrapping standard errors are in parentheses; * p<0.1, ** p<0.05, *** p<0.001
Table 3-3. Estimated Marginal Effects of Contracting Out and Job Satisfaction on Turnover Intention

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Job Satisfaction</td>
<td>Turnover Intention</td>
<td>Job Satisfaction</td>
<td>Turnover Intention</td>
<td>Job Satisfaction</td>
<td>Turnover Intention</td>
</tr>
<tr>
<td>Contracting Spending (Dollar per Employee, $)</td>
<td>-0.007*** (0.002)</td>
<td>0.013*** (0.003)</td>
<td>0.012*** (0.003)</td>
<td>-0.005*** (0.002)</td>
<td>0.011*** (0.003)</td>
<td>0.009*** (0.003)</td>
</tr>
<tr>
<td>Contracting Spending (Total Dollar Spending)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>-0.022** (0.010)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.017* (0.010)</td>
</tr>
</tbody>
</table>
Appendix 3-1. Regression Results for Two Different Turnover Intentions: Transfer Intention and Quit Intention

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1 Job Satisfaction</th>
<th>Model 2 Transfer Intention</th>
<th>Model 3 Transfer Intention</th>
<th>Model 4 Job Satisfaction</th>
<th>Model 5 Quit Intention</th>
<th>Model 6 Quit Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracting Spending (Dollar per Employee)</td>
<td>-0.032*** (0.002)</td>
<td>0.098*** (0.022)</td>
<td>0.076*** (0.020)</td>
<td>-0.032*** (0.002)</td>
<td>0.039* (0.023)</td>
<td>0.024** (0.022)</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Sufficiency</td>
<td>0.076*** (0.020)</td>
<td>-0.189*** (0.071)</td>
<td>-0.134** (0.065)</td>
<td>0.076*** (0.020)</td>
<td>-0.151*** (0.056)</td>
<td>-0.164** (0.060)</td>
</tr>
<tr>
<td>Satisfaction with Pay</td>
<td>0.098*** (0.032)</td>
<td>0.076 (0.076)</td>
<td>0.134 (0.081)</td>
<td>0.098*** (0.032)</td>
<td>-0.311*** (0.060)</td>
<td>-0.330*** (0.072)</td>
</tr>
<tr>
<td>Physical Condition</td>
<td>0.012 (0.020)</td>
<td>-0.018 (0.076)</td>
<td>-0.010 (0.081)</td>
<td>0.012 (0.032)</td>
<td>-0.316** (0.075)</td>
<td>-0.311*** (0.079)</td>
</tr>
<tr>
<td>Relationship with Supervisor</td>
<td>0.200*** (0.037)</td>
<td>-0.017 (0.091)</td>
<td>-0.014 (0.129)</td>
<td>0.200*** (0.037)</td>
<td>-0.507*** (0.084)</td>
<td>-0.543*** (0.121)</td>
</tr>
<tr>
<td>Relationship with Coworker</td>
<td>-0.047 (0.033)</td>
<td>-0.071 (0.099)</td>
<td>-0.111 (0.111)</td>
<td>-0.047 (0.033)</td>
<td>0.503 (0.099)</td>
<td>0.515 (0.110)</td>
</tr>
<tr>
<td>Supervisor</td>
<td>0.010 (0.007)</td>
<td>-0.038 (0.053)</td>
<td>-0.030 (0.036)</td>
<td>0.010 (0.007)</td>
<td>0.001 (0.021)</td>
<td>-0.001 (0.023)</td>
</tr>
<tr>
<td>Minority</td>
<td>0.021 (0.017)</td>
<td>0.139*** (0.053)</td>
<td>0.156** (0.053)</td>
<td>0.021 (0.017)</td>
<td>-0.073 (0.045)</td>
<td>0.075* (0.046)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.006 (0.011)</td>
<td>-0.032 (0.041)</td>
<td>-0.032 (0.037)</td>
<td>0.006 (0.011)</td>
<td>0.083** (0.033)</td>
<td>0.082** (0.034)</td>
</tr>
<tr>
<td>Age</td>
<td>0.076*** (0.020)</td>
<td>-0.174** (0.073)</td>
<td>-0.121 (0.077)</td>
<td>0.076*** (0.020)</td>
<td>-0.201*** (0.084)</td>
<td>-0.214*** (0.091)</td>
</tr>
<tr>
<td>Total Employees</td>
<td>0.011 (0.011)</td>
<td>0.055 (0.039)</td>
<td>0.059 (0.037)</td>
<td>0.011 (0.011)</td>
<td>-0.084** (0.040)</td>
<td>-0.085** (0.039)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.683*** (0.014)</td>
<td>-1.718*** (0.114)</td>
<td>-1.686*** (0.130)</td>
<td>0.683*** (0.014)</td>
<td>-3.443*** (0.121)</td>
<td>-3.443*** (0.117)</td>
</tr>
<tr>
<td>Agency and Year Dummy</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>132 (699.39)</td>
<td>132 (241.89)</td>
<td>132 (264.52)</td>
<td>132 (684.22)</td>
<td>132 (346.71)</td>
<td>132 (371.97)</td>
</tr>
<tr>
<td>Wald chi-square</td>
<td>699.39</td>
<td>241.89</td>
<td>264.52</td>
<td>684.22</td>
<td>346.71</td>
<td>371.97</td>
</tr>
</tbody>
</table>

Note: Bootstrapping standard errors are in parentheses; * p<0.1, ** p<0.05, *** p<0.001
Footnotes

1. Using a single item to measure overall job satisfaction may be criticized, but it is preferred to a summated scale of multi-facets of job satisfaction (see Scarpello & Campbell, 1983).

2. The result of Harmon’s single factor test suggests that the first factor explains about 36% of the entire variance. As presented in a recent publication by Fuller et al. (2016), the current level of variance (36%) explained by the first factor in our sample data set is lower than the cut-off level (see, Fuller et al., 2016). The result of the Brewer’s Split sample method presents consistent findings between two different models: the first model using the original sample data set that measures both dependent and independent variables from same responses in the survey, and the second model using two split sample responses to measure dependent and independent variables. The two different models present similar levels of fit statistics and a statistical significance of the independent variable with the same direction.
CHAPTER 4.
EMPLOYEE TURNOVER AND ORGANIZATIONAL PERFORMANCE
IN U.S. FEDERAL AGENCIES

Retaining employees has been an on-going concern among scholars and practitioners in the public sector since the early 1900s (White, 1948; Merit Systems Protection Board, 1987). Beginning in 1990, scholars in the public management field (e.g., Cohen, Blake, & Goodman, 2016; Cho & Lewis, 2012; Jeon & Robertson, 2013; Jung, 2010; Kim, 2005; Kim & Fernandez, 2017; Lewis, 1991; Pitts, Marvel, & Fernandez, 2011; Whitford & Lee, 2015) have extensively explored employees’ turnover behavior in public organizations. The literature has contributed to the identification of the critical determinants of employees’ turnover decisions and has suggested managerial solutions to resolve this on-going concern. However, the literature’s approach that treats turnover as a dependent variable emphasizes only the negative role of employee turnover on organizational performance without sufficient theoretical or empirical support.

Does employee turnover necessarily have a negative impact on organizational performance? The traditional belief among scholars and practitioners in both the public and private sector holds that employee turnover typically generates both pecuniary (e.g., recruiting and training costs for new employees) and non-pecuniary costs (e.g., low employee morale) and thus entails negative consequences in lowering organizational performance (Dalton & Todor, 1979; Staw, 1980). Theoretical perspectives on the relationship between employee turnover and organizational performance, however, present a different story: turnover may in fact be beneficial for an organization by improving organizational performance (Dalton & Todor, 1979; Abelson & Baysinger, 1984). On the basis of these different theoretical perspectives, over 100
studies have offered empirical tests for the actual effects of employee turnover on organizational performance in the generic management field. While empirical evidence from the literature is mixed due to methodological challenges (Hancock et al., 2013), a major portion of the findings supports the dysfunctional effects of employee turnover on organizational performance in private organizations.

In contrast, the question of the potential effects of employee turnover on organizational performance has been neglected in the public management field: a single publication by Meier and Hicklin (2008) is the only available source for public sector organizations. The current research emphasizes that employee turnover in public sector organizations, in particular the federal government, deserve more attention from scholars due to its distinctive personnel management practices (Appleby, 1945; Rainey & Bozeman, 2000; Truss, 2013). Foremost, public sector organizations are operated rigidly in terminating their employees for poor performance or wrongdoings: federal agencies must deal with the due process that involves unions, the formal grievance process and internal administrative processes (Truss, 2013). This distinctive aspect may contribute to identifying unpredicted or unconfirmed results which differ from those in the private sector. In addition, the federal government offers the opportunity for an empirical analysis of the effects of employee transfers that has been neglected in the private sector due to data limitations, and this will contribute to satisfying with the need for empirical evidence on their potential effects on organizational performance in both public and generic management (Dalton, 1997; Volcour & Tolbert, 2003; Wynen, Op de Beeck, & Hondeghem, 2013).

This research aims to investigate whether employee turnover is harmful for governmental organizations and thus contributes to the literature on employee turnover and organizational
performance in public management. First, through a critical review of traditional theoretical perspectives, this research develops hypotheses on varying relationships between employee turnover and organizational performance in accordance with the type of employee turnover (employee transfers, quits, and involuntary turnovers). Second, this research tests a set of hypothesized relationships between employee turnover and organizational performance using panel data from federal subagencies from 2010 to 2014. A panel data approach with both unit and year fixed effect estimators offers numerous benefits over a cross-sectional data approach in addressing reverse causality and endogeneity issues. Empirical results challenge the wide-spread but untested belief among public management scholars that employee turnover has harmful effects of employee turnover on organizational performance perceived by remaining employees: employee turnover can be beneficial for an organization. While a low-to-moderate level of employee transfers is likely to increase organizational performance, involuntary turnovers (for poor performers and misconduct)—regardless of rate—contribute to improving organizational performance. The results confirm the key role of turnover types as a situational factor in the employee turnover-organizational performance relationship.

This research begins with a review of the theoretical perspectives on the relationship between employee turnover and organizational performance, and develops hypotheses on the relationship. The discussion then turns to the data and methods used to test the relationship, followed by the findings of the empirical models. Finally, this research discusses both theoretical and practical implications concluding with a discussion of the limitations of this research.
Traditional Theoretical Perspectives

Theoretical perspectives on the relationship between employee turnover and organizational performance are rooted in multiple disciplines, including psychology, sociology, economics and generic management (Hancock et al., 2013; Park & Shaw, 2013). The most dominant perspective on the employee turnover-organizational performance relationship emphasizes the dysfunctional effects of employee turnover and predicts a linear negative relationship between employee turnover and organizational performance. That is, “turnover rates at any levels hurt organizational performance” (Park & Shaw, 2013, p. 269). With a recognition that modern organizations need to survive in a knowledge-based economy, scholars predict the potential negative consequences of employee turnover in organizational performance with three different orientations (Hancock et al., 2013). First, employee turnover incurs monetary costs to organizations: organizations need to spend additional expenditures to hire and train new employees to replace former employees (Allen et al., 2010; Dalton & Todor, 1979; Staw, 1980). Second, human capital theory suggests that employees’ accumulated knowledge and skills are of great significance in maintaining organizational performance (Becker, 1993; Strober, 1990). For this reason, losing employees who have more experience in their job will lead to a negative outcome in organizational performance. Third, as social capital theory suggests, employee turnover may disrupt the social relations that employees typically use in sharing knowledge and information and these relationships are essential in pursuing organizational goals more effectively (Szreter, 2000). Organizations that experience the loss of employees are thus thought to suffer a decreasing performance. In addition, turnover decisions may involve additional socialization costs for newly hired employees to obtain the equivalent level of social relations which existing employees have (Park & Shaw, 2013). Social capital often acts as a club good by
excluding new members in existing social relationships in organizations (Aldridge, Halpern & Fitzpatrick 2002; Szreter 2000).

While holding a belief in the significance of accumulated human capital and social capital among employees affecting organizational performance (Price, 1977; Shaw, Gupta, & Delery, 2005), another theoretical perspective predicts a non-linear negative relationship between employee turnover and organizational performance. Grounded on learning curve theory, this perspective suggests that the negative effect of employee turnover on organizational performance decreases as turnover increases: a low to moderate level of employee turnover is more disruptive to organizational performance than a moderate to high level of employee turnover (Park & Shaw, 2013; Shaw et al., 2005). Scholars working with this theoretical perspective focus on the probable difficulty for newly hired people to build a comparable or equivalent level of human capital with current employees. In particular, they predict that organizations with a high turnover rate have a lower level of accumulated human capital, which in turn suggests that newcomers will more quickly attain the same level of human capital as current employees. As Shaw, Gupta, and Delery (2005, p. 52) out, “when voluntary turnover rates are high, an organization typically replaces a short-tenured employee with a new employee who soon represents the same level of human capital accumulation and shows equivalent performance.” On the other hand, when turnover is low or moderate, “it is quite time-consuming for a new employee to build specific human capital that is equivalent to the average stayer’s” (Shaw et al, 2005, p. 52).

The previous two hypothesized relationships are solely built upon negative impacts (or costs) involved in turnover behavior, but “there may be potential benefits associated with turnover that mitigate or in some cases outweigh the costs” (Hancock et al., 2013, p. 577). Those benefits, for examples, include lower compensation costs (Abelson & Baysinger, 1984),
facilitating innovation through an influx of new blood, new technology and new ideas (Abelson & Baysinger, 1984; Dalton & Todor, 1979; Schneider, Goldstein, & Smith, 1995), increasing mobility that positively affects employees’ work attitudes and motivation (Dalton & Todor, 1979; Staw, 1980). Moreover, turnover can benefit an organization through the elimination of poor performers and replacement with more competent new employees (Abelson & Baysinger, 1984; Dalton & Todor, 1979).

While the idea of the positive effects of turnover are regarded as new or radical among scholars in the generic management field, “the idea has its roots in classic public sector personnel administration” (Meier & Hicklin, 2008, p. 575). For example, Mosher and Kingsley (1941) suggest that turnover can be beneficial if it can increase the possibilities of promotion through increased mobility. Public organizations with high mobility can attract more future employees. Further, they imply that an optimal level of turnover should be “sufficiently large to prevent the stagnation of the service and sufficiently small to reflect healthy working conditions” (Mosher & Kingsley, 1941, p. 341). Stahl (1976, p. 391) emphasizes the modification of the traditional view of turnover as “an unmitigated evil.” He lists the probable advantages that an organization will receive from employee turnover, such as “representativeness, freshness of viewpoint, and breadth of experience on the part of key workers” (Stahl, 1976, p. 391).

Scholars with this viewpoint, thus, argue that turnover may be beneficial to an organization if the benefits listed above exceed the costs related to the selection, retention, and training process: they predict an inverted U-shaped relationship between employee turnover and organizational performance. That is, “an optimal turnover rate is found at the point where benefits maximally exceed the costs. Specifically, at low to moderate levels where benefits are
greater than costs, increased turnover rates can contribute to organizational performance, but as rates rise beyond moderate levels, they have negative effects” (Park & Shaw, 2013, p. 269).

**Developing Hypotheses**

While previous traditional theoretical perspectives set up a framework of predicting the employee turnover-organizational performance relationship for empirical investigations, the findings fail to offer coherent and convergent evidence. One significant reason for this divergence among empirical findings comes from developing theoretical perspectives without paying attention to the distinction between turnover types (for exceptions, see Batt & Colvin, 2011; McElory, Morrow, & Rude, 2001; Simon, 2012; Subramony & Holtom, 2011 & 2012): previous theoretical perspectives focus on total turnover and its potential effects on organizational performance, but such an approach disregards different reasons and contexts for employee turnover.

Recently, scholars have urged an elaboration of previous theoretical perspectives through the incorporation of the idea that the relationship between employee turnover and organizational performance is contingent on the type of employee turnover (e.g., Hausknecht & Trevor, 2011; Shaw, 2011). For example, while some studies (e.g., Morrow & McElroy, 2007; McElroy, Morrow, & Rude, 2001; Shaw et al., 2005) confirm a linear negative relationship between voluntary turnover and organizational performance, other studies (e.g., Meier & Hicklin, 2008; Siebert & Zubanov, 2009) identify an inverted U-shaped relationship between total turnover and organizational performance. As an effort to address this disparity, the current research develops hypotheses with a consideration of the possible role of the type of employee turnover as a situational factor in the employee turnover-organizational performance relationship while
predicting that the relationship differs across different types of employee turnover. That is, different types of employee turnover will lead to different consequences in organizational performance. This research considers three different turnover types: 1) employee transfers; 2) quits, and 3) involuntary turnovers (including both termination for misconduct and poor performance). Figure 4-1 below describes the hypothesized relationships between employee turnover and organizational performance by the type of employee turnover.

[Figure 4-1]

First, employee transfers are defined as employee movements to another federal agency with no competition to the applicants from outside the federal government. Theoretical arguments suggest that employee transfers to a sub-department or unit within an organization may have positive aspects. First, an employer expects employee transfers to provide positive outcomes in increasing organizational flexibility and innovation (Dalton, 1997; Dineen, Ling, & Soltis, 2011; Tsui et al., 1995) and correcting misplacements of employees (Yoder, 1958). For these reasons, managers and supervisors often encourage internal transfers to employees (Dalton, 1997; Dineen, Ling, & Soltis, 2011; Yoder, 1958). Second, employee transfers are initiated by employees for three main reasons: 1) finding more developmental and career advancement opportunities; 2) finding a job or an organization that better fits the employee’s personalities; and 3) personal problems at their current position (to care for their family nearer their home, lack of important facilities such as a hospital, to get closer to their children, and so on). For these reasons, employees who consider internal transfers within the organization may have a lower work motivation and job satisfaction in their current workplace. Replacing them with new employees may offer some benefits to an organization, including an influx of new technologies
and new ideas by new employees and a positive change in employees’ work attitudes caused by promotional opportunities.

With these potential benefits to organization, federal employees’ transfers to other federal agencies are expected to bring a positive consequence in organizational performance. After a certain level of employee transfers, however, organizational performance would be worsened since the costs, such as the loss of accumulated human and social capital and the expenses involved in hiring and training new employees, will no longer be compensated by these benefits (Dalton, 1997). The theoretical argument on employee transfers, thus, is identical to the perspective of an inverted U-shaped relationship. Therefore, this research predicts an inverted U-shaped relationship between employee transfers and organizational performance and proposes the following hypothesis:

**Hypothesis 1.** Employee transfers have an inverted U-shaped relationship with organizational performance such that the relationship is positive at a low-to-moderate level of employee transfers but becomes negative at a moderate-to-high level of employee transfers.

Second, quits, which are often used interchangeably with voluntary turnover, represent federal employees’ voluntary departure from current federal workplace to other sectors. Quits are initiated by employees for personal reasons such as higher salaries, better career opportunities and dissatisfaction with job, and are distinguished from employee transfers and voluntary retirements (Campion, 1991; Batt, 2002). Employees who voluntarily quit their jobs are considered as holding higher human and social capital than those who are laid off by their employers involuntarily or those who transfer to other sub-units within an organization. In addition, quits are typically regarded as more unmanageable than other types of employee turnover due to their unpredictability (Park & Shaw, 2013; Shaw et al., 1998). Therefore, employee quits will be detrimental to organizational performance.
The harmful effect of quits, however, will be lowered as quit rates increase since new employees can build up human and social capital equivalent to the level held by current employees (Shaw, Gupta, & Delery, 2005). In addition, as quits keep increasing, an organization begins to commit more resources and effort to minimizing the adverse effects of quits and to offer new employees training for job skills and knowledge to facilitate their learning process (Shaw, Gupta, & Delery, 2005). These efforts by an organization will result in weakening the negative effects of quits on organizational performance.

In sum, quits are expected to have a negative effect on organizational performance but the negative effect will be attenuated as quits are moving from low-to-moderate levels to moderate-to-high levels. Therefore, this research predicts an attenuated negative relationship between quits and organizational performance. The following hypothesis is proposed:

Hypothesis 2. Quits have an attenuated negative relationship with organizational performance such that the relationship is more negative at a low-to-moderate level of employee quits.

Third, involuntary turnovers, which are actions that terminate employees from their position, are initiated by an employer for employees’ poor performance or misconduct. Note that involuntary turnover in this research should be distinguished from cut-backs: cut-backs in general do not entail hiring new employees while pursuing the reduction in the size of workforce of an organization (Behn, 1980; Jones, 1998). In general, involuntary turnovers are assumed to offer benefits for organizational performance (Dalton, Toder, & Krackhardt, 1983; Holtom et al. 2008). Such benefits may include a lower level of disruption for remaining employees which in turn will increase their work performance (Park & Shaw, 2013). In addition, if an organization can eliminate poor performers and replace them with new employees who perform better, the remaining employees will benefit from a lower workload and less work stress (Abelson &
Baysinger, 1984). Replacing employees for poor performance or misconduct can also send a warning signal to the remaining employees: it may positively encourage employees who remain in the organization to work better or avoid wrongdoing (Meier & Hicklin, 2008).

Psychological contract theory suggests, on the other hand, that involuntary turnovers may generate adverse effects on organizational performance if the remaining employees perceive the elimination process of involuntary turnovers as unfair (De Meuse et al., 2004; Morrison & Robinson, 1997). While feeling the loss of job security, those remaining employees “withdraw psychologically (e.g., reduced trust and loyalty, withholding of effort, and reduced involvement) or physically (e.g., increased absences or voluntary turnover), with negative economic consequences for the firm” (Datta et al., 2010, p. 308). In the public sector, however, this concern may not matter. As one of the aspects which sharply distinguishes them from private sector organizations, public sector organizations are under strict constraints by external constituencies and internal regulations in terms of eliminating civilian employees (Rainey & Bozeman, 2000). For this reason, managers and supervisors in public sector organizations may take an action to eliminate employees with a consistently poor performance record or employees who commit serious misconduct.

In sum, in the public sector, involuntary turnovers will eventually improve organizational performance through replacing those who present poor performance or are involved in misconduct with new employees who present better performance or personal virtues, even though they incur monetary costs such as hiring and training new employees. Thus, this research sets up the following hypothesis:

**Hypothesis 3. Involuntary turnovers have a linear positive relationship with organizational performance.**
Method

Data

This research uses two major data sources: the U.S. Office of Personnel Management’s (OPM) Fedscope and Federal Employee Viewpoint Survey (FEVS). Fedscope offers statistics on employment, accessions and separations in the federal agencies since 2005. Employee turnover measures in this research, as well as some organizational demographic control variables, are obtained from Fedscope’s quarterly statistics for each federal agency. The FEVS is used to measure organizational performance, which is the dependent variable of this research, and control variables including organizational satisfaction-relevant and managerial practices variables. The unit of analysis in this study is the federal agency (including sub-agencies of a parent agency/department and independent agencies). For example, the Internal Revenue Service is the sub-unit or agency of the Department of the Treasury. Both the Internal Revenue Service and the headquarters of Department of Treasury are included as separate units in the sample data set.

By combining data from the Fedscope and the FEVS (excluding agencies with incomplete information for either the dependent or independent variables), this research developed the final sample data set that consists of 595 observations (179 agencies in 2010, 178 agencies in 2011, 86 agencies in 2012, 78 agencies in 2013, and 74 agencies in 2014). During the time frame of this research, four agencies in the sample data set (Tricare Management Activity, Mineral Management Service, Financial Management Service, and Bureau of Public Debt) had experienced organizational changes and this research treats former and new agencies as separate units.¹ The large reduction in the number of agencies since 2012 is the result of the lower number of agencies which participated in the FEVS than in previous years, and leads to an unbalanced
panel data structure. The agencies in the sample data set do not present much variation in key demographic information—such as employees’ average age, tenure and salaries—from the excluded agencies. The military agencies under the Department of Air Force, the Department of the Army, the Department of Defense and the Department of Navy are the most represented ones in the sample data set: about half (46%) of total sample observations are from those military agencies.

**Dependent Variable**

The dependent variable is organizational performance perceived by employees. The measure of organizational performance in this research is based on the following survey item in the FEVS: “My agency is successful at accomplishing its mission.” As the survey item is stated, organizational performance in this research is operationalized as the level of mission achievement of each agency as perceived by employees. This perceptual performance is measured by the proportion of employees who have at least a positive perception of the agency’s mission achievement.

Using a perceptual measure of organizational performance in this research is meaningful. Scholars suggest that organizational performance is conditional on who is evaluating the performance rather than on whether performance is evaluated by objectively verified measures (Connolly, Conlon, & Deutsch 1980; Tsui, 1990). An organization consists of multiple constituencies with diverse needs, and different constituencies deliver diverse evaluations on organizational performance: thus, each constituency’s perspective needs an equal attention. In particular, organizational performance perceived by employees, as an ‘internal’ constituency, conveys a critical clue on how current employees—who are obligated to execute tasks and
programs for their organizations—perceive changes in achieving their organizations’ missions and goals after former coworkers left their workplace for some reasons.

Further, there is ample evidence that perceptual measures are moderately or highly correlated with objective measures of organizational performance (Bommer et al., 1995; Brewer, 2005): in particular, a correlation between them becomes higher if both measures of performance gauge the same dimension of performance. Using three different sample data sets, Wall et al. (2004) compared both subjective and objective measures of company performance. While confirming convergent validity, discriminant validity and construct validity, their findings support the validity of using subjective measures of organizational performance when objective measures are not available. Given this restriction, the use of the perceived performance variable is justified in that it enables scholars to compare different federal agencies (Fernandez & Moldogaziev 2011; Meier & O’Toole, 2013).

Table 4-1 below presents descriptive statistics for both dependent and independent variables, as well as other control variables. Approximately 80% of respondents in federal agencies presented a positive perception of their agency’s performance in achieving its own mission between 2010 and 2014. The perceived level of organizational performance varies widely across federal agencies, with the lowest level at 49.6% and the highest at 93.4%. Details can be found in Appendix B.

[Table 4-1]

**Independent Variable**

The main independent variable in this research is employee turnover rate at each federal agency. Turnover rate is measured in three different categories: employee transfer rate (transfer to other federal department or agency voluntarily), quit rate (leave the federal government
voluntarily), and involuntary turnover rate (termination for poor performance or misconduct). Turnover rate for each of these categories is calculated as the proportion of employees who left their agency. This research counts the number of employees who left their agency during a twelve-month period starting one year before the administration of the FEVS, and divides that number by the number of total employees in the starting month of the period.

Table 4-1 shows each turnover rate decreasing over the time period of this research. Both employee transfer rate and quit rate were stable at round 1.9% and 3.5%, respectively, between 2010 and 2012, then decreased to 1.17% and 2.94%, respectively, in 2014. Involuntary turnover rate also presents a similar trend to that observed in both employee transfer rate and quit rate: the involuntary turnover rate was steady at around 3.2% from 2010 to 2012 but it decreased rapidly to 1.92% and 1.32% in 2013 and 2014 respectively. As presented in appendix 4-2, the data set may include an outlier: a single agency (the Aviation Rulemaking Advisory Committee) reports a dramatically different turnover rate in two categories (63.16% for employee transfer rate and 21.05% for quit rate). Results of empirical models without this observation, however, present consistent findings with the ones from empirical models with it.

Control Variables

This research includes a range of control variables that previous research has confirmed significant effects on organizational performance (e.g., Fernandez & Moldogaziev, 2011; Keenan & Newton, 1984; Meier & O’Toole, 2001; Peters & O’Connor, 1980; Rainey, 2014; Spector & Jex, 1991). First, the level of employees’ overall job satisfaction (Job Satisfaction) is controlled with an expected positive relationship with organizational performance. Since the measure of overall job satisfaction encompasses multiple-dimensions, such as pay, benefits, and work environment, other satisfaction-related variables were excluded. Second, a list of variables
relevant to managerial practices and relational aspects was also controlled: the level of relatedness between individuals’ work and agency’s goals and priorities (Relatedness), the level of personal accomplishment (Accomplishment), the level of cooperation among coworkers (Cooperation), the level of empowerment (Empowerment), the level of opportunities to improve skills (Opportunities), and the level of trust in supervisor (Trust) were included. Finally, another set of variables of organizational demographics—including the size of organization (Total Employees), the proportion of minority employees (Minority), the proportion of supervisors and managers (Supervisor), and the average age of employees (Age)—was controlled. Appendix A presents data sources to measure dependent, independent and control variables³.

**Model**

This research uses a multivariate two-way OLS fixed effects model to analyze a panel of sub-agencies between 2010 and 2014. A panel data approach offers some advantages over a cross-sectional data approach in this research. First, it can address the reverse causality issue through allowing a time-lagged performance variable and controlling for other potential confounding factors (Park & Shaw, 2013). Recent studies (e.g., Meier & Hicklin, 2008; Siebert & Zubanov, 2009) also provide evidence for the validity of the direction of the relationship between employee turnover and organizational performance assumed in this research. Second, a panel data model can reduce the risk of omitted variable bias: the model includes unit fixed effect estimators to control for unobservable characteristics of federal agencies as well as year fixed effect estimators to parcel out potential effects of unobserved contexts across the time-period of this research.

Although a panel data approach offers these advantages, it raises the possibility of serial correlation and heteroscedasticity. A Wooldridge diagnostic test (F=3.166, prob > F = 0.1954)
confirms no serial correlation in the data set of this research. To address the risk of heteroscedasticity, this research estimates the empirical model using clustered robust standard errors: Monte Carlo simulations in Bertrand, Duflio and Mullainathan (2004) and Petersen (2009) show that this approach can reduce the risk of heteroscedasticity. The parsimonious fixed effects model for sub-agency $i$ in year $t$ is

$$
Performance_{it} = \alpha_i + \beta_1 \text{Turnover}_{i,t-1} + \beta_2 \text{Turnover}^2_{i,t-1} + \gamma_1 \text{Agency}_i + \gamma_2 Yr_t + X_{it}\beta + \epsilon_{it}
$$

$Performance_{it}$ is sub-agency $i$’s performance in year $t$, and $\text{Turnover}_{i,t-1}$ is sub-agency $i$’s turnover rate in year $t-1$. $\text{Agency}_i$ is a vector of agency dummy variables to control for unobserved heterogeneity. $Yr_t$ is a vector of year dummy variables (with 2010 as the reference year), which can control for yearly unobservable or unmeasurable changes in comparison to 2010. $X_{it}$ is the vector of control variables mentioned above.

### Results

Table 4-2 below presents the results of fixed effects models for employee turnover and organizational performance. Recall that employee transfer rate, quit rate and involuntary turnover rate (including termination for misconduct or poor performance) are the key independent variables in the fixed effects models. The only difference between Model 1 and Model 2 is that the latter includes the quadratic term of each turnover rate variable: the quadratic term of the turnover variable in Model 2 is included to test the curvilinear relationship between employee turnover and organizational performance.

First, Model 1 and Model 2 present the evidence for the curvilinear relationship between employee transfers and organizational performance. The estimated coefficient of employee
transfer rate is 0.012 in Model 1 but it is not statistically significant: this result rejects the possibility of observing a negative linear relationship between employee transfers and organizational performance. A linear term of the employee transfer rate variable is still not statistically significant in Model 2 where the quadratic term of the employee transfer rate variable is included. Instead, the estimated coefficient of the quadratic term, -2.138 (p<0.10), has a marginally statistically significant impact on organizational performance. A joint significance test confirms that both a linear and a quadratic term are jointly significant (p=0.051): both a positive linear term and negative square term confirm the inverted U-shaped relationship between employee transfers and organizational performance predicted by Hypothesis 1. That is, as employee transfer rate increases from a low-to-moderate level, more employees perceive that their agency accomplishes its mission successfully.

An inverted U-shaped relationship implies that there is an optimal level of turnover to achieve this highest level of organizational performance: organizational performance will be highest when the benefits and the costs are balanced. When confirming the inverted U-shaped relationship, the optimal level of the turnover can be estimated by taking the first derivative of the regression equation. Such a process suggests about 7.2% as the optimal level of employee transfer rate. This is much higher than the mean of employee transfer rate of 1.8%. Most of the federal agencies have their mean employee transfer rate below this level so that their organizational performance—more precisely the level of mission achievement perceived by employees—will be improved as their employee transfer rate increases up to 7.2%; however, less employees will perceive a successful mission achievement of their organizations once employee transfer rate moves beyond 7.2%.
This finding supports theoretical conjectures that internal replacements may generate benefits for an organization that sends those employees to another agency (Corredoira & Rosenkopf, 2010; Dalton, 1997; Somaya, Williamson, & Lorinkova, 2008). As those conjectures predicted, an agency can expect an improvement through holding a certain level of organizational flexibility and amending flawed hiring processes. In addition, an organization can enjoy cost savings involved in salaries and benefits for mid-career or senior employees. The current findings provide empirical evidence for the positive aspects of employee transfers in contrast to the received opinion. The findings, however, suggest an opposite direction of the effects of employee transfers which has not been identified. As human capital and social capital theories warn, too many employee transfers will not only involve a dramatic loss of aggregated human capital, but also disrupt the social relations and interactions among employees. This will eventually negatively affect employees’ perception on organizational performance.

Second, the results for quit rate show some evidence on a curvilinear pattern of the relationship between quit rate and organizational performance as in the case of transfer rate. In Model 1 a linear term of the quit rate variable is not statistically significant. In Model 2, the linear term is still not statistically significant but the estimated coefficient, 3.931 (p<0.10), of the quadratic term of the quit rate variable is marginally statistically significant. Although a negative slope for the linear term and a positive slope for the quadratic term may imply an attenuated or a U-shaped relationship, a joint significance test shows that both terms are jointly insignificant which rejects the possibility of having an attenuated negative relationship with organizational performance as predicted by Hypotheses 2.

While previous empirical findings (e.g., Batt & Colvin, 2011; McElroy, Morrow, & Rude, 2001; Morrow & McElroy, 2007;) present evidence for the detrimental effects of quits on
organizational performance in private organizations, the current findings do not present statistically significant evidence for the potential relationship between quits and organizational performance in the federal agencies. This result is quite surprising but can be explained by considering tenure length. More than 60% of employees who left the federal government have a service experience of less than 2 years in the sample data set of this research. As human capital theorists suggest, less than 2 years of service experience may not be enough time to obtain the job skills and knowledge that increase an accumulated level of human capital of their organizations. For this reason, remaining employees may not perceive much difference in their agencies’ mission achievement after former employees quit their jobs and leave their organization.

Third, regarding involuntary turnover rate, Model 1 and Model 2 present a different story. The estimated coefficient, 0.127, of the involuntary turnover rate in Model 1 is statistically significant ($p<0.05$), and implies that an additional 1-percentage point increase in involuntary turnover rate will lead to an increase of about 0.13-percentage points in the proportion of employees who have a positive perception of their agency’s mission accomplishment. On the other hand, in Model 2, both the linear term and the quadratic term of the involuntary turnover rate fail to have statistical significance. The results thus confirm a linear positive relationship between involuntary turnover rate and organizational performance that is expected from Hypothesis 3.

Contrary to the traditional theoretical perspective that involuntary turnovers are beneficial to organizational performance, recent empirical findings (e.g., Batt & Colvin, 2011; Subramony & Holtom, 2011) have presented evidence supporting the negative effects of involuntary turnovers in the private sector. This study’s findings, on the other hand, imply that decisions to
terminate employees for reasons of poor performance or misconduct will be advantageous to organizations. The magnitude of an estimated impact seems not to be substantial. These findings, however, may imply that even though involuntary turnover will incur the costs of hiring and training new employees, an organization will obtain non-pecuniary benefits that better achieve its missions and goals.

In sum, among different possible relationships between employee turnover and organizational performance, the results empirically support the inverted U-shaped relationship between employee transfers and organizational performance and a linear positive relationship between involuntary turnovers and organizational performance. Contrary to Batt and Colvin (2011), the results refute the claim that all different employee turnovers have equivalent relationships with organizational performance. Figure 4-2 below describes both relationships confirmed by the empirical results of this research. Other control variables—Relatedness, Cooperation, Resources, and Empowerment—have a statistically significant and positive relationship with organizational performance as previous studies have confirmed.

As a robustness check of the current findings, additional models were tested. First, to address an issue of non-normal distribution of a dependent variable, the models based on a log-transformed dependent variable were tested. Second, additional models with both linear and quadratic terms centered on their mean were also tested in case the collinearity between them may lead to a type II error in testing the hypotheses by increasing standard errors. These additional models present consistent findings with the current ones.

[Table 4-2]

[Figure 4-2]
Discussion and Conclusion

Is employee turnover indeed detrimental for an organization? Scholars and practitioners in the public sector have long agreed that employee turnover is not beneficial for organizational performance, but their belief has no ample evidence from either a theoretical or an empirical perspective. Based on the idea that the type of employee turnover is a situational factor, this research develops and tests hypotheses predicting differing effects of employee turnover on organizational performance by its three main types (employee transfers, quits, and involuntary turnovers). Using a panel data set from 200 U.S. federal agencies between 2010 and 2014, empirical results presents both theoretical and practical implications of the research on employee turnover and its effects on organizational performance in the public sector.

This research presents the evidence that supports the theoretical perspective of considering potential benefits employee turnover will bring to an organization: the research confirms an inverted U-shaped relationship between employee transfers to other federal agencies and organizational performance. While some scholars (e.g., Corredoira & Rosenkopf, 2010; Dalton, 1997; Somaya, Williamson, & Lorinkova, 2008) propose that transfers to other departments or sub-organizations within the current workplace may benefit sending organizations, the finding of an inverted U-shaped relationship between employee transfer rate and organizational performance presents empirical evidence that lends support to their conjectural perspective: an organization which experiences an appropriate level of employee transfers will gain a positive outcome in its performance. Further, the research presents evidence for a linear positive impact of involuntary turnovers. These findings ultimately suggest that the relationship between employee turnover and organizational performance differs by turnover
types: therefore, researchers should be encouraged to take a contingent perspective on the relationship between employee turnover and organizational performance in their future research.

Practically speaking, the findings of this research suggest that managers and supervisors in federal agencies should take into account different consequences of turnover behavior in managing human resources. Foremost, managers and supervisors should not be bound by a naïve belief that employee turnover is simply a problem that they should attempt to prevent or fix. Zero or low-level employee transfer rates may assure a certain level of positive performance in an organization, but efforts to hold employee transfer rate to a minimum will sacrifice the probable benefits of improving organizational performance through reducing compensation costs, improving innovation and increasing employees’ work motivation. Collaboration by managers and supervisors between federal agencies seems to be essential in managing employees who plan to transfer to other federal agencies.

Managers and supervisors should also continue to make efforts to observe their employees’ performance and to take actions against employees that generate harmful effects on other employees’ performance or on the organization as a whole. Laying off employees who present poor performance or are involved in misconduct may relieve disruptions or stagnation in the working process, and therefore replacing them with new employees may further generate a substantial and positive effect on organizational performance. When terminating employment contracts of federal employees, federal agencies should comply with a due process that requires sufficient evidence, appropriate procedures and negotiations with unions. While some lawmakers have argued that due process is extremely burdensome and inefficient, the findings of this research imply that managers and supervisors use the due process efficiently and effectively so that only employees who present significant wrongdoings or poor performance are eliminated.
However, the findings on the positive side of involuntary turnover should not be discussed on the potential consequences of cutbacks in organizational performance. As briefly mentioned, employee cutbacks entail hiring freeze that prevents organizations from filling up vacant positions with employees who hold better skill sets. As a result, cutbacks cause organizations to experience a deterioration in performance (Jones, 1998).

Although this research provides significant contributions to theory and practice, some limitations should be mentioned. First, different organizational contexts may affect the relationship between employee turnover and organizational performance. For example, different agencies may use different managerial styles in helping new employees to obtain their job-relevant skills and knowledge. And, different types of mission across federal agencies may also moderate the impacts of employee turnover on organizational performance. In the sample data set of this research, however, these possibilities were not confirmed: the results of both a between-effect estimator model and intraclass correlation coefficient refuted the possibility that unobservable characteristics across agencies may moderate the relationship between employee turnover and organizational performance. Second, the aggregated data structure employed in the current research typically involves the loss of variation among individual responses. This is unavoidable but an accepted trade-off when using panel data approaches instead of cross-sectional data approaches. A more desirable empirical strategy may be an individual-level analysis but no repeated observations at the individual level limit this possibility. Third, effects of employee turnover on organizational performance may differ by the quality and occupational types of employees. Each individual employee certainly varies in analytical skills and knowledge relevant to their work. Federal agencies operate with the combined efforts of many different levels of federal employees including senior executives, supervisors, managers, and street-level
employees. Federal employees also can be categorized by their specialization: general administrators, human resource managers, technical experts, and numerous other employee groups. Unfortunately, both the Fedscope and the Federal Employee Viewpoint Survey do not provide such detailed information on individual employees. Future research to investigate differing effects of employee turnover by employees’ quality and specialization would offer valuable insights. Finally, this research does not present the evidence on whether employee transfers bring any changes in performance to organizations that hire those transferred employees. Future research is warranted regarding the potential consequences of employee transfers in organizational performance for those receiving organizations.
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Table 4-2. Results of Two-Way Fixed-Effects OLS Models

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<tr>
<td></td>
<td>coefficient/(se)</td>
<td>coefficient/(se)</td>
</tr>
<tr>
<td>Employee Transfer Rate</td>
<td>0.012 (0.051)</td>
<td>0.308 (0.198)</td>
</tr>
<tr>
<td>Employee Transfer Rate (^2)</td>
<td>-2.138* (1.127)</td>
<td></td>
</tr>
<tr>
<td>Quit Rate</td>
<td>0.068 (0.177)</td>
<td>-0.458 (0.335)</td>
</tr>
<tr>
<td>Quit Rate (^2)</td>
<td>3.931* (2.263)</td>
<td></td>
</tr>
<tr>
<td>Involuntary Turnover Rate</td>
<td>0.127*** (0.047)</td>
<td>0.182 (0.112)</td>
</tr>
<tr>
<td>Involuntary Turnover Rate (^2)</td>
<td>-0.180 (0.289)</td>
<td></td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>0.140 (0.101)</td>
<td>0.159 (0.100)</td>
</tr>
<tr>
<td>Relatedness</td>
<td>0.273*** (0.092)</td>
<td>0.273*** (0.094)</td>
</tr>
<tr>
<td>Cooperation</td>
<td>0.312*** (0.082)</td>
<td>0.300*** (0.082)</td>
</tr>
<tr>
<td>Opportunities</td>
<td>0.053 (0.065)</td>
<td>0.052 (0.065)</td>
</tr>
<tr>
<td>Trust in Supervisor</td>
<td>-0.055 (0.079)</td>
<td>-0.058 (0.079)</td>
</tr>
<tr>
<td>Resources</td>
<td>0.187*** (0.064)</td>
<td>0.197*** (0.063)</td>
</tr>
<tr>
<td>Physical Conditions</td>
<td>-0.012 (0.057)</td>
<td>-0.028 (0.057)</td>
</tr>
<tr>
<td>Empowerment</td>
<td>0.194*** (0.063)</td>
<td>0.177*** (0.064)</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>0.043 (0.097)</td>
<td>0.048 (0.096)</td>
</tr>
<tr>
<td>Minority</td>
<td>-0.097*** (0.020)</td>
<td>-0.105*** (0.020)</td>
</tr>
<tr>
<td>Age</td>
<td>0.017 (0.012)</td>
<td>0.016 (0.012)</td>
</tr>
<tr>
<td>Supervisor</td>
<td>-0.011 (0.024)</td>
<td>-0.009 (0.024)</td>
</tr>
<tr>
<td>Total Employees</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.000)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.031</td>
<td>-0.027</td>
</tr>
<tr>
<td></td>
<td>(0.099)</td>
<td>(0.097)</td>
</tr>
<tr>
<td>Agency Fixed-Effect</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Year Fixed-Effect</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Number of observations</td>
<td>595</td>
<td>595</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.671</td>
<td>0.678</td>
</tr>
<tr>
<td>F</td>
<td>29.45***</td>
<td>27.38***</td>
</tr>
</tbody>
</table>

**Note:** Numbers in parentheses are clustered robust standard errors.

*** $p<0.01$, ** $p<0.05$, * $p<0.10$
Figure 4-1. Relationships between Employee Turnover and Organizational Performance

Figure 4-2. Confirmed Relationships between Employee Turnover and Organizational Performance
Footnotes

1. The Tricare Management Activity agency disestablished in 2013 and the responsibility of the Tricare management program transferred to the Defense Health Agency (DHA). Since the DHA was established to cover broader medical services, this research treated the DHA as a separate unit. The Mineral Management Service agency split into three new agencies in 2011: The Bureau of Ocean Energy Management, the Bureau of Safety and Environmental Enforcement, and the Office of Natural Resource Revenue. Only the Bureau of Ocean Energy Management participated in the FEVS survey in 2012, and, it was treated as a separate unit. Both the Financial Management Service and the Bureau of the Public Debt under the Department of Treasury were merged as the Bureau of Fiscal Service in 2011, but the Bureau of Fiscal Service did not participate in the FEVS.

2. Unbalanced panel data sets entail two potential issues: single observations and missing observations (Wooldridge, 2010). To address the potential effects of single observations, this research tested time-demeaned models with no single observations. While exclusion of single observations in time-demeaned models affected the standard errors, the overall results were consistent with the ones presented in this research. Second, unbalanced panel data can lead to biased estimators due to the violation of the missing completely at random (MCAR) assumption. In other words, some missing observations (simply attrition) for certain years may be correlated with the idiosyncratic errors (Wooldridge, 2010). This implies that some of the federal agencies were missed since they disestablished or merged with other agencies. As briefly mentioned, this research observed four federal agencies that had merged, transferred, or split: new agencies were treated as new unites in the data set. Some observations of new agencies in certain years (the Bureau of Fiscal Service) were not feasible,
since they did not participate in the FEVS, even though they were still active organizations. Unfortunately, the Office of Personnel Management provides no information on why some agencies did not participate in the FEVS. For this reason, this research was not able to confirm the assumption of randomly missing observations. However, a fixed-effects model can relieve this concern fairly through allowing missing observations to be correlated to idiosyncratic errors (Wooldridge, 2010).

3. Intraclass Correlation Coefficient (ICC) is ranged from the lowest of 0.803 for job satisfaction variable to the highest of 0.937 presenting the evidence for a high degree of reliability of measures from the FEVS.

4. Another possible reason for this result is the influence by an outlier in the sample data set. As briefly mentioned in the discussion of independent variables, there is a single agency which reports dramatically different values in both agency-transfer and quit rates. Empirical results which omit that agency from the sample data set, however, present consistent findings in both direction and magnitude of key explanatory variables.
Appendix 4-1. Variables and Measures

**Dependent Variable**
Organizational Performance (from FEVS)
- “My agency is successful at accomplishing its mission.”

**Independent Variables**
Agency-Transfer Rate (from Fedscope)
- Proportion of employees who voluntarily transferred to other federal agencies
Quit Rate (from Fedscope)
- Proportion of employees who voluntarily left the federal government
Involuntary Turnover Rates (from Fedscope)
- Proportion of employees who involuntarily left their agencies for their misconduct or poor performance.

**Control Variables**
Job Satisfaction (from FEVS)
- “Considering everything, how satisfied are you with your job?”
Relatedness (from FEVS)
- “I know how my work relates to the agency’s goals and priorities.”
Cooperation (from FEVS)
- “The people I work with cooperate to get the job done.”
Opportunities (from FEVS)
- “I am given a real opportunity to improve my skills in my organization.”
Trust in Supervisor (from FEVS)
- “I have trust and confidence in my supervisor.”
Resources (from FEVS)
- “I have sufficient resources to get my job done.”
Physical Conditions (from FEVS)
- “Physical conditions (e.g., noise level…) allow employees to perform their job well.”
Empowerment (from FEVS)
- “Employees have a feeling of personal empowerment with respect to work processes.”
Accomplishment (from FEVS)
- “My work gives me a feeling of personal accomplishment.”
Minority (from FEVS)
- Proportion of non-white employees
Age (from Fedscope)
- Average age of employees
Supervisor (from FEVS)
- Proportion of managers and supervisors
Total Employees (from Fedscope)
- Total number of employees
Appendix 4-2. Descriptive Statistics on Organizational Performance and Employee Turnover Rates

<table>
<thead>
<tr>
<th>Turnover Rates</th>
<th>Mean</th>
<th>N</th>
<th>S.D.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance</td>
<td>0.798</td>
<td>595</td>
<td>0.075</td>
<td>0.496</td>
<td>0.934</td>
</tr>
<tr>
<td>Agency-Transfer Rates</td>
<td>0.018</td>
<td>595</td>
<td>0.031</td>
<td>0</td>
<td>0.632</td>
</tr>
<tr>
<td>Quit Rates</td>
<td>0.034</td>
<td>595</td>
<td>0.028</td>
<td>0.003</td>
<td>0.211</td>
</tr>
<tr>
<td>Involuntary Turnover Rates</td>
<td>0.027</td>
<td>595</td>
<td>0.055</td>
<td>0</td>
<td>0.136</td>
</tr>
</tbody>
</table>
Maintaining a stable workforce is one of the core tasks for any organizations with respect to organizational functions and performance. Since early public administration scholars (Mosher & Kingsley, 1936; White, 1948) have warned about the loss of skilled or talented employees in governmental organizations, scholars and practitioners in the public sector have endeavored to identify critical antecedents of employee turnover. While their work has contributed to presenting managerial solutions to lower employee turnover, the current state of research on employee turnover in the public management field leaves some critical issues unexplored.

This dissertation aims to address those issues. First, this dissertation investigates the potential influence of changes in external or environmental contexts on employees’ turnover behaviors. Specifically, this dissertation focuses on the changes in job scarcity in the labor market and government contracting out in regard to their impacts on employee turnover behavior observed in the federal agencies. This dissertation further explores the potential consequences that employee turnover brings to organizational performance, with a specific emphasis on the type of employee turnover as a situational factor. In this concluding chapter, I provide a summary of the main findings from three empirical chapters and discuss theoretical and practical implications, limitations of the dissertation, and future research topics for a better understanding of employee turnover in the public sector and the federal government.
Summary of Findings

Chapter 2 of this dissertation explores how changes in job scarcity or alternative job opportunities in a labor market affect voluntary turnover in U.S. federal agencies. This chapter offers an integrative theoretical model of voluntary employee turnover which incorporates the various roles assigned to job scarcity in employee turnover models from different disciplines. I empirically test a set of hypotheses on both direct and moderating effects of job scarcity on voluntary turnover using panel data methods. In the analysis, I distinguish two different types of employee turnover: employee transfers and employee quits. The results confirm that job scarcity positively moderates the relationship between job satisfaction and quit behavior. That is, when alternative job opportunities are more abundant, a federal agency can expect that dissatisfied employees will quit their agency and leave the federal workplace at higher rates. On the other hand, job scarcity does not play any critical role in employee transfer behavior. These findings indicate that job scarcity is a critical factor in predicting employee departure from the federal government.

Chapter 3 investigates the potential influence of contracting out on federal employees’ turnover intentions. Grounded in psychology and public management literature, this chapter presents both the direct and indirect effects of contracting out on employee turnover intention. Using a panel data set obtained from U.S federal agencies, empirical results of this chapter confirm that contracting out has a direct positive association with federal employees’ turnover intentions: federal agencies will encounter an increasing level of turnover intention among their employees as they increase the level of contracting out. Further, the results confirm the indirect effect of contracting out on employee turnover intention through lowering the level of job satisfaction among employees in federal agencies.
Chapter 4 investigates the potential consequences of employee turnover in organizational performance in federal agencies. This chapter develops varying hypotheses on the employee turnover-organizational performance relationship in accordance to the type of employee turnover (employee transfers, quits, and involuntary turnovers). The empirical results confirm that not all employee turnovers are detrimental to organizational performance. Rather, the findings support the main argument of this chapter, namely, that the effects of employee turnover on organizational performance differ by the type of employee turnover. In particular, the findings imply that both employee transfers and involuntary turnovers can be beneficial for organizational performance. A low-to-moderate level of employee transfers is likely to increase organizational performance. Also, firing employees who present poor performance or are involved in misconduct also seems to positively affect organizational performance. On the other hand, the findings failed to find any systematic evidence on the effects of employee quits.

**Theoretical Contributions**

This dissertation offers theoretical contributions to the research on employee turnover in the public sector. First, this dissertation develops theoretical models to predict the critical influence of external or environmental factors on public employees’ turnover behaviors and intentions. In Chapter 2, I develop an integrative theoretical model of employee turnover that reconciles predictions of the varying roles that job scarcity can play from competing theoretical models. This chapter identifies two potential critical roles of job scarcity in employee turnover behavior in public organizations: a direct antecedent of employee turnover behavior and a moderator between critical antecedents (job satisfaction and turnover intention) and employee
turnover behavior. Empirical findings of this chapter confirm only a moderating role of job scarcity between employee job satisfaction and actual quit behaviors.

In Chapter 3, I develop and test a theoretical model that predicts the potential effects of government contracting out on public employees’ turnover intentions. This chapter incorporates three different theories—self-determination theory, psychological contract theory, and conservation of resources theory—and establishes the logic of how market-oriented reforms can directly and indirectly affect employee turnover intention in federal agencies. Empirical results indicate that contracting out has both direct and indirect positive effects in increasing the proportion of employees with an intent to leave their current workplace. The results also confirm the mediating role of job satisfaction in the link between government contracting out and employee turnover intention.

Next, this dissertation develops theoretical arguments predicting the potential consequences of employee turnover in organizational performance. In Chapter 4, I consider the probable role of the type of employee turnover as a situational factor in the employee turnover-organizational performance relationship. Grounded on the fundamental argument that employees choose different turnover paths for different reasons, this chapter predicts that each type of employee turnover will have a different effect on organizational performance. Further, this chapter incorporates the distinctive nature of public-sector organizations,—in contrast to private-sector organizations—in developing theoretical arguments. For example, public-sector organizations are operated under strict constraints in terms of firing or eliminating employees. Therefore, this chapter establishes theoretical arguments on the employee turnover-organizational performance relationship that are appropriate within the public-sector context.

Empirical results of this chapter present the findings that are unconfirmed or contradictory to the
previous findings observed in private-sector organizations. The results support the theoretical
notion of a potential benefit of employee transfer for sending organizations which has not been
confirmed empirically in either public- or private-sector organizations. Further, the results
suggest that eliminating employees who engage in misbehavior or present poor performance is
also beneficial for organizations performance. This finding is contrary to the dominant
perspective on the negative effect of involuntary turnover observed in the private sector.

**Practical Implications**

The findings of this dissertation offer practical implications to managers and supervisors
in public organizations regarding how to manage employee turnover behavior. First, the findings
of this dissertation emphasize that managers and supervisors should make a cautious effort to
apply different managerial solutions to different forms of employee turnover. The findings of
Chapter 2 indicate that employee transfers and quits are predicted by different antecedents. More
specifically, in terms of employee transfer, managers and supervisors need to give an attention to
employees who indirectly or directly express an intention to transfer to another agency. Since
lower job satisfaction seems to be the key factor leading to employees’ desire to transfer, they
should also make an effort to figure out where job dissatisfaction comes from among their
employees. On the other hand, managers and supervisors need to approach employee quits with
different strategies. While an intent to quit does not necessarily lead to actual quit behaviors, job
satisfaction among employees is a direct antecedent to actually quitting the job. The direct link
between job satisfaction and quit behavior, however, is moderated by job scarcity in a labor
market. These findings, therefore, urge managers and supervisors to place considerable effort
into improving job satisfaction when economic conditions become more favorable and alternative job opportunities are more available for employees.

In Chapter 3, the empirical results indicate government contracting out is positively associated with both employee transfer and quit intentions. The results also confirm that contracting out negatively affects job satisfaction among employees which eventually leads to an increase in both kinds of turnover intention. As both scholars and practitioners have warned, these results suggest that government contracting out pursues market-oriented values such as efficiency at the cost of harming public employees’ work attitudes and morale. In particular, the potential of job losses or weakened job security seems to be the biggest concern among employees (Savas, 2000), and this in turn may lead to lower work motivation and negative work attitudes among employees. Therefore, with an attempt to grasp how employees perceive the resources available to perform their work and whether employees feel threatened about their employment, managers and supervisors need to craft managerial approaches to reduce or minimize potential costs of contracting out in terms of employees’ work attitudes and morale.

The findings of Chapter 4, on the other hand, offer another set of critical practical implication for managers and supervisors in managing employee turnover. Foremost, the findings suggest that managers and supervisors should not treat employee turnover as simply a problem to fix or prevent. Rather, they should consider the different consequences of varying types of employee turnover for organizational performance. Since a low-to-moderate level of employee transfer is likely to increase organizational performance, managerial efforts to maintain a minimum level of employee transfer may sacrifice the potential benefits of improving organizational performance. Further, the previous literature confirms that employee transfer is beneficial for the organizations who accept these employees. Managers and supervisors,
therefore, need to communicate and consult with managers and supervisors in other federal agencies in terms of potential positions for internal transfers within the federal bureaucracy while facilitating transfer processes.

Next, the finding of a positive link between involuntary turnovers and organizational performance underscores the importance of managers and supervisors’ commitment to monitoring employees’ performance and work ethics. Employees who present persistent misbehavior or poor performance may cause disruptions to other colleagues and their work process while generating harmful effects on organizational functions and performance as a whole. Therefore, eliminating and replacing those employees with new employees who hold better work skills and ethics will lead to an improvement in organizational performance.

Limitations and Directions for Future Research

Despite its significant contributions to theory and practice, this dissertation has certain limitations to be noted. First, all three empirical chapters of this dissertation analyze employee turnover at the organizational level by relying on an aggregated data structure. Using the aggregated data hinders the findings of this dissertation from making inferences about individual employees’ decision-making processes on turnover. An individual level analysis may be desired for robust inferences, but the lack of unique identifiers in FEVS does not allow researchers to track individual employees across time or match them to individual personnel data in a central personnel file.

Second, while this dissertation focuses on the three main types of employee turnover (employee transfer, quits, and involuntary turnovers), additional types of employee turnover have been unable to gain scholarly attention in the public management field. In particular, employee
downsizing has recently reemerged as an important strategy to reduce the size of the labor force in public organizations. For example, the Air Force recently announced its plan to use reduction in force (RIF) to eliminate more than 1,000 positions for civilian workers in its department. While both scholars and public unions have expressed tremendous concern about the potential negative effects of employee downsizing on the remaining employees’ work morale, theoretical perspectives predict two competing consequences, both positive and negative. Empirical investigations for these potential consequences have gained little attention among public management scholars. Therefore, future research is warranted in terms of how employee downsizing events affect the remaining employees’ work motivation.

Third, although the empirical models used in this dissertation were able to control for time-invariant organizational characteristics such as organizational culture and climate, different contexts across public agencies may lead to varying outcomes in managing employee turnover. For example, managers and supervisors may use different leadership skills across agencies. Or, former and current individual employees’ work skills and knowledge may also affect the consequences of employee turnover on organizational performance. Therefore, future research needs to design empirical models to investigate the potential role of different organizational contexts in predicting employee turnover behavior and its consequences for organizational performance.

Fourth, empirical findings of this dissertation rely on perceptual measures from the single survey data set, which raises the issue of potential common source bias. In both Chapters 2 and 3, both dependent and independent variables were measured using the same survey instrument in the same year. Theoretically, however, common source bias may not be a critical issue in this dissertation. As scholars (Fuller et al., 2016; Spector, 2006) have empirically confirmed, not all
perceptual measures cause common source bias. In particular, Spector (2006) suggested the statistical evidence that while self-reported variables to measure performance-related perceptions among employees are prone to common source bias, those to measure work-satisfaction or work-attitude among employees are generally not prone to common source bias as used in Chapters 2 and 3.

Fifth, the primary object of analysis in this dissertation was the U.S. federal bureaucracy, and therefore, the empirical findings and implications from this dissertation may not be generalized into other public organizations (such as local or state governments). While different types of public organizations may share commonalities in some aspects, state and local governments may have different contexts in their organizational structures, workforce compositions, and management practices. Therefore, it is a worth applying theoretical models developed in this dissertation to local/state governments and other organizations.
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*Organizational Research Methods, 9*, 221-232.


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