

**Pay-for-Performance Pay System and Job Attitudes
in Government Agencies**

BY

GEON LEE

B.A., Hanyang University, 1995

M.P.A., Indiana University, Bloomington, 2004

M.S., University of Michigan, Ann Arbor, 2006

THESIS

Submitted as partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Public Administration
in the Graduate College of the
University of Illinois at Chicago, 2011

Chicago, Illinois

Defense Committee:

James Thompson, Chair
Timothy Johnson, Advisor
Karen Mossberger
Sharon Mastracci
Soonhee Kim, Syracuse University

This thesis is dedicated to my wife, Eunyoung, without whom it would never have been accomplished.

ACKNOWLEDGMENTS

“so do not fear, for I am with you;
do not be dismayed, for I am your God.
I will strengthen you and help you;
I will uphold you with my righteous right hand”
(Isaiah 41:10)

First of all, I would like to thank my Lord for guiding me to successfully complete my doctoral degree. He always stays with me in the long journey of my study, encouraging me to look at the vision of my life after the journey. Through the journey, I have come to realize that He is the living God who comforts and upholds me.

There are many people I have to appreciate for this dissertation. First, I would like to express my thanks to Dr. James Thompson who is my dissertation chair. He helped me formulate the dissertation research ideas and guide me through the complete process. The research questions and ideas for this dissertation work grew out of discussions with him, becoming more concrete and clear as we continued our regular meetings. His constructive comments and criticisms helped me improve my dissertation.

I am also sincerely grateful to Dr. Timothy Johnson, who is my academic advisor in the program and one of the dissertation committee members. I will never forget his unlimited support and guidance for my study and research during the past five years. When I faced the most difficult time just before I started conducting my dissertation work and I was depressed, he

encouraged and continued to trust in me. He is the man who has always shown me what a scholar looks like.

Special thanks also go to other committee members, Dr. Karen Mossberger, Dr. Sharon Mastracci, and Dr. Soonhee Kim for their support and feedback. This dissertation was improved with their valuable comments.

I would like to extend my special thanks to Dr. YoungIk Cho who is an Associate Research Professor at the UIC Survey Research Laboratory. He helped me a great deal in the conduct of my own research, including my dissertation research. Scholarly discussions on quantitative research with him dramatically improved my research skills.

I would also like to express my thanks to my colleagues—Yongjae Kim, Benedict Jimenez, Yoonjik Cho, Chansu Jung, and Rob Seidner. Yongjae regularly gave me a call to cheer me up during my doctoral studies. Benedict and Yoonjik gave me a tip about how to effectively manage time and complete the dissertation manuscript, and their dissertations are the role models for mine. Chansu also encouraged me to successfully finish up my dissertation work—regular discussions with him about our joint work over the phone were my great joy and were also helpful to my dissertation research. Rob helped me in finding key human resource managers in federal agencies for case studies.

Finally, I simply cannot say thank you enough to my family members for being with me in the lonely journey. My wife, Eunyoung, and three children, Subin, Susanna, and Daniel were my great supporters during the journey. Without their support, this dissertation would have not been possible.

TABLE OF CONTENTS

<u>CHAPTER</u>	<u>PAGE</u>
I. INTRODUCTION	1
1.1 Motivation for the Dissertation	1
1.2 Significance of the Study	4
1.3 Research Questions	6
1.4 Organization of the Dissertation.....	7
II. PAY-FOR-PERFORMANCE IN FEDERAL AGENCIES	8
2.1 Brief History of Pay-for Performance in Federal Civil Service	8
2.2 Pros and Cons of Pay-for-Performance	12
2.3 Three Underlying Theories of Pay-for-Performance	15
2.3.1 Agency Theory.....	15
2.3.2 Expectancy Theory	16
2.3.3 Goal Setting Theory.....	18
2.4 Chapter Summary	19
III. LITERATURE REVIEW AND HYPOTHESES	20
3.1 Job Satisfaction and Turnover as Job Attitudes	20
3.1.1 Job Satisfaction	20
3.1.2 Job Turnover	21
3.2 Effects of Rewards and PFP on Job Satisfaction and Turnover Intention	22
3.2.1 Effects of Rewards on Job Satisfaction	22
3.2.2 Effects of Rewards on Job Turnover	23
3.2.3 The Hidden Cost of PFP: Crowding-Out.....	25
3.2.4 Application of Crowding-out Theory to Public Administration Literature	28
3.2.5 Is the Public Servant a Knight or Knave?	29
3.3 Social Capital Factors that Affect Job Satisfaction and Turnover Intention	33
3.3.1 Organizational Social Capital Theory.....	33

TABLE OF CONTENTS (continued)

<u>CHAPTER</u>	<u>PAGE</u>
3.3.2 Team Collaboration	33
3.3.3 Trust in Supervisor.....	35
3.3.4 Mission Attachment.....	36
3.4 Other Factors that Affect Job Satisfaction and Turnover Intention	37
3.5 Analytical Model	39
3.6 Chapter Summary	40
IV. RESEARCH METHODOLOGY	41
4.1 Data	41
4.1.1 Subjective Data	41
4.1.2 Objective Data	41
4.2 Measures.....	43
4.2.1 Dependent Variable	43
4.2.2 Independent Variable	44
4.3 Model Estimation	47
4.4 Chapter Summary.....	51
V. ANALYTICAL RESULTS.....	52
5.1 Sample Composition	52
5.2 Examining Perceived Values of Public Managers between the PFP and the GS.....	55
5.2.1 Measures of Work Values.....	55
5.2.2 Perceptual Discrepancies in Values between the PFP and the GS systems.....	57
5.3 Comparing Job Satisfaction among Agencies.....	67
5.3.1 Comparison of Job Satisfaction among Agencies	67
5.3.2 Comparison of Job Satisfaction between the PFP and the GS.....	67

TABLE OF CONTENTS (continued)

<u>CHAPTER</u>	<u>PAGE</u>
5.4 Comparing Job Turnover Intention among Agencies	71
5.4.1 Comparison of Job Turnover Intention among Agencies	71
5.4.2 Objective Turnover Rates among Agencies	72
5.4.3 Comparison of Job Turnover Intention between the PFP and the GS	75
5.5 Moderate Effects of Pay Systems on Job Attitudes	75
5.5.1 Job Satisfaction Models for Supervisors.....	77
5.5.2 Job Satisfaction Models for Nonsupervisors	84
5.5.3 Job Turnover Models for Supervisors.....	89
5.5.4 Job Turnover Models for Nonsupervisors	94
5.6 Chapter Summary	98
VI. CASE STUDY: PFP SYSTEMS IN FIVE AGENCIES	100
6.1 Introduction	100
6.2 Procedures	100
6.3 Findings	101
6.3.1 Federal Deposit Insurance Corporation (FDIC)	101
6.3.2 Internal Revenue Service (IRS)	103
6.3.3 National Institute of Standards and Technology (NIST)	104
6.3.4 Federal Aviation Administration (FAA).....	106
6.3.5 National Oceanic Atmospheric Administration (NOAA).....	107
6.4 Conclusion.....	109
6.5 Chapter Summary	112
VII. CONCLUSIONS	114
7.1 Findings for the Main Hypotheses	114
7.2 Findings for Other Determinants.....	115
7.3 Theoretical Implications.....	117

TABLE OF CONTENTS (continued)

<u>CHAPTER</u>	<u>PAGE</u>
VII. CONCLUSION (continued).....	
7.4 Policy Implications.....	122
7.5 Research Implications.....	123
7.6 Limitations of the Study.....	124
7.7 Suggestions for Future Research.....	126
APPENDICES	128
Appendix A	129
Appendix B	131
Appendix C	134
Appendix D	137
Appendix E.....	141
BIBLIOGRAPHY.....	144
VITA.....	160

LIST OF TABLES

<u>TABLE</u>	<u>PAGE</u>
I	PAY-FOR-PERFORMANCE IN U.S.FEDERAL AGENCIES.....11
II	EXPLORATORY FACTOR ANALYSIS FOR ORGANIZATIONAL SOCIAL CAPITAL VARIABLES46
III	UNWEIGHTED AND WEIGHTED SOCIODEMOGRAPHIC COMPOSITIONS OF SAMPLE.....54
IV	INTRINSIC AND EXTRINSIC VALUES WITH EXPLORATORY FACTOR ANALYSIS.....56
V	CORRELATION MATRIX OF PERCEIVED VALUE VARIABLES56
VI	CROSSTABS OF INTRINSIC VALUES OF EMPLOYEES BY PAY SYSTEMS (%).....58
VII	ODDS-RATIOS OF INTRINSIC VALUE MODELS59
VIII	CROSSTABS OF EXTRINSIC VALUES OF EMPLOYEES BY PAY SYSTEMS (%).....60
IX	ODDS-RATIOS OF EXTRINSIC VALUE MODELS.....61
X	LOGIT MODELS PREDICTING PERCEPTUAL DIFFERENCES IN INTRINSIC VALUES BETWEEN PFP AND GS SYSTEMS63
XI	LOGIT MODELS PREDICTING PERCEPTUAL DIFFERENCES IN EXTRINSIC VALUES BETWEEN PFP AND GS SYSTEMS64
XII	MEAN AND CONFIDENCE INTERVAL FOR OUTCOME VARIABLES ACROSS AGENCIES69

LIST OF TABLES (continued)

<u>TABLE</u>	<u>PAGE</u>
XIII	DIFFERENCE IN MEAN OF JOB SATISFACTION BETWEEN THE GS AND THE PFP70
XIV	DIFFERENCE IN MEAN OF TURNOVER INTENTION BETWEEN THE PFP AND THE GS75
XV	DESCRIPTIVE STATISTICS OF VARIABLES76
XVI	HLM PREDICTING JOB SATISFACTION FOR SUPERVISORS81
XVII	HLM PREDICTING JOB SATISFACTION FOR NONSUPERVISORS86
XVIII	HLM PREDICTING JOB TURNOVER INTENTION FOR SUPERVISORS91
XIX	HLM PREDICTING JOB TURNOVER INTENTION FOR NONSUPERVISORS95
XX	SUMMARY OF HYPOTHESIS TESTS99
XXI	PAYBAND SYSTEM FEATURES AND DESIGNES ACROSS FIVE AGENCIES110
XXII	PAYBAND SYSTEM FEATURES THAT LEAD TO A GREATER PERFORMANCE ORIENTATION ACROSS FIVE AGENCIES112

LIST OF FIGURES

<u>FIGURE</u>	<u>PAGE</u>
1. Theoretical Framework of Effect of Pay Systems on Job Attitudes	32
2. Analytical Model that Predicts Job Attitudes	39
3. Comparisons of Odds Ratio of the Values that are Significant (PFP=1, GS=0)	66
4. Comparison of the Degree of Job Satisfaction Across Federal Agencies	68
5. Comparison of the Degree of Job Turnover Intention Across Federal Agencies.....	71
6. Objective Turnover Rates Across Federal Agencies, By Year (N=44)	73
7. Subjective and Objective Turnover Rates Across Federal Agencies, By Year (N=44).....	74
8. Relationships Between Monetary Rewards and Job Satisfaction Across Agencies, By Pay Systems for Supervisory Employees (N=44)	83
9. Cross-Level Interaction Effect of Pay Systems on the Relationship Between Rewards and Job Satisfaction for Supervisory Employees.....	83
10. Relationships Between Monetary Rewards and Job Satisfaction Across Agencies, By Pay Systems for Nonsupervisory Employees (N=44).....	88
11. Cross-Level Interaction Effect of Pay Systems on the Relationship Between Rewards and Job Satisfaction for Nonsupervisory Employees	89
12. Relationships Between Monetary Rewards and Job Turnover Intention Across Agencies, By Pay Systems for Supervisory Employees (N=44)	93

LIST OF FIGURES (continued)

<u>FIGURE</u>		<u>PAGE</u>
13.	Cross-Level Interaction Effect of Pay Systems on the Relationship Between Rewards and Job Turnover Intention for Supervisory Employees	93
14.	Relationships Between Monetary Rewards and Job Turnover Intention Across Agencies, By Pay Systems for Nonsupervisory Employees (N=44).....	97
15.	Cross-Level Interaction Effect of Pay Systems on the Relationship Between Rewards and Job Turnover Intention for Nonsupervisory Employees	97

SUMMARY

It is well documented that public organizations are different from private ones in many respects –the goals of the organization, institutional rules, personnel systems, and employee motivation and behaviors. Over the past three decades, much research has revealed differences in behaviors and perceptions between the private and public sectors–known as sector difference–in the public administration field. Since the New Public Management (NPM) movement, public-sector organizations have adopted many managerial principles from the private sector. Pay-for-performance (PFP) is one of the common managerial practices that has been widely employed in public organizations. At present, many federal government agencies utilize alternative pay systems based on the PFP mechanism, replacing the General Schedule (GS) system in which pay increase is based on seniority.

With the growing popularity of PFP systems in the public sector, many public administration scholars are raising concerns that the use of PFP in the public sector could have negative consequences for employees and organizations. They claim that PFP undermines the intrinsic and public service motivations of public employees, and causes the public sector to attract extrinsically–motivated individuals who place a high value on monetary rewards. This research investigates differences in employees’ job attitudes may be different between the PFP and the GS systems within the public sector and examines whether public managers working in agencies with PFP have higher rewards preferences, i.e. that their positive job attitudes are largely determined by monetary rewards. It is hypothesized that monetary rewards have a larger impact on employee job attitudes such as job satisfaction and turnover in the PFP system than in the GS system.

This dissertation research will test the proposition by comparing employees' perceptions and attitudes in the two pay systems. Additionally, this research examines how pay systems differ among federal agencies adopting PFP, through the case study. Using hierarchical linear modeling (HLM), I examine cross-level interaction effects in how pay systems moderate the relationships between monetary rewards and employee job attitudes. As hypothesized, employees in the PFP are found to be different from those in the GS regarding job attitudes, with the former group's positive job attitudes more influenced by monetary rewards than the latter's. Based on empirical findings, this research will discuss the theoretical and practical implications of these findings for human resource management in government agencies.

I. INTRODUCTION

1.1 Motivation for the Dissertation

Administrative reforms such as the New Public Management (NPM) or the reinventing government movement have greatly changed administrative phenomena around the world. Launched in New Zealand in the late 1970s, the NPM movement has spread to other countries such as Australia, United Kingdom, and Canada (Kettl, 2005). The core spirit of the NPM is the new managerialism in which government seeks to do “more with less” by providing quality public services with fewer resources. The United States has a special title for its reform activities, “reinventing government,” which was first advocated by Osborne and Gaebler in 1992. The Clinton administration accepted this paradigm as a reform policy, initiating the National Performance Review (NPR) led by Vice President Gore (Kettl, 2005; Lenkowsky & Perry, 2000; Thompson, 2000). Both sets of administrative reforms have widely utilized market mechanisms to enhance efficiency and effectiveness.

For instance, pursuant to the reinventing government movement in the U.S., performance measurement practices have been widely used in the public sector (Kettl, 2005). The implementation of the Government Performance and Results Act (GPRA) of 1993 required government agencies to set up 5-year strategic plans, prepare annual performance plans, and report annual actual performance (Poister, 2003). In 2002, the Bush administration instituted the Program Assessment Rating Tool (PART) to assess and enhance the performance of federal programs. In addition to federal agencies, state and local governments have their own systems to measure and enhance the performance

of their agencies (Berman, West, & Wang, 1999; Melkers, 2006; Wang & Berman, 2000). The ultimate goal of performance measurement practices is to help public agencies effectively attain their goals and missions (Brewer & Selden, 2000).

In order to enhance organizational performance, a variety of performance management practices have been implemented in government agencies. The management practices include total quality management, performance measurement, and performance-contingent pay systems (Moynihan & Pandey, 2005). Additionally, human resource management practices are considered a significant managerial instrument for enhancing organizational effectiveness (Daley, 2006; Perry, 1993; Tompkins, 2002). Government agencies have implemented strategic human resource management practices to clarify mission, align their human management practices closely with organizational goals, retain human capital, and attract potential job seekers (Moynihan & Landuyt, 2008).

Retaining highly qualified workers in the public sector is necessary for accomplishing organizational objectives and for providing good public service to taxpayers. Voluntary turnover has been an increasing concern in the federal services since the late 1970s (Kellough & Osuna, 1995). High job turnover results in substantial costs in the recruitment and training of new employees (S. E. Kim & Lee, 2007; Moynihan & Landuyt, 2008), and by undermining remaining workers' morale (S. E. Kim & Lee, 2007; Meire & Hicklin, 2008). Some federal agencies with a high level of voluntary job turnover have experienced difficulty fulfilling their mission (Kellough & Osuna, 1995). In order to retain human capital, government agencies have come up with alternatives to reduce job turnover.

For instance, pay-for-performance (PFP) is one of the most popular human resource management practices to address employee retention (Daley, 2006; Kettl, 2005; Lovrich, 1987).

The federal Civil Service Reform Act of 1978 (CSRA) introduced merit pay for mid-level managers in the federal government (Gabris, 1986; Ingraham, 1993b). Since the act, a number of public organizations including local and federal agencies have introduced the PFP schemes (Kellough & Selden, 1997). At present, nearly 300,000 employees in federal agencies are covered by PFP systems under which their pay increases are contingent on job performance (Ginsberg, 2008a). There is variation in PFP design across agencies, but the common feature of these PFP systems is the utilization of a flexible pay structure linking individual and organizational performance to promotions, base salary increases, or one-time bonuses –with reduced emphasis on seniority as a determinant of pay. Given that human capital plays a crucial role in enhancing organizational performance, identifying the predictors of employee work attitudes such as job satisfaction and job turnover is an important research subject in public management research. This research attempts to identify the determinants of job turnover and job satisfaction in public organizations. Of primary interest is how the type of pay system –pay for performance vs. traditional impacts employee job satisfaction and turnover.

First, this study will examine the linkage between organizational social capital factors and employee job satisfaction/turnover intention in federal agencies. Second, I will explore whether the work attitudes differ depending on pay system –pay-for-performance (PFP) system vs. general schedule (GS) system. Third, this research will investigate the effect of the pay system to see whether it influences the relationship between rewards and job satisfaction/ job turnover intention. The thesis will conclude by noting implications for both public management scholars and practitioners.

1.2 Significance of the Study

Job satisfaction and turnover intention are considered as important job attitudes associated with individual and organizational performance in an organization. Research on job attitudes is well documented in the public management literature. Public administration scholars have tried to identify the determinants of job attitudes in the public sector (see, for example, Choi, 2009; S. Kim, 2009; Ting, 1997; Wright & Davis, 2003). The main determinants of public employees' job satisfaction were found to be job characteristics, task importance, work environment, and individual characteristics. As job turnover became recognized as an important issue of human resource management in the public sector, job turnover research has been on the rise. In most studies, turnover is utilized as a dependent variable, and is predicted by a wide variety of factors including individual characteristics, organizational features, and management practices (e.g., Ippolito, 1987; S. Y. Lee & Whitford, 2008; Lewis, 1991; Selden & Moynihan, 2000a). It has been found that public employee job turnover is correlated with job characteristics such as job and pay satisfaction (S. Y. Lee & Whitford, 2008; Moynihan & Landuyt, 2008; Selden & Moynihan, 2000a), work environment (S. Y. Lee & Whitford, 2008), work diversity (Choi, 2009), and human management practices (S. M. Kim, 2005; Moynihan & Landuyt, 2008; Selden & Moynihan, 2000a).

Although prior studies on job attitudes found many important predictors associated with job satisfaction and turnover in the public sector, some factors were little explored. Pay systems are the important human resource management factors that may affect employees' motivation and job attitudes in an organization. At the federal level, there are two types of pay systems: Pay-for-Performance (PFP) and General Schedule (GS) systems. PFP, a market-based personnel system, is increasingly common in the public sector (Bertelli, 2006; Dowling & Richardson,

1997; Ingraham, 1993b; Marsden & Richardson, 1994; Schulz & Tanguay, 2006). It, however, lies at the heart of disputes over the effects of market-based mechanisms on public organizations. A number of public administration scholars are concerned that market values may dampen public values, public service ethic and motivation (Houston, 2009; Moynihan, 2008; Perry, Engbers, & Jun, 2009; Perry, Mesch, & Paarlberg, 2006). Denhardt and Denhardt (2000) pointed that market-based values conflict with traditional normative values in the public sector. In spite of the importance of PFP systems, none of the studies to date have explored how the PFP systems affect job attitudes in the public administration field. This research is unique in that it attempts to empirically investigate the relationship between market-based PFP and job attitudes of employees in government agencies.

Although the emphasis in this study is on the comparison between the PFP and the GS systems, a supplemental investigation will be made to examine whether the design features and the degree of performance orientation are homogenous or heterogeneous among agencies with PFP. The supplemental investigation is warranted to assess whether agencies with PFP are appropriately characterized as a single pay system category. In addition to assessing the impact of pay system type on job satisfaction/turnover, this research will also seek to investigate the impact of organizational social capital factors on job satisfaction/turnover intention in federal agencies.

1.3 Research Questions

This study aims to investigate the effects of PFP as a market-based institution on public employees' job attitudes— job satisfaction and turnover intention. This proposed research seeks to answer the following specific research questions:

- What factors are associated with public managers' job satisfaction and job turnover intention in federal agencies?
- Do the relationships between extrinsic rewards and job turnover intention /job satisfaction of employees vary depending on pay systems in federal agencies?
- Do pay design features and performance orientation vary across agencies that adopt PFP?
- What are the implications of alternative reward systems for job turnover intention and job satisfaction in federal agencies?

1.4 The Organization of the Dissertation

The dissertation research consists of seven chapters. Chapter 1 provides an introduction of the study, addressing the importance of the topic, the motivation of the study, and presenting the research questions. Chapter 2 begins with an introduction of pay-for-performance in the public sector, including the background, theories, and issues of pay-for-performance in public institutions. Chapter 3 introduces a review of the literature on the effects of pay-for-performance on job attitudes of public managers, and the determinants of job attitudes—job satisfaction and turnover. This chapter also provides the research questions, key hypotheses, and analytical frameworks. Chapter 4 describes the sources of data, measurement, and analytical techniques. Chapter 5 provides a variety of analytical findings, including descriptive statistics, perceptual distinctions in work values between PFP and GS agencies, trends of job attitudes across federal agencies, and analytical results. Chapter 6 introduces the paybanding systems of the agencies employed in this study. In-depth interviews of key staff in the departments of human resource management in each agency are employed to compare how paybanding policies vary across the federal agencies. This chapter includes brief case studies of the different PFP systems. The dissertation concludes with the summary of the findings, and a discussion of the implications and limitations of the study as well as a future research agenda.

II. PAY-FOR-PERFORMANCE IN THE FEDERAL AGENCIES

2.1 Brief History of Pay-for-Performance in Federal Civil Services

PFP¹ has a long tradition in the U.S. civil service personnel system (Perry, 1986), and has been widely accepted in the federal government since the Civil Service Reform Act (CSRA) of 1978. The CSRA instituted merit pay in the government (D. E. O'Toole & Churchill, 1982), by requiring all federal agencies to establish a Merit Pay System (MPS) for members of the Senior Executive Service (SES) and for mid-level managers (GS 13-15) (Ingraham, 1993a, 1993b; Kellough & Lu, 1993; Perry, Hanzlik, & Pearce, 1982). Under the MPS system, employees received a small annual salary adjustment, with pay increases based primarily on job performance. However, this system had some challenges including problems with performance appraisals. The Performance Management and Recognition System (PMRS) replaced MPS program in 1984 and was subsequently abandoned in 1993. Under the PMRS, employees received pay increases proportionate to their job performance were evaluated according to various performance levels, and could receive two types of rewards—performance rewards (or pay increases based on performance) and cash rewards (or one-time bonuses) (GAO, 1987).

The CSRA also allowed agencies to initiate more flexible personnel management practices through the use of personnel demonstration projects (Brook & King, 2008). Some federal agencies have used the demonstration project authority to experiment with PFP and to develop a stronger link between pay and performance. Under the CSRA,

¹ Even though PFP is a special case of merit pay systems, I use pay-for-performance and merit pay interchangeably in this study.

OPM has the authority to designate personnel demonstration projects (GAO, 2004).² With OPM's approval, federal agencies can create demonstration projects for the purpose of gaining flexibility in human resource management practices including in the areas of employee recruitment, promotion, and pay.

The first personnel demonstration project under CSRA began in 1980 at two Naval research laboratories: one in San Diego, CA, the other in China Lake, CA (Thompson, 2007). The Navy demonstration project employed a performance-based paybanding system³ –for the first time in the U.S.– in which 15 General Schedule grades were consolidated into several broad pay bands and objective appraisal systems were used to assess employees' job performance (Schay, 1988). This project was so successful that the project received permanent authorization. There was considerable improvement at both facilities with regard to recruitment, job retention, and employees' job satisfaction (Thompson, 2007). The diffusion of PFP within the government was facilitated by the result-oriented policy initiatives of the Clinton and Bush administrations. The Personnel Reinvention Act (PRA) proposed by the Clinton administration would have deregulated merit pay systems, granting agencies more flexibility and managerial discretion (Brook & King, 2008; Kellough & Selden, 2003). The Bush administration proposed the Managerial Flexibility Act (MFA) to give federal agencies greater managerial and pay flexibilities (Brook & King, 2008; Moynihan, 2005). To date, there have been 12 demonstration projects in which the effectiveness of PFP has been investigated (GAO, 2004; Selden, 2009).

In addition to the demonstration projects, some federal agencies have adopted their own personnel systems, replacing the General Schedule with alternative pay schemes that incorporate

² The law requires that the demonstration project has at least 5,000 employees, run with a 5-year time limit, and publish a project plan in Federal Register (GAO, 2004).

³ Unlike in the General Schedule system where pay increases are determined by seniority, employees receive basic salary increases on a basis of job performance in the paybanding system. It has broader pay bands

performance-oriented paybanding. At present, about 20 agencies have alternative pay systems in which pay is contingent on employees' job performance, including the Internal Revenue Service (IRS), the Government Accountability Office (GAO), and the Department of Defense (DoD) (Selden, 2009; Thompson, 2007).

For instance, under the IRS Restructuring and Reform Act of 1997, the IRS implemented a paybanding system for manager-and supervisor-level employees. The Act gave IRS flexibilities in compensation and hiring (Bertelli, 2006). The paybanding scheme of IRS has several pay levels within the same band—in total, 10 pay levels in 4 different bands with pay increases determined by annual job performance ratings (Thompson, 2007). The Department of Defense (DoD) initiated a new personnel system known as the National Security Personnel System (NSPS)⁴ in which the General Schedule pay scheme for most DoD employees was replaced with a PFP system. The DoD is the largest department in the federal government with nearly 670,000 civilian employees. As of 2008, a total of 180,000 employees (or 26.9%) were covered by the NSPS. Like other PFP systems, the NSPS system was designed to reward high-performing employees (Ginsberg, 2008b).

⁴ The NSPS was authorized by Congress in 2004 and put into practice in mid-2006. The program met with opposition from the federal employees union and was subsequently repealed in the National Defense Act of 2010. According to the law, the all NSPS employees must be transitioned back to the General Schedule system no later than January 1, 2012 (Ginsberg, 2008b).

TABLE I
PAY-FOR-PERFORMANCE SYSTEMS IN U.S. FEDERAL AGENCIES

Agency	Start date	Total employees	Remarks
Demonstration Projects		43,676	
DoD –Navy “China Lake”	1980	3,843	
Commerce –NIST	1988	2,700	
Commerce –Various components	1998	7,440	
DoD –Acquisition workforce	1999	2,267	
DoD S&T Labs			
DoD –AFRL	1997	2,631	
DoD –AMRDEC	1997	2,623	
DoD –ARL	1998	1,868	
DoD –MRMC	1998	1,345	
DoD –NAVSEA	1998	12,701	
DoD –ERDC	1998	1,528	
DoD –NRL	1999	2,322	
DoD –CERDEC	2002	1,833	
Energy –NNSA	2008	2,093	
Independent Systems		311,687	
Transportation –FAA	1996	37,020	
Treasury–IRS	2001	8,176	Only supervisor-level
GAO	2002	2,746	
Homeland Security –TSA	2006	61,475	
Treasury–TTB	2003	127	
Justice–ATF	2001	279	
IC	2006	NA*	
NGA	1998	NA*	
DoD–NSPS	2004	187,000	
Financial Regulatory Agencies			
Treasury–OTS	1989	1,015	
Treasury–OCC	1991	3,129	
NCUA	1992	904	
FDIC	2003	5,021	
FCA	1993	264	
CFTC	2006	500	
FHFB	1995	136	
OFHEO	1992	259	
SEC	2002	3,636	
Governmentwide Executive Pay		8,305	
SES	2004	7,338	
SFS	2004	967	
Grand Total		363,668	

Source: OPM report (November 2008)

2.2 Pros and Cons of Pay-for-Performance

PFP is an efficient management tool that allows employees to receive pay increases on the basis of their job performance. It is intended to improve individual performance (Lawler III, 1971, 1981), and ultimately organizational performance and productivity (Locke et al., 1980; Risher, 2002; Rynes, Gerhart, & Parks, 2005; Schulz & Tanguay, 2006). Previous studies have shown that employees' perceptions of PFP are rather positive. Lovrich et al. (1980), for instance, found that a majority of employees believed that a good performance reward system could improve individual performance, motivation, and organizational productivity. Streib and Nigro (1993) found that a majority of PFP users and non-users viewed PFP as an effective management tool. Kellough and Selden (1997) revealed that most employees in state governments viewed merit pay as a motivator to improve their job performance, clarify employees' roles and responsibilities, and establish a link between performance and pay. At the same time, PFP can increase the job satisfaction of high job performers, reduce job turnover of employees, and attract competent job seekers (Kellough & Selden, 1997; Milkovich & Wigdor, 1991; Risher, 2002). Additionally, PFP improves communications between supervisors and subordinates (Ingraham, 1993b; Streib & Nigro, 1993).

Although PFP has been regarded as an efficient mechanism to increase individual and organizational performance, attract competent individuals, and retain human capital in organizations, a growing consensus among public administration scholars is that PFP is not suitable for the public sector (see, for example, Houston, 2009; Ingraham, 1993a; Kellough & Nigro, 2002; Perry, Engbers, & Jun, 2009; Perry, Hanzlik, & Pearce, 1982; Thayer, 1987). One of the most critical issues that faces PFP is whether the performance appraisal systems can be objective and fair in public organizations (Gabris & Ihrke, 2000; Gaertner & Gaertner, 1985;

Hyde, 2005; Kellough & Lu, 1993). Relative to private organizations, public organizations have intangible, ambiguous, and conflicting goals (Propper & Wilson, 2003; Rainey, 1989, 1997), which threaten accurate and objective performance measurement (Hyde, 2005).

In PFP systems, the supervisor plays a key role in the performance appraisal process⁵. The main role of the supervisor is to fairly and objectively evaluate the job performance of subordinates. The role of supervision in PFP may be different from that in the General Schedule in that supervisors in the former have greater power than those in the latter to influence pay increases of subordinates (Thompson, 2006). Accordingly, supervisors should have a high degree of trustworthiness and credibility to assure the objectiveness and fairness of performance appraisal. Gabris and Ihrke (2000) have shown that employees who feel their supervisors are credible tend to perceive performance appraisal procedures as valid and fair. Fulk and his associates (1985) empirically found that perceptions of fairness and accuracy in performance appraisal were highly correlated with leadership credibility. It seems obvious that higher leadership credibility makes significant contributions to the success of the PFP system.

⁵ The success of PFP systems depends to a large extent on performance evaluations (Gabris & Ihrke, 2000; Kellough & Selden, 1997). Rynes et al. (2005) noted that “performance evaluation is believed to be capable of improving performance in two ways: through developmental feedback (directed primarily at improving ability to perform), and through administrative decisions that link evaluated performance to organizational rewards and punishment such as pay, promotion, or discharge (aimed primarily at enhancing motivation)” (p.573). Performance appraisal relies heavily on subjective measures in public organizations because of the inaccessibility of objective performance measures. A lack of objective performance measures yields concerns about the credibility and fairness of the PFP system (Kellough & Nigro, 2002; Kellough & Selden, 1997; Rynes, Gerhart, & Parks, 2005). Based on a survey conducted in 1993, Kellough and Selden (1997) found that a great number of employees in the Georgia state government were concerned about the performance evaluation systems, even though most of them perceived PFP as an effective tool to improve individual and organizational performance. Kellough and Nigro (2002) investigated employees’ perceptions about fairness of performance appraisal systems in 2000 as a follow-up to previous research, finding that about 50 percent of the employees did not agree that the performance appraisal systems of their agency were fair.

PFP may have a negative effect on the job attitudes, motivations and perceptions of employees. Many public administration scholars are concerned that the PFP mechanism may undermine intrinsic and public service motivations of public managers (e.g., Houston, 2009; Moynihan, 2008; Oh & Lewis, 2009; Perry, Engbers, & Jun, 2009; Stazyk, 2009). Put it another way, the PFP may cause public employees to devote themselves to doing work only if monetary incentives are offered. This motivation issue will be explained later in more detail. In addition, PFP may promote competition among employees, thereby impeding collaboration and teamwork for mutual goals within an agency (Ingraham, 1993a; Kellough & Selden, 1997; J. L. Pearce & Perry, 1983). Given that collaborative management is widely recognized as a robust predictor of high performance and problem-solving in public organizations (Whitford et al., 2010), the use of PFP may inhibit high performance (Moynihan 2008; Perry 1986). Burgess and Ratto (2003) state that the PFP scheme can enhance public trust in government and the competence and efficiency of public programs. However, according to Houston (2009), PFP does not make a significant contribution to increasing public trust in public organizations among the public. Some studies have found that public employees do not trust in PFP as a means of improving competence of in the performance of their tasks (Kellough & Nigro, 2005; Oh & Lewis, 2009; Rainey & Kellough, 2000).

In addition, PFP has a negative impact on organizational structures because of additional red tape and innovation. PFP schemes need additional supervision time and entail extensive paperwork-based activities (Kellough & Selden, 1997; Streib & Nigro, 1993). Streib and Nigro (1993), for instance, showed that a majority of the employees working under PFP systems complained that they had spent between 5 and 20 percent of their time on PFP-related activities

at work. Additionally, PFP can reduce the risk-taking behavior of public employees (Kohn, 1996), which may undermine innovation in organizations.

2.3 Three Underlying Theories of Pay-for-Performance

2.3.1 Agency Theory

The fundamental assumption underpinning agency theory is that human beings are selfish, instrumental, and purposive, pursuing individual utility rather than organizational objectives in an organization (Perrow, 1986; Stroh et al., 1996; Zey, 1998). Organizations are perceived as collectives of individuals that have a variety of conflicting goals based on their self-interests (Eisenhardt, 1988; Zey, 1998). Agency theory typically deals with the relationship between the principal and the agent; the former hires the latter to “get things done” in the organization (Lane, 2000; Lynn, Heinrich, & Hill, 2001; Stroh et al., 1996). One of the most serious problems in principal-agent interaction is the agency problem (Eisenhardt, 1989), which occurs when the goals of the principal are in conflict with those of the agent—because the agent tends to pursue his/her self-interest (Eisenhardt, 1989; Lynn, Heinrich, & Hill, 2001). The problem stems from the proposition that the principal has little information about the behaviors of the agent.

Within the principal-agent framework, the principal’s lack of information about the agent gives rise to opportunistic behaviors on the part of the agent: adverse selection and moral hazard ⁶ (Eisenhardt, 1989; Lane, 2000; Perrow, 1986). Adverse selection refers to the agent’s opportunistic behavior— the agent tends to overstate his skills and experience and because of the principal’s lack of information about the qualifications of the agent, the principal determines the agent’s salary level on the basis of the agent’s self-reported information. Moral hazard refers to

⁶ Lane (2000) named adverse selection as pre-contractual opportunism, and moral hazard as post-contractual opportunism (187).

the agent's opportunistic behavior which runs counter to the principal's goals at work; the principal cannot observe what the agent is actually doing because of a lack of sufficient information. Both adverse selection and moral hazard result from information asymmetry between the principal and agent (Perrow, 1986).

Generally, the principal has two primary options in order to deal with the problem of asymmetric information (Demski & Feltham, 1978; Denis, Denis, & Sarin, 1999; Eisenhardt, 1988, 1989; Perrow, 1986). The principal can observe the behaviors of the agent by establishing monitoring systems such as additional layers of supervision; alternatively, the principal can adopt a contract using performance-contingent incentives which enables the agent to be aligned with the preferences of the principal. Eisenhardt (1989) argues that while monitoring is used in a short-term contract, monetary incentives should be utilized in a long-term contract. Although the monitoring mechanism can minimize the shirking behavior of agents, it entails high transaction costs and it is difficult to monitor unobservable behaviors (Denis, Denis, & Sarin, 1999; Lynn, Heinrich, & Hill, 2001). Instead, performance-based incentive mechanisms are recognized as a cost effective tool to resolve the goal conflicts and challenges (Eisenhardt, 1988; Lynn, Heinrich, & Hill, 2001).

2.3.2 Expectancy Theory

Expectancy theory, first put forward by Vroom (1964), is primarily concerned with an individual's work motivation and performance (Mastrofski, Ritti, & Snipes, 1994). Vroom (1964) proposed in this theory that the motivational force to make a organizational member do something is a function of the multiplicative interaction of the likelihood that the behavior will produce outcomes – expectancy– and subjective desirability–valence– of the outcomes. There

are three key factors in expectancy theory: instrumentality, valence, and expectancy.

Instrumentality refers to the individual's subjective belief that there is a link between outcomes – e.g., the first outcome affects the second one. Valence is defined as the individual's perceived desirability of job outcomes; valence is positive if the outcome is perceived to be desirable, negative if it is considered to be undesirable. Expectancy is defined as “a momentary belief concerning the likelihood that a particular act will be followed by a particular outcome” (Vroom, 1964: 17). The range of the value is from 0 (no relationship) to +1 (completely sure that job performance will result in the outcome).

The underlying assumption of the theory is that workers rationally make choices about their work behavior, as opposed to the idea that individuals are intrinsically motivated.

Expectancy theory posits that the expected level of effort of workers is jointly determined by the individual's belief that performance goals are desirable, that he or she has the ability to perform at the desired level, and the likelihood that their efforts will result in the attainment of these rewards. Put it another way, employees do their best to achieve organizational goals when they believe that accomplishment will lead to desirable outcomes and they believe that performance will lead to rewards they value (Vroom, 1964). Vroom's expectancy theory has been refined by many scholars with respect to concepts and methodologies (for example, Ajzen & Fishbein, 1980; Lawler III, 1971, 1981; Magnusson & Endler, 1977; L. E. Miller & Grush, 1988; Mitchell, 1982).⁷ In particular, Lawler (1971; 1981) looked at pay as the most attractive reward to motivate human actions and influence performance. According to him, expectancy theory suggests that an organization provides individuals with performance-contingent rewards as a motivator to elicit their best efforts for the desirable outcomes.

⁷ Whereas Vroom viewed that the behavior of individuals was largely determined by their belief and perception, other theorists who claimed the refinement of expectancy theory proposed that motivators for work efforts were influenced by environmental factors as well as internal belief and perception.

2.3.3 Goal Setting Theory

Grounded in Taylor's Scientific Management, goal setting theory is recognized as a useful perspective to explain human action in organizations (Locke, 1978). Goal setting is a motivational factor to achieve a high level of job performance in organizations (Erez & Kanfer, 1983). The theory assumes that human beings behave in accordance with conscious goals or intentions (Locke & Latham, 1990). Goal setting theory assumes that goals are not given, instead individuals choose them of their own free will. In this view, goals are assigned to individuals in an organization, but it is their decision whether or not they accept the organizational goals as their own. Erez and Kanfer (1983) indicated that monitoring and evaluating the goal-directed behavior of individuals is necessary to minimize discrepancies between externally-imposed goals and the intentions of individuals to achieve the goals and valued outcomes. In particular, tangible compensation such as monetary rewards is used to elicit the goal directedness of employees in organizations (Campbell & Furrer, 1995; Locke & Latham, 1990).

Locke and Latham (1990) made the claim that goal setting should make a significant contribution to performance; the more difficult the goal, the higher the performance. Monetary rewards enable organizational members to set up a difficult goal, maintaining goal commitment (Locke & Latham, 1990; Locke et al., 1981). Hollensbe and Guthrie (2000) maintained that financial rewards would stimulate individuals to set challenging goals. While much research has documented the direct relationship between monetary rewards and performance, goal-setting theory proposes that goal setting mediates such a relationship (Latham & Yukl, 1975; Locke, 1968); high powered incentives motivate an employee to specify more challenging goals, which, in turn, lead to a higher level of performance (Campbell & Furrer, 1995; Hollensbe & Guthrie,

2000). Latham and Yukl (1975) posit that goal attainment is largely determined by performance-contingent rewards and well-established performance evaluation systems in organizations.

2.4 Chapter Summary

Since the Civil Service Reform Act (CSRA) of 1978 was initiated, PFP systems have been widely adopted in federal agencies. The growing popularity of PFP in government agencies has created a debate among scholars. While some scholars argue that PFP is an effective management tool that will motivate employees to work better, others claim that it jeopardizes cooperation and team work, and increases the job dissatisfaction of employees because of imperfect performance appraisals. PFP mechanisms are grounded in three different theoretical perspectives: agency, expectancy, and goal setting theories.

The next chapter reviews the literature regarding relationships between job attitudes and a set of predictors including PFP systems, and provides a discussion of hypotheses to be tested and the model employed in this research.

III. LITERATURE REVIEW, HYPOTHESES, AND FRAMEWORK

3.1 Job Satisfaction and Turnover as Job Attitudes

3.1.1 Job satisfaction

Job satisfaction has been considered one of the important job attitudes in organization studies (Wright & Davis, 2003), and has long been recognized as a facilitator of individual and organizational performance in an organization. Job satisfaction is defined as “individual’s response to their work place, which includes unionization and its impact on perceptions of the work setting” (Hopkins, 1983: 22). Locke (1969) defines it as “the pleasurable emotional state resulting from the appraisal of one’s job as achieving or facilitating the achievement of one’s values” (316). Job satisfaction is not merely a perception of work itself, but an attitude that has been influenced by the variety of work settings encompassing a worker in an organization (Spector, 1997).

Herzberg (1966; 1968) proposes *motivation-hygiene* theory ⁸ to account for job satisfaction and suggests the antecedents of job satisfaction and dissatisfaction. According to this theory, whereas job satisfaction is determined by the motivation factor, job dissatisfaction is influenced by the hygiene factor. This theory holds that changes in the hygiene factor do not contribute to increasing job satisfaction, only affecting a degree of job dissatisfaction. Unlike other scholars who emphasize work environment as one of

⁸ This theory has its roots in a study of Herzberg, Mausner, and Snyderman (1959), which was proposed by analysis of interviews of 203 accountants and engineers. The theory assumes that job satisfaction and dissatisfaction are not on a same continuum; in other words, satisfaction and dissatisfaction come from two different factors –motivation and hygiene. Although the theory is powerful in explaining the determinants of job satisfaction, but it provokes much criticism from many scholars because of its methodological limitations (Sachau, 2007). While the motivation factor refers to achievement, recognition, responsibility, advancement, work itself, the hygiene factor includes supervision, working conditions, and agency policy and administration.

the main determinants of job satisfaction (e.g., Hopkins, 1983), Herzberg views motivation (or intrinsic motivation) as a robust predictor of job satisfaction. Yet, many empirical studies have shown that both the motivation and hygiene factors have an effect on job satisfaction in organization studies (e.g., S. Kim, 2009; Wright & Davis, 2003).

Job satisfaction is considered an important driving force to enhance individual job performance and organization performance, and many public organizations are designing human resource strategies to escalate employees' job satisfaction (Wright & Davis, 2003). Numerous studies have been made to reveal the predictors of job satisfaction in the public management literature. It is found to be highly correlated with monetary rewards (DeSantis & Durst, 1996; Ellickson, 2002; Ting, 1997), advancement opportunities (Ellickson, 2002; S. Kim, 2009; Ting, 1997), work environment (Choi, 2009, In press; DeSantis & Durst, 1996; Ellickson, 2002; S. Kim, 2009), goal specificity (Wright & Davis, 2003), job characteristics (DeSantis & Durst, 1996), supervision (Ellickson, 2002; Ting, 1997), and management practices (Choi, 2009; S. Kim, 2002).

3.1.2 Job turnover

Job turnover is defined as “the ultimate decision preceded by thoughts of leaving the organization”(Zeytinoglu et al., 2007:S34), which is regarded as a consequence of job dissatisfaction (Cheri, 1992; Mobley, 1977; Moynihan & Landuyt, 2008; Zeytinoglu et al., 2007). Job turnover research has predominantly used a perceptual measure of job turnover as an outcome variable (for example, L. Bright, 2008; Choi, 2009; S. Kim, 2005; S. Y. Lee & Whitford, 2008; Moynihan & Landuyt, 2008). In other words, job turnover intention measured by perceptions of survey respondents is widely being used as a proxy measure of actual turnover.

Job turnover has been predicted using a wide variety of factors including individual characteristics, organizational features, and management practices in the public management literature (e.g., Ippolito, 1987; S. Y. Lee & Whitford, 2008; Lewis, 1991; Selden & Moynihan, 2000a). It has been found that job turnover of public employees is correlated with job characteristics such as job satisfaction (S. Y. Lee & Whitford, 2008; Moynihan & Landuyt, 2008; Selden & Moynihan, 2000a), work environment (S. Y. Lee & Whitford, 2008), work diversity (Choi, 2009), human resource factors (S. Kim, 2005; Moynihan & Landuyt, 2008; Selden & Moynihan, 2000b), and performance management practices (G. Lee & Jimenez, 2011). As human capital is recognized as an important predictor of organizational performance, research is on the rise to identify antecedents of job turnover in the field of public management.

3.2 Effects of Rewards and PFP on Job Satisfaction and Turnover Intention

3.2.1 Effects of Extrinsic Rewards on Job Satisfaction

Hopkins (1983) suggests that job satisfaction can be influenced by three factors—unionization, individual orientations, and work situations. Unionization is associated with the job security of workers; individual orientations include age, gender, education, and length of service; work situations can be divided into job characteristics and job environment.⁹ Numerous empirical studies in the management literature have identified the importance of hygiene factors such as rewards as a critical determinant of job satisfaction (Agho, Mueller, & Price, 1993; Bokemeire & Lacy, 1987; Ellickson, 2002; Mottaz, 1985b; Ting, 1997; Watson & Meiksins, 1991). Extrinsic rewards refer to material compensation that employees receive in return for their labor in the workplace, including salary, bonus, incentives, and gain-sharing. The monetary

⁹ The examples of job characteristics are resource and job quality, and those of job environment include pay, size of organization, discrimination, and family-friendly policy (Hopkins, 1983).

rewards play a crucial role in the job satisfaction of employees in an organization (Igalens & Roussel, 1999).

For instance, Mottaz (1985) has shown that extrinsic rewards are an important factor that positively affects work satisfaction, and the effect of extrinsic rewards on job satisfaction is pronounced among lower-level workers in private organizations. Bokemeire and Lacy (1987) find that job rewards measured by annual income are a significantly positive determinant of job satisfaction. Ellickson (2002) investigates 1,200 full-time employees working in local government, finding that pay and benefits are powerful determinants of municipal employees' job satisfaction. Igalens and Roussel (2002) also demonstrate that extrinsic rewards measured by pay raise and benefits are positively and significantly associated with job satisfaction. Other than actual salary or compensation, pay satisfaction has also been used as a proxy measure of extrinsic rewards in the literature (e.g., S. Kim, 2009; Ting, 1997). Ting (1997) shows that pay satisfaction is positively correlated with job satisfaction of federal government employees.

Hypothesis 1: The more the employees receive extrinsic rewards, the more likely it is that they report a high degree of job satisfaction

3.2.2 Effects of Extrinsic Rewards on Job Turnover

Monetary rewards are a robust predictor of job turnover of employees (Cotton & Tuttle, 1986; Leonard, 1987; Lewis, 1991), and are widely employed as an effective tool for retaining and recruiting high performing employees in public agencies as well as private companies (Brooke, Russell, & Price, 1988; S. Kim, 2009). Selden and Moynihan (2000) suggest that “pay will remain an essential tool for retaining talent” (72). Pay is the most important motivator of workers in PFP systems in which high-performing workers receive high pay increases. Although

studies have documented that pay increases result in a reduction in job turnover intention (e.g., Galizzi & Lang, 1998; Selden & Moynihan, 2000b; Shaw et al., 1998), several studies conclude that pay increases can lead to an increase in job turnover intention in some circumstances (e.g., Moynihan & Landuyt, 2008; Price & Mueller, 1981).

For instance, Selden and Moynihan (2000) examine the relationship between the actual turnover rates of state government and a set of work-related variables including annual salary, finding that states with higher average salaries have fewer quits. Shaw and his colleagues (1998) also show that average pay increases significantly reduce the turnover rate of employees in 227 private organizations. In contrast, Moynihan and Landuyt (2008) find that there is a significantly positive correlation between actual salary and turnover intent of state government employees, after controlling for other demographic and work-related variables.

In spite of mixed empirical evidence of the relationship between extrinsic rewards and job turnover, there is consensus among turnover scholars that a high degree of extrinsic rewards will increase the retention of high performing employees by increasing job satisfaction in an organization (Hom & Griffeth, 1995; L. E. Miller & Grush, 1988).

Hypothesis 2: The more the employees receive extrinsic rewards, the less likely it is that they intend to leave a job

3.2.3 The Hidden Cost of PFP: Crowding-Out

Frey (1997) presented the three types of perspectives on effects of external rewards on human motivation: *crowding-in*, *crowding-neutral*, and *crowding-out* effects.¹⁰ Some scholars support a *crowding-out* effect, claiming that performance-contingent rewards undermine intrinsic motivation, (for example, Deci, 1975; Deci & Ryan, 1985; Frey, 1997), whereas others support a *crowding-in effect*, maintaining that extrinsic rewards enhance intrinsic motivation (for example, Aronfreed, 1968). The crowding-neutral view suggests that external rewards do not significantly affect human motivation.

Although two extremely contrasting views –crowding-in vs. crowding-out– have been debated to date, crowding-out has been considered an predominant account of the effect of rewards on motivation in the literatures (Eisenberger & Cameron, 1996). This is because crowding-out underlies solid theories that clearly account for the detrimental effects of an external intervention on human behaviors. Lepper and his colleagues (1973) propose an overjustification hypothesis based on self-perception theory to explain the crowding-out effect. They argue that when rewards are offered to individuals who have been enjoying an interesting activity without any rewards, their perceptions shift from viewing their behavior as self-initiated to perceiving it as pursuing external rewards. External rewards play a crucial role in offering workers strong justification for performing a task, which make them reduce the role of intrinsic motivation (Lepper & Greene, 1975; Lepper, Greene, & Nisbett, 1973). Lepper and his

¹⁰ The crowding-in view prevails from the 16th to 19th century and posits that seeking material rewards increases moral standards and motivation to work well for its own sake. The crowding-neutral perspective posits that extrinsic rewards have nothing to do with intrinsic motivation, which was mainly proposed by neoclassical economists. The crowding-out effect refers to an effect in which monetary rewards have a detrimental effect on intrinsic motivation, which, currently, is supported by a variety of scholarly domains including social sciences, psychology, and economics (Frey, 1997).

colleagues contend that tangible rewards, especially performance-contingent pay might result in decreased intrinsic motivation.

Deci and Ryan (1985) explained the crowding-out effect with cognitive evaluation theory which emphasizes changes in feelings of *competence* and *self-determination* as a result of external rewards or constraints (see also Deci, 1971, 1972, 1975; Deci, Nezlek, & Sheinman, 1981). According to Deci's cognitive evaluation theory, all rewards and constraints have two features: control and information.¹¹ If external rewards are perceived by individuals to be controlling, the locus of causality¹² will shift from internal to external, which makes them feel less competent and self-determinant. This leads to a reduction in intrinsic motivation. Once an individual recognizes that the locus of causality shifts to an external source, his behavior is then motivated by extrinsic rewards, rather than by intrinsic rewards. On the other hand, when the individual receives interpersonal rewards, he will not perceive them as controls, but as information, the rewards will reinforce intrinsic motivation because those rewards strengthen his feelings of competence and self-determination (Deci, 1972, 1975; Deci & Ryan, 1985). Put another way, rewards do not always have a detrimental effect on intrinsic motivation: they can either increase or decrease intrinsic motivation. External rewards, not limited to monetary incentives,¹³ include verbal reinforcement and (positive or negative) feedback (Deci, 1975).

Through various experimental studies, Deci found that contingent incentives and negative

¹¹ Cognitive evaluation theory posits that all rewards have both controlling and informational components. When the controlling aspect is pronounced, external forces are predicted to reduce intrinsic motivation; when the controlling feature is less salient, the informational aspect positively influence intrinsic motivation

¹² Deci borrowed the term, locus of causality advanced by deCharms and Muir (1968) to account for crowding-out. He viewed intrinsically motivated persons as ones who had an internal locus of causality, and claimed that intrinsic motivation would be changed to extrinsic motivation, if internal locus of causality were changed to external one.

¹³ Deci categorized monetary incentives into two types such as contingent and non-contingent.

feedback had a detrimental influence on intrinsic motivation, whereas verbal rewards and positive feedback strengthened intrinsic motivation.

Frey (1997) claimed that the distinction between crowding-in and crowding-out was determined by whether an external intervention is perceived to be *controlling* or *supportive*. For instance, when an external intervention is perceived to be controlling by individuals, it may reduce self-determination and self-esteem, and change the locus of control, which, in turn, decreases intrinsic motivation.¹⁴ In contrast, when the outside intervention is perceived to be supportive, it may enhance intrinsic motivation. According to his argument, individuals perceive extrinsic rewards or monetary incentives as a controlling mechanism. Thus, he suggested that the use of extrinsic rewards might undermine intrinsic motivation—crowding-out. His proposition is in line with Deci's theory.

A considerable number of laboratory-based experiments have tested the theory, producing mixed results (Eisenberger & Cameron, 1996). Since empirical findings were mixed, meta-analytical research was conducted to confirm or disapprove crowding-out theories. For instance, Cameron and Pierce (1994) analyzed 96 experimental studies, and found that while verbal praise increases intrinsic motivation, tangible rewards decrease it. Deci and his colleagues (1999) found in a meta-analysis of 128 studies that performance-contingent rewards undermined intrinsic motivation; all tangible and expected rewards have a detrimental effect on intrinsic motivation. The meta-analytical results have concluded that performance-contingent rewards could crowd out intrinsic motivation, supporting the crowding-out perspective.

¹⁴ Frey sees self-determination and self-esteem as important criteria to judge the status of intrinsic motivation. Here, the concept of self-determination is identical to that of Deci (1975). His account of intrinsic motivation is similar to that of Deci. Frey avers that contingent rewards may impair self-determination and self-esteem, resulting in crowding-out.

3.2.4 Application of Crowding-out Theory to Public Administration Literature

Many public administration scholars have maintained that performance-based incentives may undermine intrinsic and public service motivations (Bertelli, 2006; Houston, 2009; Moynihan, 2008; Perry, Engbers, & Jun, 2009). Moynihan (2008) avers that market-based mechanisms including PFP pose a threat to public service motivation, and may attract individuals who place higher value on extrinsic rewards than intrinsic values in the public sector.

As discussed earlier, social psychologists highlight “psychological contexts” to explain the crowding effects of external rewards, claiming that performance-contingent rewards can result in the crowding-out phenomenon. Drawing on crowding-out theory (e.g., Calder & Staw, 1975; Deci, 1971, 1972, 1975; Deci & Ryan, 1985; Lepper, Greene, & Nisbett, 1973; Notz, 1975), some public administration scholars have empirically attempted to investigate how PFP affects the motivation of employee in public agencies. Bertelli (2006) analyzed perceptions of employees working in the Internal Revenue Service (IRS) using the 2002 Federal Human Capital Survey. He found that the crowding-out effect existed among supervisory-level employees under the PFP-based paybanding system, but that the crowding-in effect took place among non-supervisors under the General Schedule pay system. Stazyk (2009) investigated a relationship between performance-based variable pay systems –pay-for-performance, competency-based pay, team-based pay, and gainsharing– and public service motivation in local government. He concluded that variable pay systems could crowd out intrinsic motivation of individuals with a high level of public service motivation.

Moynihan (2008) expressed a concern that the market control system could make it difficult for public employees to exercise moral judgment or act in accordance with public demands and preferences. In addition, the PFP scheme can change institutional values from

public values such as public ethics to self-utility maximization, which causes public employees to behave in a way that their activities are motivated by extrinsic values.

3.2.5 Is the Public Servant a Knight or Knave?

Public employees have different motives, ethics and values, compared to private employees working in a market environment. The PFP scheme is one of the striking features of market mechanisms (Peters, 2001), and it is designed to motivate employees to perform better and generate a high degree of organizational performance (Locke et al., 1980; Rynes, Gerhart, & Parks, 2005). Thompson (2006) contends that market considerations in the public sector may weaken the value-oriented behavior of actors. He states that “pay-banding and pay-for-performance systems that make performance more consequential inevitably exacerbate the tensions between enhancing performance and acting pursuant to a public service ethic” (p.498).

Perry and his colleagues (2009) insist that PFP is not a merely pay system, but an institutional design. The institutional design may switch from normative values to market values and reshape the behavior of actors in public organizations –from public servants to market actors (Moynihan, 2008; Paarlberg, Perry, & Hondeghem, 2008). Market actors tend to behave in a way that their self-utility rather than the public interest is maximized, and they rarely act in compliance with agency goals or public demands without extrinsic compensation. Furthermore, the PFP scheme can cultivate a culture in which reward expectancies are a primary values, downplaying public service values or ethics.

The performance-contingent mechanism in public organizations can reshape the landscape of public human resource management in two ways: *crowding-out and self-selection*. The utilization of PFP threatens intrinsic or public service motivation in the public workplace

where employees have high levels of those motivations (Bertelli, 2006; Stazyk, 2009). In addition, it attracts many individuals who are interested in extrinsic values into the public sector (Moynihan, 2008). For these reasons, extrinsic rewards such as monetary incentives may become a central value that employees pursue under the PFP system in public organizations.

It has been long acknowledged in the public administration literature that many public employees perceive their job as a calling or civic duty for the public (Perry & Wise, 1990). A number of studies have shown that public employees are less motivated by tangible rewards than private workers (see, for example, Gabris & Simo, 1995; Karl & Sutton, 1998; Newstrom, Reif, & Monckza, 1976; Rainey, 1982). PFP may provoke reward expectancies of employees, making them place more emphasis on extrinsic values. For these reasons, employees working in the PFP system are more likely to be more 'rewards-centered' than those in the traditional pay system based on seniority. Accordingly, the former's job satisfaction is more contingent on extrinsic rewards than the latter's.

In contrast, public servants in the GS system are likely to be satisfied with their work itself because they have a higher degree of public service and intrinsic motivations to serve the public than those in the PFP system. Additionally, 'market actors' in a PFP system are more likely to leave a job when they are not satisfied with pay or other extrinsic benefits or when they find a better workplace where higher-powered incentives are provided. In other words, employees' job turnover is more determined by the magnitude of extrinsic rewards in the PFP than in GS system. Here I propose that the effect of rewards on job satisfaction and job turnover intention may hinge on the pay scheme because it affects values and motivations of employees in public organizations.

Hypothesis 3: The relationship between extrinsic rewards and job satisfaction will be stronger (or more positive) in the PFP system than in the GS system

Hypothesis 4: The relationship between extrinsic rewards and job turnover intention will be stronger (or more negative) in the PFP system than in the GS system

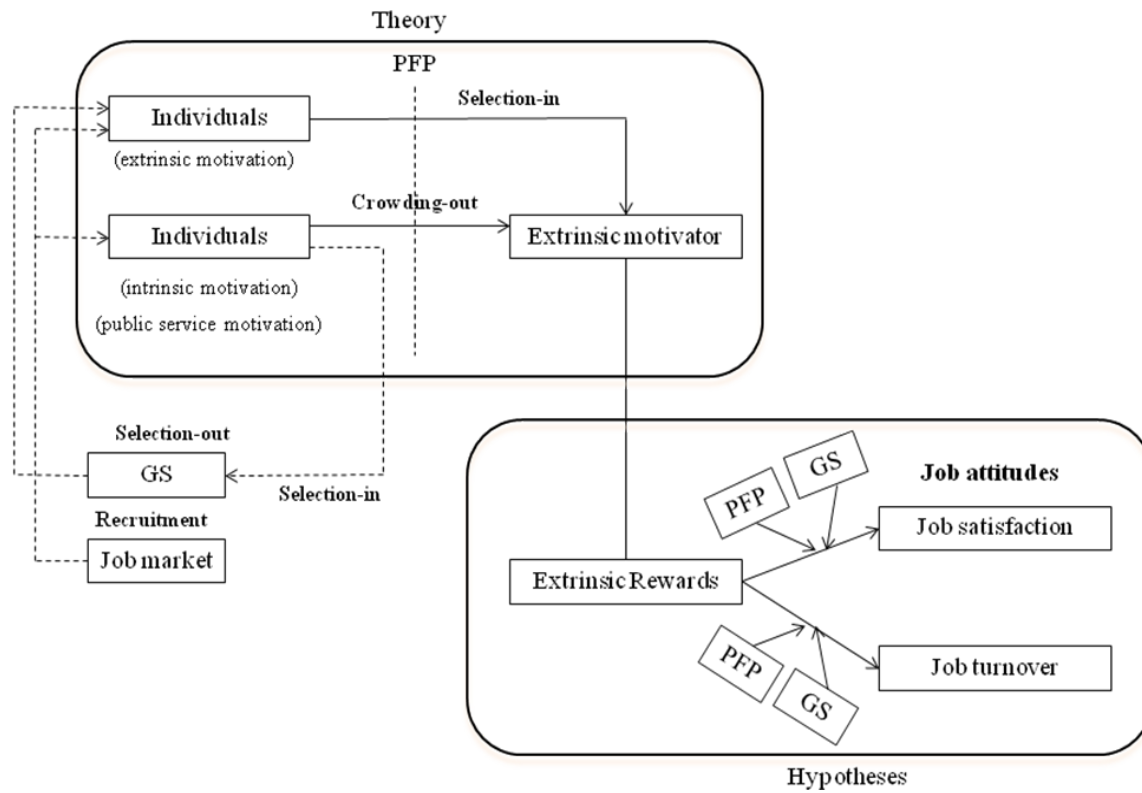


Figure 1. Theoretical Framework of Effect of Pay Systems on Job Attitudes

3.3 Social Capital Factors that Affect Job Satisfaction and Turnover Intention

3.3.1 Organizational Social Capital Theory

Social capital is defined as “asset that inheres in social relations and networks” (Leana & van Buren, 1999: 538). Social capital theory is commonly used in many academic disciplines to account for the effectiveness of collective activities. Organizational theorists borrowed this theory to explain the linkage between organizational productivity and collective activities, and named it *organizational social capital* theory. Organizational social capital is characterized by mutual interactions among actors with trust and shared goals in the organization (Leana & van Buren, 1999). Nahapiet and Ghoshal (1998) offer three dimensions of organizational social capital: the structural, relational, and cognitive dimensions. The structural dimension refers to collaborative network interactions between actors. The relational dimension is trust or trustworthiness among actors. The last dimension represents shared norms or shared vision. Although social capital is realized through actors within the organization, it is considered to be an organizational resource (Dess & Shaw, 2001). It is found that organizational social capital enhances organizational-level performance (Bolino, Turnley, & Bloodgood, 2002; Dess & Shaw, 2001; Kostova & Roth, 2003; Nahapiet & Ghoshal, 1998).

3.3.2 Team Collaboration

Collaborative networks have been considered one of the most important topics in public management research (Milward & Provan, 1998) and regarded as a common administrative phenomenon in government agencies (L. J. O'Toole, 1997; Provan & Milward, 2001). O'Toole (1997) defined networks as “structures of interdependence involving multiple organizations or parts of thereof, where one unit is not merely the formal subordinate of the others in some larger

hierarchical arrangement” (45). This indicates that networks are a melting pot in which independent agencies mingle together to accomplish mutual goals, but no formal position controls the network structure. Collaborative networks include interagency cooperation, collaborative program management structures, and public-private partnerships (O'Toole 1997). Collaboration through networks in public agencies is established and developed for the reason of resources and information to deal with complex problems the agencies face (Agranoff & McGuire, 2003).

Team-based collaboration is a micro-level of organizational collaboration, and this behavior can make a contribution to an organization by facilitating communication among team members and by solving difficult problems the organization faces through brainstorming and collective decision-making. Whitford et al.(2010) claim that work-unit collaboration allows an organization to achieve collective goals by sharing knowledge, resources, and information. More important, this type of collaboration involves trust-based mutual dependence, which makes the actors take an active role in policy formulation and implementation within the team.

Organizational actors in a collaborative setting freely participate in exchanging policy ideas, maintaining a shared-sense of obligation, and forming commitment for mutual goals without relying on the command-control mechanism (L. J. O'Toole, 1997). Collaborative networks can facilitate organizational flexibility, by eradicating rule-based bureaucratic obstacles (Agranoff & McGuire, 2001), and enhance organizational capacity by securing resource acquisition through resource dependence activities among actors (Provan & Milward, 2001). Thus, employees working in collaborative settings are likely to have positive work attitudes.

3.3.3 Trust in Supervisor

Trust has numerous beneficial outcomes for organizations (Dirks & Ferrins, 2001; Kramer, 1999). Rational choice theory posits that organizational actors are motivated by their self-interests, maximizing their own utility rather than collective benefits. In this view, organizations require high transaction costs for monitoring and information acquisition. However, organizations with high levels of trust reduce the possibility of actors' opportunistic behaviors, and thereby minimize transaction costs (Nahapiet & Ghoshal, 1998). Additionally, trust has a positive effect on organizational behaviors. Numerous studies have shown that trust results in employee's cooperative behaviors and positive work attitudes (e.g., Brockner et al., 1997; Muchinsky, 1977; Pillai, Schriesheim, & Williams, 1999; Simons & Peterson, 2000). Robinson (1996), for instance, finds that trust in an organization has an effect on an employee's organizational citizenship behavior (see also, Kostova & Roth, 2003; McAllister, 1995; P. Podsakoff et al., 1990). Rich (1997) reveals that sales people who have trust toward their sales manager are more likely to feel work satisfaction. Similar results were obtained by Cho (2008). He investigated the relationship between trust in leadership and public employee work satisfaction in government agency, finding that employees with high levels of trust toward their leadership showed higher levels of work satisfaction.

3.3.4 Mission Attachment

Organization actors need the same perceptions of mission to achieve the shared vision of an organization. In order to improve organizational performance, a mission should be clearly defined in public agencies. Mission plays a key role in motivating individuals to work well within the agency (Weiss & Piderit, 1999). Consensus about shared vision, norms and mission among organization actors is prerequisite to integration of organizational resources (Tsai & Ghoshal, 1998). Mission statements specify the fundamental reasons of the organizations, suggest the foundation for priorities and work assignments, and are located at the top of the goal hierarchy of the organizations (J. A. Pearce & David, 1987). Mission specificity can stimulate employees to focus on their activities and make them feel more responsible for individual job tasks (Locke & Latham, 1990; Wright, 2007).

Goal setting theory indicates that the individual who accepts the organizational goal as his or her own behaves in a goal-directed way (Locke & Latham, 1990). Likewise, mission serves as a specific guideline for how to behave in an organization. Weiss and Piderit (1999) emphasized “mission statements can also communicate organizational values to employees in ways that engage their commitment and encourage them to identify with the organization” (196). The attachment between mission and employees may make them retain positive work attitudes. Brown and Yoshioka (2003) empirically found that mission attachment significantly influences employees’ decision to leave in nonprofit organizations.

3.4 Other Factors that Affect Job Satisfaction and Job Turnover Intention

Existing studies identify that employees' job tenure is associated with increased job satisfaction (Choi, 2009; S. Kim, 2009; Mobley, 1977; Sorensen & Tuma, 1981). It may be that employees tend to have a positive view of the organization where they work over time.

Alternatively, there is possibility that individuals who are not satisfied with the job are likely to leave a job early. In this regard, a longer job tenure of employees may increase the possibility of a high degree of job satisfaction, which in turn lowers the possibility of job turnover.

According to Hirschman (1970), individuals raise their voice to respond to a decline in the quality of an organization for which they work: they tend to exit the organization if their voice is not accepted. The exit, voice and loyalty theory is much used to account for work attitudes in the public sector (e.g., S. Y. Lee & Whitford, 2008; Moynihan & Landuyt, 2008). A union system is a voice mechanism by which employees express their complaints. Employees join a union to express complains about unsatisfactory working conditions and secure benefits through the bargaining process (Kellough & Osuna, 1995). Much research has shown that unionization is negatively associated with job turnover rates: employees who have a union membership are less likely to quit a job (Blau & Kahn, 1981; Cotton & Tuttle, 1986). Selden and Moynihan (2000b) reveal that the percentage of state employees covered by collective bargaining agreement is associated with decreased turnover rate. However, the relationships between unionization and job satisfaction (and job turnover) are empirically mixed. Some studies showed that organizations with higher percentage of unionized employees were more likely to have higher turnover rates than are those with fewer union members (e.g., Kellough and Osuna 1999).

Formal training is a typical HRM strategy for an organization to improve employees' professional development. Employees who have a higher chance of getting training will be more competitive than their counterparts, which makes the former retain the positive view of their work and organization. Ellickson (2002) showed that there was a positive relationship between training and job satisfaction of local government employees. Additionally, several studies have found evidence that training opportunities decrease job turnover (e.g., Huselid, 1995; Shaw et al., 1998).

Resource availability is important to motivate employees to maintain high levels of output, and can affect employee' morale. Individuals with a high degree of resources are more likely to have positive attitudes toward their workplaces (Cho, 2008). Empirically, individual resources were found to be positively associated with work satisfaction (Cho, 2008; Ellickson, 2002). Thus, I posit that individuals with enough resource available express more job satisfaction (less job turnover intention) than do their counterparts in federal agencies.

3.5 Analytical Model

In this study, many factors are employed to predict job attitudes, including work-related, social capital, sociodemographic, and institutional factors as shown in Figure 2. The main interest of the study is the moderate effect of pay systems on job satisfaction and turnover intention.

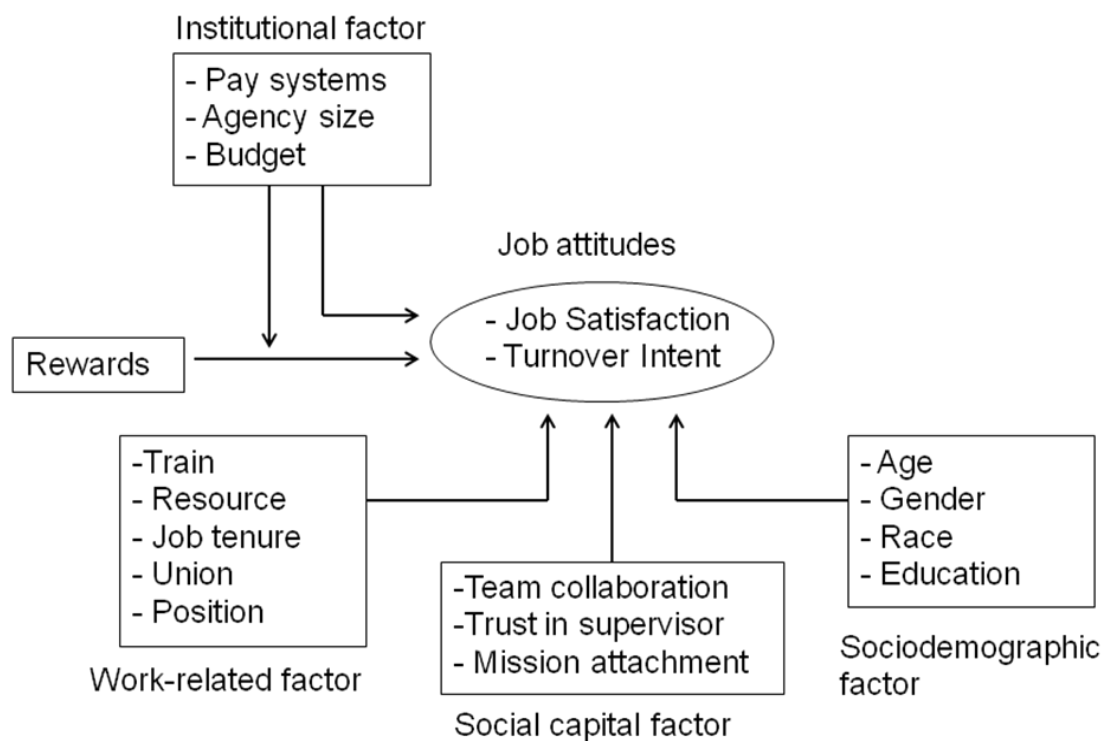


Figure 2. Analytical Model that Predicts Job Attitudes

3.6 Chapter Summary

This chapter reviews the literature related to job satisfaction and turnover, and presents hypotheses as well as a theoretical framework. This study has two main purposes: (1) to compare the PFP and the GS systems regarding job attitudes, and (2) to identify the determinants of job satisfaction and turnover. Job attitudes such as job satisfaction and turnover are considered an important research theme in the field of public administration because the attitudes are highly associated with organizational effectiveness and commitment. Much research has revealed a set of determinants of job satisfaction and turnover in public organizations. Uniquely, this study attempted to investigate how pay systems affect job attitudes in federal agencies. This research mainly examines the extent to which relationships between rewards and job attitudes vary between PFP and GS employees and identifies the determinants of job satisfaction and turnover in public organizations. I hypothesized that monetary rewards positively affect job attitudes of public managers, and that the relationships vary depending on pay systems as follows:

- H1: Monetary rewards have a positively effect on job satisfaction.
- H2: Monetary rewards have a negatively effect on job turnover intention
- H3: The relationship between monetary rewards and job satisfaction will be stronger (more positive) in the PFP than in the GS system.
- H4: The relationship between monetary rewards and job turnover intention will be stronger (more negative) in the PFP than in the GS system

The next chapter presents research methods including data, measurement, and empirical models.

IV. RESEARCH METHODOLOGY

4.1 Data

4.1.1 Subjective Data

This study mainly employs the Merit Principles Survey 2005, collected by the U.S. Merit Systems Protection Board (MSPB).¹⁵ The target population of the survey is full-time public employees working in federal agencies. MSPB randomly selected 74,000 federal employees to be representative of the target population, and conducted the online survey between the summer and fall of 2005. All sampled persons were sent invitation e-mails with a link to the web site containing the survey instrument.¹⁶ In total, 36,926 respondents of them completed the survey, equivalent to a response rate of about 50 percent. The survey consists of 69 questions that cover the topics of work environment, perceptions of agency performance, performance appraisal, job attitudes, rewards, and employees' career information (U.S. Merit Systems Protection Board, 2007).

4.1.2 Objective Data

Many studies on human resource management in public administration have operationalized the PFP system using the perceptions of employees about the link between pay or promotion and performance—using questions about how well employees' pay or promotion is reflected by their job performance. However, the perception measures may not accurately represent the pay system, but rather only the link between

¹⁵ Pursuant to 5 U.S.C. 1204(a) (3), MSPB are required to report the survey results to the President and the Congress.

¹⁶ Although this survey was mainly conducted via the Web survey, the paper and pencil-based mail survey was partially employed for sampled persons in four agencies that did not have Web or e-mail access.

rewards and performance. For this reason, this study measures pay systems objectively, dividing them into two categories: the PFP-based paybanding and General Schedule systems. The main interest of this study is to identify the differences between the two pay systems in the federal government. As has been noted previously, many federal agencies have adopted PFP-based paybanding systems, though a majority of agencies still have the traditional pay system based on seniority. A total of 46 federal agencies were sampled at a group level in the MPS 2005 data. In order to identify the agencies under the PFP paybanding system, I investigated the alternative pay system profile information provided by OPM, and 13 agencies (as of 2010) that have adopted the PFP-based paybanding system were identified in the sample as shown in Appendix B. Of the 13 agencies, only seven had retained the PFP system as of 2005 when the MPS data were collected. Agencies with PFP in this study are National Institute of Standard and Technology (NIST), National Oceanic and Atmospheric Administration (NOAA), Federal Deposit Insurance Corporation (FDIC), Transportation Security Administration (TSA), Alcohol, Tobacco, Firearms & Explosives (ATFE), Federal Aviation Administration (FAA), Internal Revenue Service (IRS)¹⁷, and Office of the Comptroller of Currency (OCC). Thus, this study used those agencies as a PFP group, and all others as a GS group. Throughout the study, I utilized the dummy variable for the pay systems, coding the PFP group as 1, and the traditional GS group as 0 in all statistical models in the study. In coding the PFP category, respondents who hold GS or GS-related category are excluded from all analyses.

¹⁷ PFP covers only supervisory employees in IRA, thus I analyze data using separate sub-populations: supervisory and nonsupervisory groups in the study.

4.2 Measures

4.2.1 Dependent Variable

Job satisfaction is defined as the state of mind of employees that results from the job setting and environment (Hopkins, 1983). It is a multi-dimensional concept reflecting a variety of job facets (Hopkins, 1983; Kalleberg, 1974), thus it needs to be measured multi-dimensionally.¹⁸ This study measures job satisfaction with five survey items tapping the diverse facets including job, pay and supervision: (1) “In general, I am satisfied with job”; (2) “Overall, I am satisfied with my pay”; (3) “Overall, I am satisfied with my supervisor”; (4) “I would recommend my agency as a place to work”; (5) “My job makes good use of my skills and abilities.” Five items, ranging from *strongly disagree* (=1) to *strongly agree* (=5), were summed to create the single index variable. The reliability coefficient for this summated measure is 0.82.

Job turnover intention is measured by the single survey item: “How likely is it that you will leave your agency in the next 12 months?” The response category for the question is a 5-point Likert-type scale ranging from *very likely* (=1) to *very unlikely* (=5), but I reversed it from *very unlikely* (=1) to *very likely* (=5) for analysis. In order to investigate only voluntary job turnover, I excluded respondents who had expressed retirement as a reason for leaving the job from the sample. One might think that the perception measure of job turnover does not represent actual turnover, however job turnover intention as measured by workers’ perceptions has been found to be highly correlated with actual turnover (see Breukelen, Vlist, & Steensma, 2004; Vandenberg & Nelson, 1999). Moynihan and Landuyt (2008) make the claim that perceptual measures of job turnover have advantages over actual quitting for empirical research in that it

¹⁸ In some cases, job satisfaction is measured by a single questionnaire item in empirical studies: “All in all, how satisfied are you with your job?” However, this uni-dimensional measure has some disadvantages: (1) it ignores other important features besides work itself as pay, relationships with supervisor, job security, and so forth: (2) the single measure may overestimate the degree of job satisfaction (Kalleberg, 1974).

enables one to investigate the relationship between the perceptions of intent on leaving and a variety of organizational variables in a cross-sectional model. Much research on job turnover relies heavily on the perceptions of employees staying in an organization (see Cotton & Tuttle, 1986; Mor barak, Nissly, & Levin, 2001). In particular, perceptual job turnover intention has been widely used as a proxy measure of job turnover in public administration research (e.g., Leonard Bright, 2009; S. Kim, 2005; S. E. Kim & Lee, 2007; S. Y. Lee & Whitford, 2008; Moynihan & Landuyt, 2008; Selden & Moynihan, 2000a).

4.2.2 Independent Variable

Extrinsic rewards are conceptualized as compensation that employees receive in return for their job activities, including actual pay, bonus, promotion, and job security. They are measured in a variety of ways—either objectively or subjectively in organizational research. Whereas some scholars have measured extrinsic rewards with employee’s perception about their rewards status –pay equity or promotional opportunity (e.g., Mottaz, 1985a), others have operationalized them with objective indicators such as actual income (e.g., Bokemeire & Lacy, 1987; DeSantis & Durst, 1996). This study operationalizes extrinsic rewards with self-reported employee’s annual salary: “What is your approximate annual salary?” The numerical values are log-transformed for all analyses. The measure of training is comprised of responses to the questions: (1) “I receive the training I need to perform my job”; (2) “I am given a real opportunity to improve my skills in my organization.” The reliability coefficient for the variable is 0.79. Individual resources are operationalized as the perception of employee’s possession of resource: “I have the resources to do my job well.” Job tenure is measured by the number of years for which employees have been working in the agency. For the union membership variable,

union members are coded as 1, and otherwise as 0 in this analysis. The analytical model has two different subsamples: supervisory and nonsupervisory levels. The supervisory-level sample includes managers and supervisors, and the nonsupervisory-level sample consists of team leaders and nonsupervisors. Position is measured with two levels—junior and senior—in each sub sample. For the supervisory-level (nonsupervisory) model, senior is measured by the position of the manager (team manager) and junior is measured by the position of the supervisor (front-line level).

In this study, the social capital factor was utilized to predict job attitudes, and eleven survey items were used for exploratory factor analysis to measure social capital variables. Table II presents the result of exploratory factor analysis for social capital variables. Based on the factor analysis, I utilized three survey questions to measure the degree of collaboration of agencies: (1) “Information is shared freely in my work unit”; (2) “A spirit of cooperation and teamwork exists in my work unit”; (3) “A spirit of cooperation and teamwork exists between my work unit and other work unit.” The reliability coefficient for this variable is 0.86. Trust in supervisor is measured by the responses to five questions, including the items: (1) “I trust my supervisor to fairly assess my performance and contributions”; (2) “I trust my supervisor to clearly communicate conduct expectations”; (3) “I trust my supervisor to keep me informed”; (4) “I trust managers above my immediate supervisor to clearly communicate organizational performance expectations”; (5) “I trust managers above my immediate supervisor to keep the organization informed” (Alpha coefficient is 0.88). I used the three question items to measure mission attachment: (1) “I understand my agency’s mission”; (2) “My agency’s mission is important to me”; “I understand how I contribute to my agency’s mission.” (Alpha coefficient is 0.86). The

response categories for all items are a 5-point Likert scale type ranging from *strongly disagree* (=1) to *strongly agree* (=5).

TABLE II
EXPLORATORY FACTOR ANALYSIS FOR ORGANIZATIONAL SOCIAL CAPITAL VARIABLE

Item	Factor 1	Factor 2	Factor 3
I understand my agency's mission	0.128	0.790	0.124
My agency's mission is important to me	0.100	0.744	0.119
I understand how I contribute to my agency's mission	0.173	0.763	0.177
Information is shared freely in my work unit	0.309	0.162	0.720
A spirit of cooperation and teamwork exists in my work unit	0.264	0.158	0.788
A spirit of cooperation and teamwork exists between my work unit and other work units	0.299	0.190	0.629
I trust my supervisor to support me in pay and award discussions with upper management	0.691	0.076	0.303
I trust my supervisor to clearly communicate conduct expectations	0.719	0.092	0.312
I trust my supervisor to keep me informed	0.749	0.065	0.333
I trust managers above my immediate supervisor to clearly communicate organizational performance expectations	0.718	0.231	0.150
I trust managers above my immediate supervisor to keep the organization informed	0.722	0.199	0.162
Eigen value for all items	2.903	1.958	1.946
Variance explained by each factor (%)	26.4	17.8	17.7
Reliability coefficient of Alpha	0.88	0.86	0.85

Note: Varimax method is utilized for rotation

For demographic control variables, white is coded as 0 and other race categories as 1 for the race variable. Men are coded 1 for the gender variable. Age is recoded with six age categories from "less than 35" to "over 55." Education is measured by six categories ranging from high school degree (=1) to doctorate or equivalent (=5). As an organizational level control

variable, organization size is measured by the number of employees as of 2005. All these numerical values are natural log-transformed in the study.

4.3 Model Estimation

The level of analysis is both individual and organization in this study. Normally, there are two strategies to deal with two level data: *aggregation* or *disaggregation* (Snijders & Bosker, 1999). Whereas one can aggregate the individual-level data to organizational-level by averaging values driven from individual responses by organizations (the unit of analysis become the organization), one can disaggregate the organizational-level data to the individual-level by assigning an organizational-level value to each individual within the organization (the unit of analysis becomes the individual). These strategies are commonly adopted in empirical research, yet there are some issues with each method. Aggregated data make it impossible for researchers to identify differences in individual variables (or within-variance), and produce large standard errors in a statistical models because aggregation reduces sample size, which leads to increased type-II errors. Ecological fallacy is one of the most important issues in aggregated data (Robinson, 1950).¹⁹ Ecological fallacy refers to disagreement between analytical results based on aggregate data and the results made by individual-level data. The empirical relationships among individual-level variables can be spurious when data are aggregated. In contrast, the disaggregation method ignores the possibility that individual responses may be correlated within an organization, which is known as intraclass correlation. One of the critical and basic assumptions of regression analysis is that each individual (or unit) within the organization (or

¹⁹ Robinson (1950) found that the correlations between racial ethnicity and illiteracy remarkably differed between individual-level and area-level data, showing that the individual-level correlation is only 0.203 and the area-level correlation is 0.946. For this reason, many social scientists hesitate to make inferences about individual behaviors using aggregate data (Gove & Hughes, 1980).

group) should be uncorrelated with each other (Gujarati, 2003). If the assumption is violated, standard errors for the estimates will be underestimated. The analytical results using disaggregation without taking account into intra-class correlation increase the type-I errors.

Hierarchical linear modeling (HLM) is a very useful technique to resolve the aggregate and disaggregate problems, taking into account the variances in both individual-and organizational-level variables in a single model (Hox, 2004; Raudenbush & Bryk, 2001; Snijders & Bosker, 1999). In particular, this method is required when the OLS linear regression's basic assumption that each observation is uncorrelated with one another is violated. In order to investigate whether intracluster correlations exist or not, I estimate the amount of variance in the outcome variables that are explained by organizational-level variables using HLM. I call this model an unconditional (or null) model. The unconditional model includes only the outcome variable and no predictors as follows:

$$(\text{Job satisfaction/turnover})_{ij} = \beta_{0j} + \varepsilon_{ij}, \text{ where } \varepsilon_{ij} \sim N(0, \sigma^2) \quad (1)$$

$$\beta_{0j} = \gamma_{00} + u_j, \text{ where } u_j \sim N(0, \tau_0^2) \quad (2)$$

$$\text{Therefore, } Y_{ij} = \gamma_{00} + u_j + \varepsilon_{ij} \quad (3)$$

The above unconditional model (equation 3) is the exact same as a one-way random effect ANOVA model. In equation (1), Y_{ij} is the degree of job satisfaction and turnover of the i^{th} individual within the j^{th} agency, β_{0j} is the predicted value of job satisfaction and turnover within the j^{th} agency, and ε_{ij} is an individual-level residual related to the i^{th} individual within the j^{th} agency. In equation 2, γ_{00} is the population mean of the predicted value of job satisfaction and turnover, and u_j is a set of deviations from the grand mean of job satisfaction and turnover.

As shown in equation (3), the model has one fixed effect and two random effect terms: the predicted value (γ_{00}), individual-level random error (ε_{ij}), and agency-level random error (u_j). The expected mean and variance of ε_{ij} are 0 and σ^2 , respectively; the expected mean and variance of u_j are 0 and τ_0^2 in that order. While the expected variance of individual-level random error, ε_{ij} refers to the variation among employees within agencies, the agency-level variance, τ_0^2 represents the variation between agencies. Intraclass correlation coefficient (ICC) is computed by the two variances:

$$\text{ICC} = \frac{\tau_0^2}{\tau_0^2 + \sigma^2}$$

The ICC value represents the proportion of the total variation in an individual's job satisfaction (and job turnover) that is accounted for by differences across agencies. To put this another way, there is an expected correlation between two randomly chosen employees within the same agency—*homogeneity*. The higher the value, the more homogeneous the individuals' perceptions are within the agency.

The next step is to build models to estimate the variation in job satisfaction and turnover that are explained by individual-and agency-level predictors. These models are called *conditional models*. The HLM models are specified as follows:

$$\begin{aligned}
Y_{ij}(\text{Job satisfaction/turnover}) = & \beta_{0j} + \beta_{1j}(\text{Reward}) + \beta_{2j}(\text{Train}) + \beta_{3j}(\text{Resource}) \\
& + \beta_{4j}(\text{Tenure}) + \beta_{5j}(\text{Union membership}) \\
& + \beta_{6j}(\text{Position}) + \beta_{7j}(\text{Team collaboration}) \\
& + \beta_{8j}(\text{Trust in supervisor}) + \beta_{9j}(\text{Mission attachment}) \\
& + \beta_{10j}(\text{Age}) + \beta_{11j}(\text{Gender}) + \beta_{12j}(\text{Race}) \\
& + \beta_{13j}(\text{Education}) + \varepsilon_{ij}
\end{aligned} \tag{4}$$

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Pay system}) + \gamma_{02}(\text{Agency size}) + \gamma_{03}(\text{Agency budget}) + u_{0j} \tag{5}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{Pay system}) + \gamma_{12}(\text{Agency size}) + \gamma_{13}(\text{Agency budget}) + u_{1j} \tag{6}$$

$$\text{where } \varepsilon_{ij} \sim N(0, \sigma^2) \text{ and } \begin{pmatrix} u_{0j} \\ u_{1j} \end{pmatrix} \sim N \left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \tau_0^2 & \tau_{01}^2 \\ \tau_{01}^2 & \tau_1^2 \end{pmatrix} \right]$$

These three equations (4), (5), and (6) can be incorporated with one single model:

$$\begin{aligned}
Y_{ij} = & \gamma_{00} + \beta_{1j}(\text{Reward}) + \beta_{2j}(\text{Train}) + \beta_{3j}(\text{Resource}) + \beta_{4j}(\text{Tenure}) \\
& + \beta_{5j}(\text{Union membership}) + \beta_{6j}(\text{Position}) + \beta_{7j}(\text{Team collaboration}) \\
& + \beta_{8j}(\text{Trust in supervisor}) + \beta_{9j}(\text{Mission attachment}) + \beta_{10j}(\text{Age}) \\
& + \beta_{11j}(\text{Gender}) + \beta_{12j}(\text{Race}) + \beta_{13j}(\text{Education}) + \gamma_{01}(\text{Pay system}) \\
& + \gamma_{02}(\text{Agency size}) + \gamma_{03}(\text{Agency budget}) + \gamma_{11}(\text{Pay system} \times \text{Reward}) \\
& + \gamma_{12}(\text{Agency size} \times \text{Reward}) + \gamma_{13}(\text{Agency budget} \times \text{Reward}) + u_{0j} \\
& + u_{1j}(\text{Reward}) + \varepsilon_{ij}
\end{aligned} \tag{7}$$

The single equation (7) has two components: fixed and random parts. The random effect, $u_{0j} +$

$u_{1j}(\text{Reward}) + \varepsilon_{ij}$ will tell how much intercepts and slopes vary across agencies and how much of

the variance in job satisfaction and turnover that is accounted for by both individual-and-agency-

level variables. For the fixed effects, there are three types in the model—individual-level fixed effects, agency-level fixed effects, and cross-level interaction effects. The individual-level fixed effects will tell about the relationship between job satisfaction/turnover and individual-level variables. The agency-level fixed effects will show whether pay system and agency size affect an individual's job satisfaction and turnover. The cross-level interaction effect, γ_{11} (Pay system \times Reward), will tell whether the relationship between job satisfaction/turnover and reward differ between the two pay systems.

The regression coefficients and variances are estimated by the Maximum Likelihood (ML) method in HLM. An advantage of ML is that it generates asymptotically efficient and consistent estimates. The parameters can be estimated by two different ML methods in HLM – Full Maximum Likelihood (FML) and Restricted Maximum Likelihood (REML). The estimation procedures of the two methods are different, but the differences in estimates are not large, although REML produces less biased estimates (Hox, 2004). This study uses the REML method to minimize bias in estimates.

4.4 Chapter Summary

Hierarchical linear modeling (HLM) is used to estimate the parameters of empirical models, which is a useful technique when both individual-and group-level variables are specified in a single model, taking into account the variances of both-level variables in the model. The assumption of traditional OLS regression will be violated if observations within an agency are correlated. HLM deals with this issue. In particular, the cross-level interaction reveals the effects of pay systems on the relationship between monetary rewards and job attitudes.

The next chapter presents the results and findings from the statistical models.

V. ANALYTICAL RESULTS

5.1 Sample Composition

The sociodemographic characteristics of sampled persons are presented in Table III. By gender, 59.1 percent of the total sampled persons are male employees while 40.9 percent are female. Given that the proportion of male employees is 55.6 percent of the total population, those in the sample are slightly overrepresented (59.1%). Whites are the largest ethnic group (73%) in the sample, followed by African American (12.2%), Hispanic (4.5%), and Asian and other ethnic groups (9.9%). Compared to the total population, whites, and Asian and other groups are overrepresented, whereas African American and Hispanic are underrepresented in the sample. By age, while employees less than 31 years old, and between 31 and 40 are underrepresented (3.0% and 14.2%, respectively), employees age 50s are highly overrepresented (43.6%). About 40 percent of the sample are nonsupervisory front-line workers, and supervisor-level employees make up about 27 percent. It is not possible to analyze proportions by job position in the sample because job position in the Central Personnel Data File (CPDF) is not sorted as job categories in the data.

This survey employs a multi-stage random sampling technique to draw the sample to be representative of the population. As in most complex sample surveys, this survey constructs the weight variable to adjust for unequal probabilities of selection and post-stratifies the sample composition in accordance with the population. The third column of Table III shows weight-based analyses. The weight variable largely reduces the gap between the sample and population with respect to demographic proportions. For instance

the sample proportion of gender has been adjusted to the level of the population one: 55.7 vs. 55.6% for male, 44.3% vs. 44.4% for female. For racial/ethnic status, the proportion of whites is slightly reduced from 73.4 percent in the unweighted analysis to 72.0 percent in weighted analysis, whereas the percentage of Hispanics is increased from 4.5 percent to 6.8 percent. This weighting adjustment also changes the age and job position composition of the sample.

Weighting adjustments are necessary to analyze data obtained from surveys using complex sample designs to accurately estimate the variances and standard errors of survey parameters. Most statistical software packages assume that survey data are obtained from surveys utilizing a simple random sampling design, simply calculating variances on the basis of simple random sampling regardless of actual survey sample designs. Not taking into account sample designs in the analytical process results in inaccuracy in variance estimation –e.g., underestimation of standard errors (Heeringa, West, & Berglund, 2010). This, in turn, may lead to the increased type-I or type-II error in regression analysis. For these reasons, all statistical analyses here are weighted.

TABLE III**UNWEIGHTED AND WEIGHTED SOCIODEMOGRAPHIC COMPOSITIONS OF SAMPLE**

Variable	Unweighted (%)	Weighted (%)	Population (%)
Gender			
Male	59.1	55.7	55.6
Female	40.9	44.3	44.4
	N = 31,707		
Racial/Ethnic status			
White	73.4	72.0	68.6
African American	12.2	12.0	16.9
Hispanic	4.5	6.8	7.3
Asian and other	9.9	9.1	7.1
	N = 31,108		
Age			
Less than 31	3.0	7.9	10.4
31-40	14.2	12.6	20.1
41-49	30.0	28.1	29.3
50-59	43.6	41.2	32.3
60 and older	9.2	10.2	7.9
	N = 31,118		
Job position			
Non-supervisory employee	40.4	64.5	
Team leader	13.2	23.1	
Supervisor	27.0	7.3	
Manager	16.5	4.5	
SES	2.9	0.5	
	N = 32,058		
N			1,851,359

Note: The source of population information is the Central Personnel Data File (as of 2004)

5.2 Examining Perceived Values of Public Managers between the PFP and the GS

First of all, I will compare the work values of employees between PFP and GS agencies. In order to explore how individuals' perceptions of work values differ between the two pay systems, empirical tests are necessary. Chi-square tests and logistic regression analysis are employed to reveal perceptual differences among employees.

5.2.1 Measures of Work Values

In order to measure the work values of employees, I utilize the survey question, "How important are each of the following in motivating you to do a good job?" Each of twelve items appears in Table IV. I run an exploratory factor analysis to examine the underlying factor structures and their internal reliability of measurement. The table shows that the Varimax rotation method generates two factors for the twelve items. The eigenvalues of the two factors are 2.59 and 2.30, indicating that approximately 46.1 percent of variation in the items is accounted for by factor 1 and an additional 44.2 percent is accounted for by factor 2. In order to check the internal consistency of each factor, I examine the Cronbach's alpha coefficient of reliability for each. Both factors have a high value of alpha: 0.78 for factor 1 and 0.79 for factor 2. The six items of factor 1 include "Desire not to let my supervisor down," "My duty as a public employee," and "Personal pride or satisfaction in my work." The factor loadings of the items in factor 1 range from 0.46 to 0.73. Since all of these items are related to intrinsic work values, I name this factor as *intrinsic values* in this study. Factor 2 includes six items such as "A cash award of \$1,000," "Desire for a good performance rating," "Increases chances for promotion." I name this factor as extrinsic values.

TABLE IV**INTRINSIC AND EXTRINSIC VALUES WITH EXPLORATORY FACTOR ANALYSIS**

Item	Factor 1	Factor 2
(1) Desire not to let my supervisor down	0.613	0.195
(2) Desire not to let my coworkers down	0.731	0.061
(3) Recognition from my coworkers	0.460	0.265
(4) My duty as a public employee	0.563	0.081
(5) Desire to help my work unit meet its goals	0.722	0.143
(6) Personal pride or satisfaction in my work	0.542	-0.009
(7) A cash award of \$100	0.019	0.717
(8) A cash award of \$1,000	0.031	0.699
(9) Desire for a good performance rating	0.435	0.473
(10) Increased chances for promotion	0.285	0.484
(11) A time off award of 8 hours	0.029	0.660
(12) Non-cash recognition (e.g., letter of appreciation)	0.256	0.515
Eigen value for all items	2.591	2.301
Variance explained by each factor (%)	46.1	44.2
Reliability coefficient of Alpha	0.78	0.79

Note: Varimax method is utilized for rotation; factor loadings of less than 0.45 are discarded.

TABLE V**CORRELATION MATRIX OF PERCEIVED VALUE VARIABLES**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)											
(2)	0.60										
(3)	0.30	0.46									
(4)	0.29	0.36	0.24								
(5)	0.46	0.53	0.33	0.48							
(6)	0.27	0.37	0.21	0.40	0.44						
(7)	0.17	0.09	0.18	0.08	0.12	0.00±					
(8)	0.18	0.10	0.21	0.05	0.11	0.02	0.59				
(9)	0.23	0.14	0.24	0.21	0.32	0.16	0.29	0.34			
(10)	0.37	0.27	0.32	0.31	0.40	0.23	0.29	0.35	0.49		
(11)	0.14	0.06	0.18	0.07	0.11	0.02	0.51	0.47	0.32	0.30	
(12)	0.24	0.19	0.32	0.21	0.26	0.13	0.40	0.29	0.30	0.34	0.41

± : not significant at the level of 0.10

5.2.2 Perceptual Discrepancies in Values between PFP and GS systems

I use the Chi-square test to investigate the association between pay systems and perceived values. For dependent variables, the scale of the variables is a five-point Likert scale ranging from “very unimportant” to “very important.” I recode the five scales into the binary scale “important” and “unimportant” to make 2 X 2 cross tabulations across the dependent variables, as shown in Table 6. Percentages in the table represent row-specific proportions in the observed data. For the intrinsic values, approximately 94.6 percent of all employees in the GS report that it is important for them not to let their supervisors down in their organizations, while about 93.6 percent of the employees in the PFP think so. This Pearson Chi-square statistic shows that the relationship between the variables is significant ($p < 0.05$). Approximately, 91.9 percent of the GS employees perceive that their work motivation comes from recognition from other coworkers whereas about 93.1 percent of the PFP employees perceive so ($p < 0.05$). For personal pride and job satisfaction, row-proportions of observed data are not different between the two pay systems (99.66% vs. 99.81%). The proportion is almost the same in each row for this variable, showing the homogeneity of proportions. There is no difference between the groups ($p = 0.81$) in the extent of importance about helping their work unit. Employees working in the GS system tend to place higher importance on public service duty than those in the PFP system, a difference of which is also statistically significant ($p < 0.01$).

TABLE VI

CROSSTABS OF INTRINSIC VALUES OF EMPLOYEES BY PAY SYSTEMS (%)

	Unimportant	Important	Total
<i>(I-1) Desire not to let my supervisor down</i>			
GS	5.44 (901)	94.56 (15,651)	100 (16,552)
PFP	6.41 (216)	93.59 (3,152)	100 (3,368)
Total	5.61 (1,117)	94.39 (18,803)	100 (19,992)
Chi-square: 4.97 (p=0.03)			
<i>(I-2) Desire not to let my coworker down</i>			
GS	2.11 (366)	97.89 (16,987)	100 (17,353)
PFP	1.42 (50)	98.58 (3,475)	100 (3,525)
Total	1.99 (416)	98.01 (20,462)	100 (20,878)
Chi-square: 7.16 (p=0.01)			
<i>(I-3) Recognition from my coworkers</i>			
GS	8.14 (1,172)	91.86 (13,219)	100 (14,391)
PFP	6.94 (208)	93.08 (2,787)	100 (2,995)
Total	7.94 (1,380)	92.06 (16,006)	100 (17,386)
Chi-square: 4.88 (p=0.03)			
<i>(I-4) Personal pride or satisfaction in my work</i>			
GS	0.34 (62)	99.66 (18,101)	100 (18,163)
PFP	0.19 (7)	99.81 (3,661)	100 (3,668)
Total	0.32 (69)	99.68 (21,762)	100 (21,831)
Chi-square: 2.19 (p=0.14)			
<i>(I-5) My duty as a public employee</i>			
GS	1.44 (246)	98.56 (16,801)	100 (17,047)
PFP	2.66 (89)	97.34 (3,260)	100 (3,349)
Total	1.64 (335)	98.36 (20,061)	100 (20,396)
Chi-square: 25.55 (p<0.01)			
<i>(I-6) Desire to help my work unit meet its goals</i>			
GS	1.29 (223)	98.71 (17,113)	100 (17,336)
PFP	1.34 (46)	98.66 (3,395)	100 (3,441)
Total	1.29 (269)	98.71 (20,508)	100 (20,777)
Chi-square: 0.06 (p=0.81)			

Note: Number in parentheses is cell frequencies

Table VII presents the odds ratios (OR) of each 2 X 2 table. The odds are the ratio of the probability of an event occurring to the probability of the event not occurring (Powers & Xie, 2000). The table shows that the odds of reporting the importance of not letting down supervisor for employees in the GS are 1.2 (1/0.84) times greater than those in the PFP. The odds of stating that duty as a public servant is important are 88% greater for employees in the GS system than those in PFP system. The odds of reporting that not letting down a coworker and personal pride are important for public managers in the PFP are greater than those in the GS.

TABLE VII

ODDS-RATIOS OF INTRINSIC VALUE MODELS

Variable	Odds ratio (OR) ²⁰	OR significant*
Not letting down supervisor	0.84	Yes
Not letting down coworker	1.49	Yes
Recognition	1.18	Yes
Personal pride	1.79	No
Duty as a public servant	0.53	Yes
Helping agency meet its goal	0.99	No

*Level of 0.10; PFP=1, GS=0

Table VIII provides the 2 X 2 tables for each extrinsic value variable. There is no difference between the PFP and the GS systems regarding perceptions of cash rewards (both \$100 and \$1,000): the proportions of each cell are homogeneous for the two variables. About 86.7 percent of employees in the PFP system report that increased chance for promotion is important, whereas 81.6 percent of the employees in the GS state that this is important for them ($\chi^2=50.1$; $p<0.01$). There is a significant difference ($p<0.05$) between the two groups with

²⁰ I compute the odds ratios of each 2 x 2 table (cell frequencies: $f_{11}, f_{12}, f_{21}, f_{22}$) by using the formula, $\Omega = \frac{f_{11} \times f_{22}}{f_{12} \times f_{21}}$

respect to good performance ratings, indicating that employees in the PFP system are more likely than those in the GS to state that receiving a good performance rating is important for them.

Approximately 67 percent of employees in the PFP perceive that a time off reward of 8 hours is important, compared to about 61 percent of the GS employees ($p < 0.01$). This pattern is also true for the noncash reward variable ($p < 0.01$).

TABLE VIII

CROSSTABS OF EXTRINSIC VALUES OF EMPLOYEES BY PAY SYSTEMS (%)

	Unimportant	Important	Total
	<i>(E-1) A cash award of \$100</i>		
GS	52.20 (6,267)	47.80 (5,738)	100 (12,005)
PFP	53.16 (1,296)	46.84 (1,142)	100 (2,438)
Total	52.36 (7,563)	47.64 (6,880)	100 (14,443)
Chi-square: 0.74 ($p = 0.40$)			
	<i>(E-2) A cash award of \$1,000</i>		
GS	13.58 (1,976)	86.42 (12,571)	100 (14,547)
PFP	13.56 (402)	86.44 (2,562)	100 (2,964)
Total	13.58 (2,378)	86.42 (15,133)	100 (17,511)
Chi-square: 0.00 ($p = 0.97$)			
	<i>(E-3) Increased chance for promotion</i>		
GS	13.29 (1,899)	86.71 (12,394)	100 (83.64)
PFP	18.38 (514)	81.62 (2,282)	100 (2,796)
Total	14.12 (2,413)	85.88 (14,676)	100 (17,089)
Chi-square: 50.10 ($p < 0.01$)			
	<i>(E-4) Desire for a good performance rating</i>		
GS	5.31 (837)	94.69 (14,916)	100 (15,753)
PFP	6.33 (197)	93.67 (2,916)	100 (3,113)
Total	5.48 (1,034)	94.52 (17,832)	100 (18,866)
Chi-square: 5.17 ($p = 0.02$)			
	<i>(E-5) A time off reward of 8 hours</i>		
GS	33.02 (4,169)	66.98 (8,458)	100 (12,627)
PFP	35.90 (917)	64.10 (1,637)	100 (2,554)
Total	33.50 (5,086)	66.50 (10,095)	100 (15,181)
Chi-square: 7.95 ($p < 0.01$)			

TABLE VIII (continued)

	Unimportant	Important	Total
	<i>(E-6) Noncash recognition</i>		
GS	32.51 (4,109)	67.49 (8,531)	100 (12,640)
PFP	36.36 (936)	63.64 (1,638)	100 (2,597)
Total	33.16 (5,045)	66.84 (10,169)	100 (15,214)
Chi-square: 14.34 (p<0.01)			

Note: Number in parentheses is sample size in cell

TABLE IX

ODDS-RATIOS (OR) OF INTRINSIC VALUE MODELS

Variable	Odds ratio (OR)	OR significant*
A cash reward of \$100	0.96	No
A cash reward of \$1,000	1.00	No
Increased chance for promotion	0.68	Yes
Desire for a good performance rating	0.83	Yes
A time off reward	0.88	Yes
Noncash recognition	0.84	Yes

*Level of 0.10; PFP=1, GS=0

In order to adequately examine any cause and effect relationship in scientific research, some demographic variables that might influence the relationship of interest need to be controlled for. Hence, I use logistic regression analysis to more carefully examine the relationships while controlling for a set of demographic variables as shown in Tables X and XI. The control variables I use here have frequently been used to control for perceptual biases in empirical research on sector differences (for example, Houston 2000). These variables include gender, age, race, job tenure, income, and position.

Table X presents the logit models predicting differences in perceived intrinsic work values between the pay systems after controlling for demographic and job-related variables. There is no significant difference in perceptions between the GS and the PFP agencies with

respect to the “letting down supervisor” variable; however, a significant difference ($p < 0.05$) exists between the two groups for the “letting down coworker” measure: employees in the PFP are less likely to let down a coworker than those in the GS. Public managers in the PFP have a tendency to be recognized in the agency, compared to those in the GS (Odds ratio: $e^{(0.32)} = 1.38$). In other words, an employee’s odds of being recognized in the PFP are 38 percent greater than those in the GS.

For public service duty, there is a significant difference in perceptions between the PFP and the GS ($p < 0.001$) employees after controlling for all other variables. It can be interpreted that employees in the GS are about twice ²¹ as likely as those in the PFP to report that public service duty is important for them. Given that the magnitudes of the regression coefficient and odds ratio are larger than any other variables in the intrinsic value models, this value may be a striking feature of the GS system. There is not a significant difference in their helping behaviors within their agencies.

It is important to note that job position is positively associated with a set of intrinsic values. This indicates that the higher position of the employees, the more likely it is that they will perceive intrinsic work values as important. The income variable also posits a systematic pattern across the models, indicating that the higher the income, the less likely it is that they perceive intrinsic values as important after controlling for all other variables. Given that the proportions of employees in a high job position and that distributions of income differ across the agencies, position and income are important control variables to take into account the reporting bias in these models.

²¹ Odds ratio for PFP employees: $e^{(-0.70)} = 0.497$. In order to interpret the odds ratio more easily, I recalculate the odds ratio for GS employees: $1/0.497 = 2.01$ (odds ratio for GS employees)

TABLE X

LOGIT MODELS PREDICTING PERCEPTUAL DIFFERENCES IN INTRINSIC VALUES BETWEEN PFP AND GS SYSTEMS

Variable	Not Letting down supervisor	Not Letting down coworker	Recognition	Personal pride	Duty as a public servant	Helping agency meet its goal
PFP employee	0.00 (0.11)	0.50 (0.21)**	0.32 (0.11)***	0.64 (0.59)	-0.70 (0.16)***	0.23 (0.24)
Male	-0.30 (0.07)***	-0.20 (0.11)*	0.09 (0.06)	-0.40 (0.27)	0.11 (0.12)	-0.66 (0.15)
Minor	-0.00 (0.08)	-0.37 (0.11)***	-0.06 (0.07)	-0.79 (0.26)***	0.33 (0.15)**	0.30 (0.17)*
Age	-0.00 (0.00)	0.02 (0.01)**	0.02 (0.00)***	0.02 (0.02)	0.03 (0.01)***	0.01 (0.01)
Extrinsic rewards	-0.28 (0.09)***	-0.48 (0.14)***	-0.28 (0.08)***	0.09 (0.33)	-0.60 (0.16)***	-0.69 (0.18)***
Years of tenure	-0.01 (0.00)**	-0.00 (0.01)	0.00 (0.00)	-0.02 (0.01)	0.00 (0.01)	-0.01 (0.01)
Position	0.28 (0.03)***	0.52 (0.05)***	0.22 (0.03)***	0.32 (0.13)**	0.20 (0.05)***	0.64 (0.07)***
Likelihood ratio χ^2	96.19***	132.48***	120.84***	21.95***	72.30***	117.10***

Numbers in parenthesis are standard errors; *p<0.10, **p<0.05, ***p<0.01; N= 31,101

TABLE XI

LOGIT MODELS PREDICTING PERCEPTUAL DIFFERENCES IN EXTRINSIC VALUES BETWEEN PFP AND GS SYSTEMS

Variable	A reward of \$100	A reward of \$1,000	Promotion	Good performance rating	Time off reward	Noncash recognition
PFP employee	0.10 (0.07)	0.21 (0.08)***	0.20 (0.08)**	0.48 (0.13)***	-0.10 (0.07)	-0.14 (0.06)**
Male	-0.16 (0.04)***	-0.13 (0.05)**	-0.18 (0.05)***	-0.64 (0.08)***	-0.00 (0.00)*	-0.35 (0.04)***
Minor	0.17 (0.04)***	-0.03 (0.06)	0.67 (0.06)***	0.60 (0.10)***	0.33 (0.05)***	0.57 (0.05)***
Age	-0.01 (0.00)***	-0.02 (0.00)***	-0.03 (0.00)***	-0.00 (0.00)	-0.00 (0.00)*	-0.01 (0.00)***
Extrinsic rewards	-1.73 (0.06)***	-0.01 (0.07)***	-1.43 (0.08)***	-0.78 (0.10)***	-1.14 (0.06)***	-0.63 (0.05)***
Years of tenure	0.01 (0.00)***	0.02 (0.00)***	-0.02 (0.00)***	0.00 (0.00)	-0.01 (0.00)***	-0.00 (0.00)
Position	-0.16 (0.02)***	-0.10 (0.02)***	0.06 (0.02)***	0.00 (0.03)	-0.25 (0.01)***	0.04 (0.02)**
Likelihood ratio χ^2	1,997.50***	452.99***	1,116.63***	257.88***	1,908.67***	637.87***

Numbers in parenthesis are standard errors; *p<0.10, **p<0.05, ***p<0.01; N= 31,078

For extrinsic values (see Table XI), there is no significant difference in perceptions of a reward of \$100 between the two groups. However, their perceptions regarding a reward of \$1,000 differ between the two groups ($p < 0.01$), indicating that employees in the PFP are more likely than those in the GS to report that a reward of \$1,000 is an important motivation to work: the odds of stating that a reward of \$1,000 is an important motivation are 23% (OR: $e^{(0.21)} = 1.23$) greater in the PFP than those in the GS after controlling for all other variables. I speculate that \$100 cash may be considered too small an amount of money, which cannot differentiate the PFP from the GS groups, but that a reward of \$1,000 is differently perceived between the PFP and the GS. This perceptual gap between the two groups would remain wide as the magnitude of a cash reward increases.

For promotion, the difference in the log odds between the two groups is 0.20, which is statistically significant at the level of 0.05. It is interpreted that public managers in the PFP are about 1.2 times (OR: 1.22) more likely than those in the GS to think that promotion is an important motivator. The magnitude of the coefficient of the main independent variable in the good performance rating model is the largest among the models in extrinsic values. The odds of reporting that good performance rating is an important motivator for employees in the PFP are 1.6 times (OR: $e^{(0.48)} = 1.62$) greater than those in the GS. This indicates that employees in the agencies that adopt PFP place higher importance on good performance ratings than those in agencies with GS. There is no significant difference in perception of time off reward between the groups; however, noncash recognition such as letter of appreciation may be a more important value in GS agencies than in PFP agencies (OR: $e^{(-0.14)} = 0.87$; $p < 0.05$).

It is interesting to note that gender is a significant factor that affects perceptions of extrinsic values. In fact, the systematic differences between men and women do not appear in the

models of intrinsic values—only the first two models are significant. Female workers are more likely than males to perceive sets of extrinsic values as an important motivator, after controlling for pay systems and other demographic variables.

In short, the direction of regression coefficients is not fully consistent with my expectations that intrinsic values such as recognition and helping coworkers are a feature of individuals in PFP agencies. However, public service duty is found to be an important characteristic of public managers in GS agencies. Systematic differences in extrinsic values exist between public managers in the PFP and the GS systems—especially, cash rewards, promotions, and performance ratings. Public managers in the PFP have a higher propensity to hold these values than those in the GS, after controlling for other sociodemographic variables.

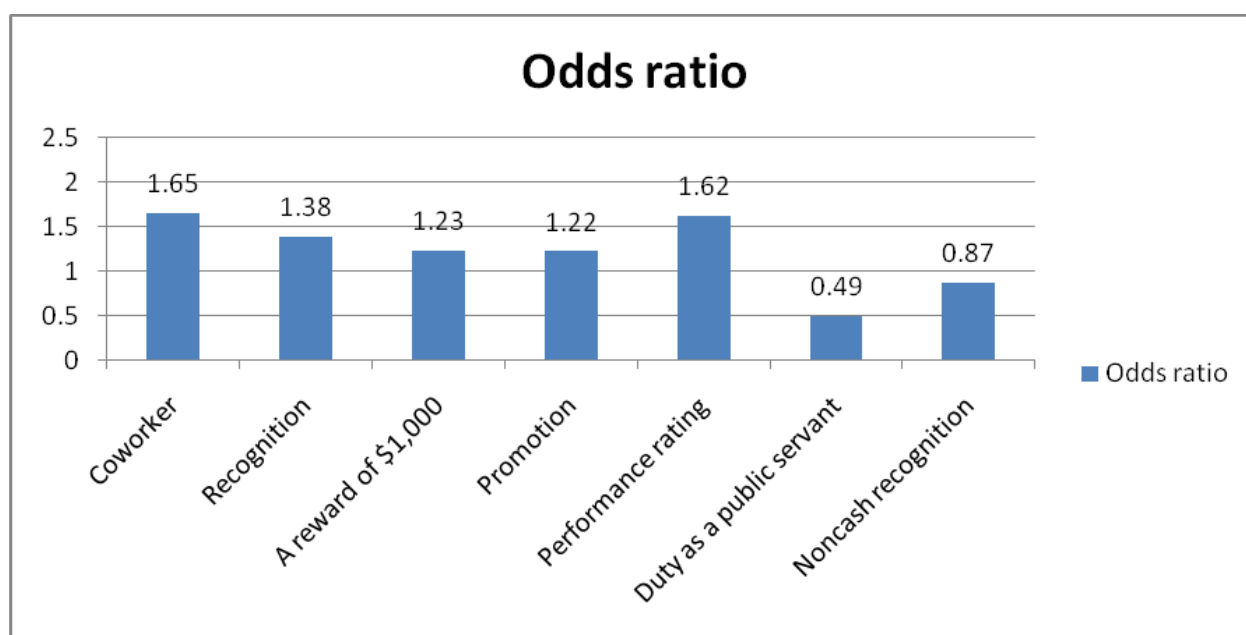


Figure 3 Comparisons of Odds Ratio of the Values that are Significant (PFP=1, GS=0)

5.3 Comparing Job Satisfaction among Agencies

5.3.1 Comparison of Job Satisfaction among Agencies

Figure 4 depicts the distribution of the degree of job satisfaction across federal agencies. All mean values are weighted and descriptive statistics including mean, standard error, and 95% confidence interval for each agency are presented in Table 10. The average weighted mean of job satisfaction across all agencies is 18.20 (SE: 0.06), and the range of mean values is between 15.56 (SE: 0.28) and 19.61 (SE: 0.43). As can be seen in Figure 4, the Transportation Security Administration (15.56) is lowest in average employee job satisfaction, followed by the Bureau of the Immigration and Customs Enforcement (16.71), the Bureau of Customs and Border Protection (16.72), and the Federal Emergency Management Agency (17.34). In contrast, the Bureau of Alcohol, Tobacco, and Explosives has the highest average employee job satisfaction (19.67). The Executive Office of the U.S. Attorney (19.61) is next highest and the Office of the Comptroller of Currency (19.51) is in third place among the sampled agencies.

5.3.2 Comparison of Job Satisfaction between the PFP and the GS

Table XII presents the weighted mean job satisfaction for each pay system. The t-statistic (7.89) of the mean difference is significant at the level of 0.001, demonstrating that the aggregated mean of job satisfaction is significantly higher in the GS (18.31) than in the PFP (17.47) system. However, this finding should be considered tentative until a full regression model controlling for all other independent variables is examined. It remains to be seen whether this significant difference remains or not. This analysis will be discussed later in this chapter.

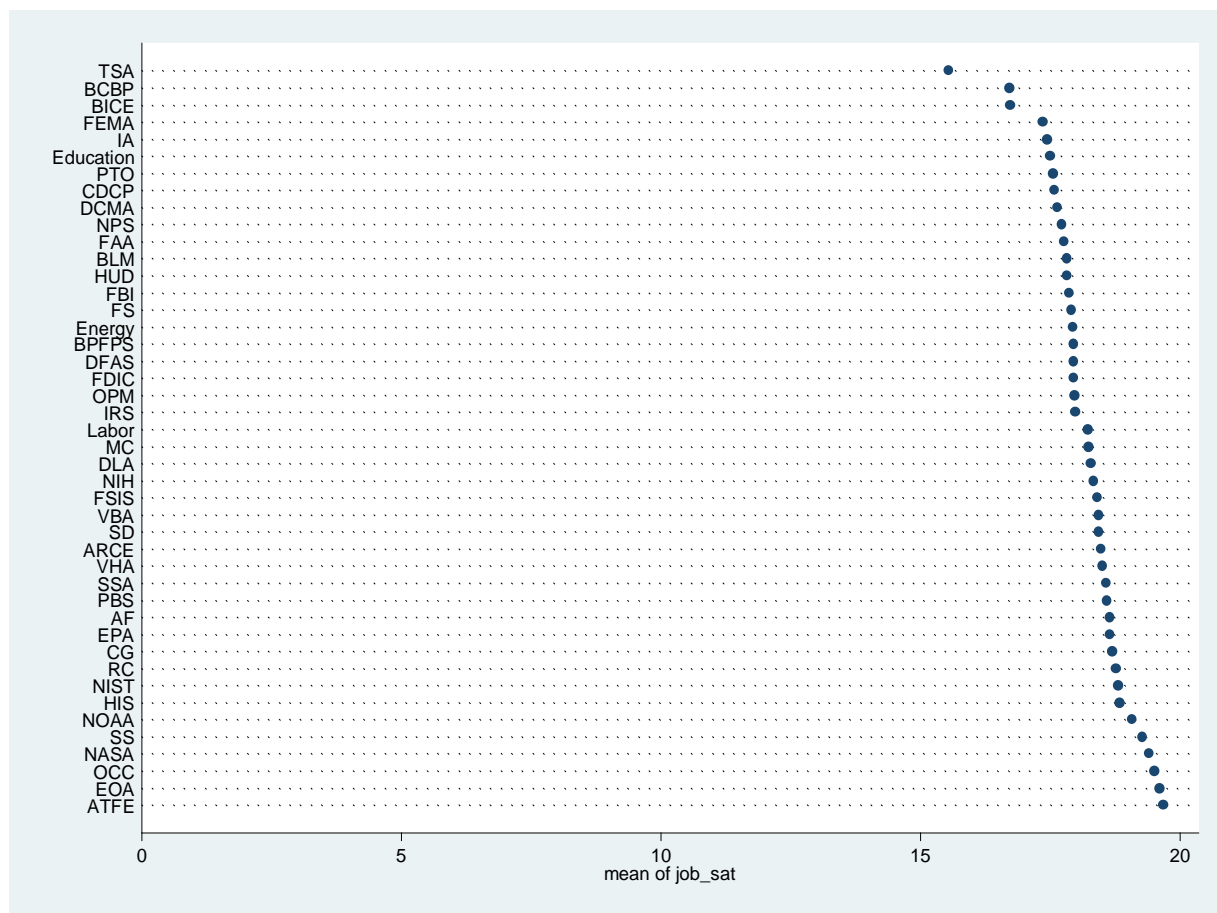


Figure 4. Comparison of the Degree of Job Satisfaction across Federal Agencies

(Each dot point is an aggregated mean job satisfaction rating)

TABLE XII

**MEAN AND CONFIDENCE INTERVAL FOR OUTCOME VARIABLES ACROSS
AGENCIES**

Agency	Job Satisfaction		Job Turnover	
	Mean	95% C.I.	Mean	95% C.I.
AF	18.65	18.24, 19.06	2.19	2.03, 2.35
ATFE	19.67	19.32, 20.01	1.76	1.63, 1.88
BCBP	16.71	16.22, 17.19	2.26	2.09, 2.43
BICE	16.72	16.30, 17.13	2.35	2.19, 2.50
BLM	17.82	17.44, 18.19	2.12	1.97, 2.26
BPFPS	17.95	17.57, 18.34	1.86	1.73, 1.99
CDCP	17.58	17.10, 18.05	2.02	1.87, 2.17
DCMA	17.64	17.28, 18.00	2.31	2.16, 2.45
DFAS	17.95	17.61, 18.29	2.47	2.34, 2.61
DLA	18.28	17.91, 18.65	2.10	1.97, 2.24
Education	17.49	17.07, 17.92	2.39	2.24, 2.53
Energy	17.94	17.52, 18.36	2.29	2.13, 2.44
EPA	18.65	18.20, 19.10	1.94	1.80, 2.09
EOA	19.61	18.76, 20.46	2.01	1.72, 2.30
FAA	17.77	17.30, 18.23	2.04	1.88, 2.22
FBI	17.86	14.07, 21.64	1.43	0.89, 1.97
FDIC	17.95	17.59, 18.30	2.02	1.89, 2.16
FEMA	17.35	16.96, 17.73	2.55	2.41, 2.70
FSIS	18.41	18.01, 18.81	1.82	1.68, 1.96
FS	17.91	17.55, 18.26	2.07	1.91, 2.22
HUD	17.83	17.24, 18.42	2.22	2.02, 2.41
23IA	17.44	16.82, 18.05	2.46	2.24, 2.67
HIS	18.83	18.35, 19.30	2.23	2.03, 2.42
IRS	17.98	17.59, 18.38	1.93	1.79, 2.07
Labor	18.22	17.81, 18.63	2.20	2.06, 2.33
NASA	19.41	19.06, 19.76	1.88	1.75, 2.00
NIST	18.80	18.40, 19.22	2.13	1.97, 2.28
NIH	18.33	17.81, 18.84	2.52	2.33, 2.71
NOAA	19.07	18.74, 19.40	1.73	1.62, 1.84
NPS	17.72	17.27, 18.16	2.03	1.88, 2.18
RC	18.77	18.42, 19.13	1.74	1.60, 1.86
OPM	17.96	17.57, 18.34	2.37	2.21, 2.52

TABLE XII (continued)

Agency	Job Satisfaction		Job Turnover	
	Mean	95% C.I.	Mean	95% C.I.
OCC	19.51	19.18, 19.84	1.77	1.66, 1.89
PTO	17.55	17.13, 17.97	2.20	2.06, 2.34
PBS	18.59	18.07, 19.10	2.10	1.94, 2.26
SSA	18.58	18.22, 18.94	1.89	1.77, 2.01
SD	18.44	17.83, 19.06	2.03	1.82, 2.24
TSA	15.55	15.00, 16.10	3.06	2.86, 3.26
CG	18.69	18.24, 19.13	2.27	2.08, 2.46
MC	18.23	17.85, 18.61	2.16	2.02, 2.31
SS	19.28	18.91, 19.65	2.03	1.88, 2.17
ARCE	18.48	18.08, 18.88	2.09	1.94, 2.24
VBA	18.43	18.02, 18.83	2.03	1.89, 2.18
VHA	18.50	18.02, 18.98	2.03	1.87, 2.19
Average	18.20	19.09, 18.31	2.17	2.13, 2.21

TABLE XIII**DIFFERENCE IN MEAN OF JOB SATISFACTION BETWEEN THE GS AND THE PFP**

Variable	Mean	95% confidence interval
GS	18.31	18.17 – 18.45
PFP	17.47	17.22 – 17.71
GS-PFP	0.84	0.56 – 1.12
T-statistic	7.89 ***	

***p<0.001; one-tailed

5.4 Comparing Job Turnover Intention among Agencies

5.4.1 Comparison of Job Turnover Intention among Agencies

The average mean job turnover intention is 2.16 (SE: 0.02), and the population mean for all federal agencies lies between 2.13 and 2.21 at the 95 % confidence level. Whereas the average job turnover intention of employees is highest in the Transportation Security Administration (3.06), and lowest in the Federal Bureau of Investigation (1.43). The correlation coefficient of job satisfaction and turnover intention at the agency level is about -0.63, displaying a strong negative correlation. This indicates that agencies with a higher degree of employee job satisfaction have lower mean levels of job turnover intention.

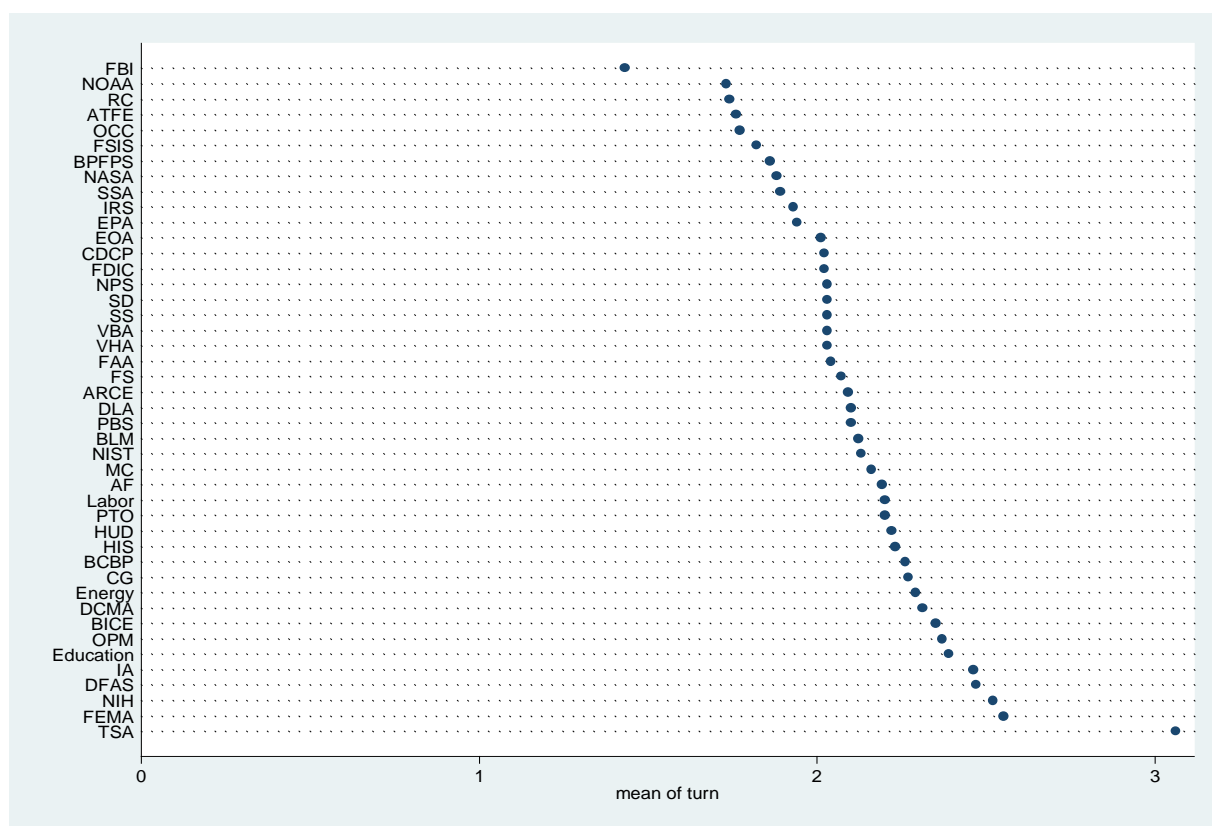


Figure 5. Distribution of the Degree of Job Turnover Intention across Federal Agencies (Each dot point is an aggregated mean of job turnover intention)

5.4.2 Objective Turnover Rates among Agencies

Figure 6 shows comparisons of objective job turnover rates across federal agencies by year from 2005 and 2008. In 2005, the Office of the Comptroller of Currency had the highest job turnover rate (18.6 %), followed by the Forest Service (18.5%), the Federal Deposit Insurance Corporation (15.9%), and the Transportation of Security Administration (15.2%). The job turnover rates in 2005 were higher than those of any other year for most of the agencies, and there were some pronounced heaping in some agencies such as the Federal Deposit Insurance Corporation, the Office of the Comptroller of Currency, and the Public Buildings Service. The possible reason why the turnover rates were higher in 2005 than in 2007 and 2008 may be that the turnover rates of federal employees have decreased since 2007 because the job market has been frozen due to the economic recession in the U.S. The agency turnover rates between years are found to be positively correlated: 0.70 (Pearson correlation coefficient) between 2005 and 2006, 0.69 between 2005 and 2007, and 0.60 between 2005 and 2008.

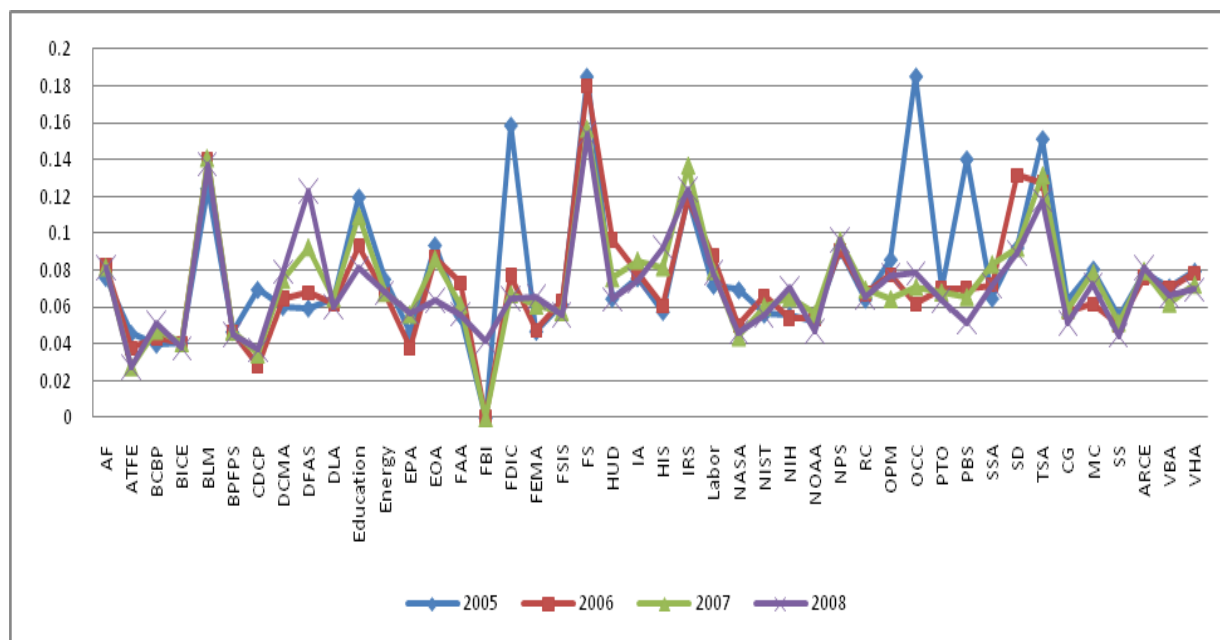


Figure 6. Objective Turnover Rates across Federal Agencies, By Year (N=44)

Data source: The Central Personnel Data File at FedScope (www.fedscope.opm.gov)

Figure 7 depicts comparisons of the subjective job turnover intention rate ²² in the 2005 MPS data and the objective turnover rate for each year. It clearly shows that subjective job turnover intention is much higher than the real job turnover rate, indicating that employees who express quitting a job do not always realize job turnover in the federal government. While the subjective turnover rate is highest for employees in the Transportation Security Administration (46.3%), it is lowest for those in the National Oceanic and Atmospheric Administration (13.1%). For correlations between the subjective and the objective rates, there is a meager relationship ($\rho = 0.05$) between the 2005 subjective rate and the 2005 objective rate, but the relationship gets stronger ($\rho = 0.20$) between the subjective rate and the 2006 objective rate. This relationship is much stronger ($\rho = 0.29$) between the 2005 subjective and the 2007 objective measure: and

²² The subjective job turnover intention rate of an agency is generated by the weighted ratio of people expressing “very likely” or “likely” intention of turnover to the total by agency.

between the 2005 subjective and the 2008 objective measure ($\rho = 0.33$). This implies that job turnover intention may be a 3 or 4 year early indicator of actual turnover, though employees may also tend to excessively overreport in the survey.

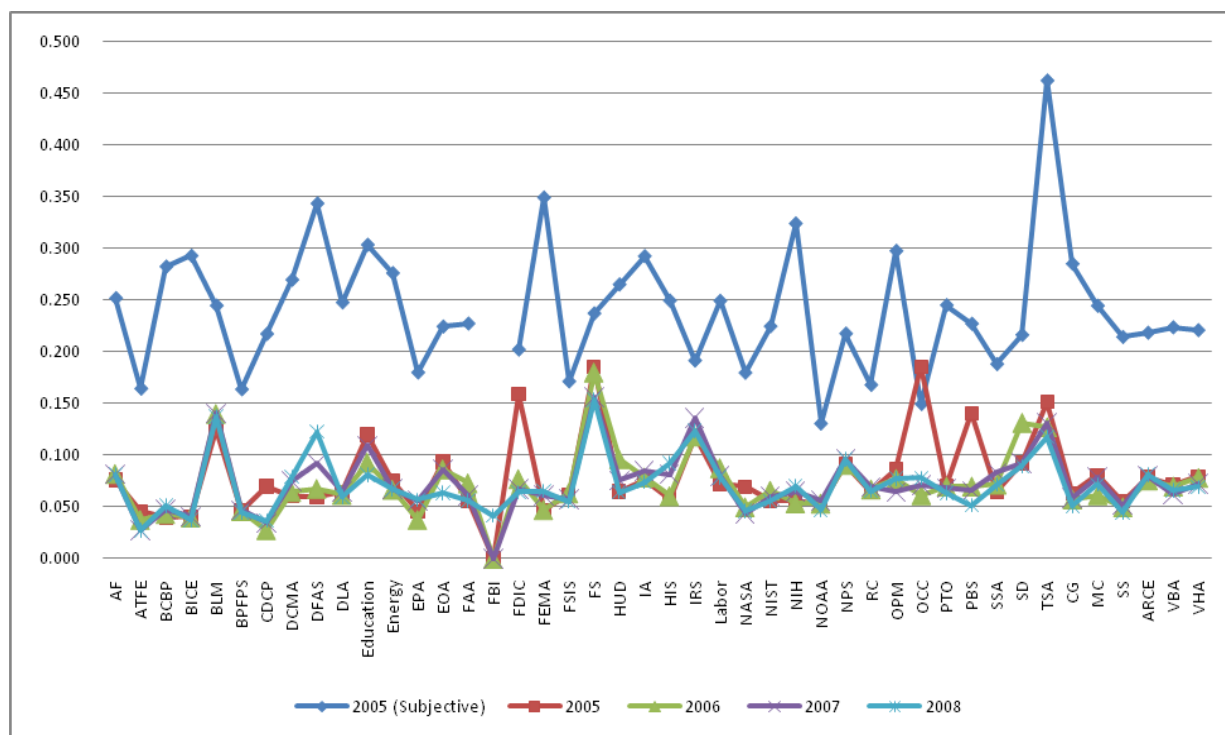


Figure 7. Subjective and Objective Turnover Rates across Agencies, By Year (N=44) (Data source: 1. The Central Personnel Data File, 2. 2005 Merit Principles Survey Data)

5.4.3 Comparison of Job Turnover Intention between the PFP and the GS

Table XIV presents the means and standard errors of raw values of employees' job turnover intention between the PFP and the GS. The aggregated mean of employees' turnover intention is slightly higher in the PFP (2.22) than in the GS (2.13), a difference that is significant at the level of 0.05, with no control variables.

TABLE XIV

DIFFERENCE IN MEAN OF TURNOVER INTENTION BETWEEN THE PFP AND THE GS

Variable	Mean	95% confidence interval
GS	2.10	2.05 – 2.14
PFP	2.22	2.13 – 2.31
PFP - GS	0.13	0.02 – 0.23
T-statistic	2.43*	

***p<0.05; one-tailed

5.5 Moderate Effects of Pay Systems on Job Attitudes

In order to accurately estimate the effects of pay systems, organizational human capital, work-related, and control variables on job attitudes, hierarchical linear modeling was utilized. This statistical method allows one to capture a cross-level interaction effect which examines how relationships between extrinsic rewards and job attitudes vary between the two pay systems in the model. All variables employed in the models are described in Table XV.

TABLE XV

DESCRIPTIVE STATISTICS OF VARIABLES (N=36,920)

Variable	Measurement	Mean	S.D.	Minimum	Maximum
Job satisfaction	1-25 index	18.70	3.97	5	25
Job turnover intention	1-5 scale	1.99	1.35	1	5
Extrinsic rewards (in logarithm)	Interval/ratio scale	11.25	0.42	6.91	13.81
Training	1-10 index	7.40	1.90	2	10
Individual resource	1-5 scale	3.53	1.03	1	5
Job tenure intention (in year)	Interval/ratio scale	16.18	9.60	0	99*
Union membership	1: union member 0: non-union	0.12		0	1
Team collaboration	1-15 index	10.93	2.73	3	15
Trust in supervisor	1-25 index	18.07	4.63	5	25
Mission attachment	1-15 index	13.52	1.77	3	15
Age (in year)	Interval/ratio	49.06	8.76	6	80*
Gender	1: male, 0: female	0.59		0	1
Race	1: minor, 0: White	0.35		0	1
Education	1-5 scale	2.89	1.23	1	5
Position	1-5 scale	2.28	1.23	1	5
Pay systems	1:PFP, 0: GS	0.17		0	1
Organizational size (in logarithm)	Interval/ratio	9.70	0.96	7.92	12.29
Organizational budget size in 2005 (in logarithm)	Interval/ratio	8.21	2.63	-0.92	13.35

Note: * Illegitimate values that might be due to measurement errors in the survey were excluded in analytical models

5.5.1 Job Satisfaction Models for Supervisors

Table XVI presents multilevel models regressing job satisfaction²³ on both individual- and agency-level variables that are presented in the above table. To investigate how much variance is accounted for by agency-level variables in the model, I partitioned variances into two levels—individual and agency levels—in a null model (model 1). This is also called an unconditional model in which no predictors are entered in the model. The null model shows the individual residual variance of 12.97 and the agency-level variance of 0.85, yielding an intraclass correlation coefficient (ICC)²⁴ of 0.06. This indicates that about 6 percent of the variance in job satisfaction is accounted for by agency-level characteristics in the model. This suggests that a conventional OLS regression, with overlooking the agency-level clustering effects that are left unexplained by individual-level variables, may be at increased risk of committing type-I errors (Snijders & Bosker, 1999). From the random variances, the overall distribution of the degree of job satisfaction can be estimated in the population. The overall mean (γ_{00} :19.14) has a standard deviation²⁵ of 3.59, indicating that the expected value of job satisfaction in a randomly chosen agency is 19.14.

²³ Although job satisfaction is perceived as a predictor of turnover intention and both variables are highly correlated one another, this study uses the two variables separately as outcome variables. The simple correlation coefficient between the two variables is -0.43. The range of the correlation coefficients between the two variables in four different settings (e.g., PFP/nonsupervisor, PFP/supervisor, GS/nonsupervisor, GS/supervisor) is between -0.39 and -0.46.

²⁴ $ICC = \frac{\tau_0}{(\tau_0 + \sigma^2)} = \frac{0.85}{(0.85 + 12.97)} \approx 0.06$. The ICC is an important statistical property used to judge which model is more appropriate to take—the multilevel or the conventional OLS. Statistically speaking, the ICC is the correlation among people who are randomly drawn within a same agency, which violates the critical assumption of the conventional OLS regression that no correlation in error terms exists between two independent variables. Thus, if the value of the ICC is positive, then hierarchical linear modeling is considered a better method than OLS (Snijders and Bosker 1999).

²⁵ The standard deviation is computed with the two random parts: $\sqrt{(12.97) + (0.85)} \approx 3.59$

In model 2, only individual-level variables are entered in the model making the intercepts and slopes of the monetary rewards variable vary –that is, the random intercept and slope model. After taking into account all individual-level predictors, the individual variance is sharply reduced by about 64 percent from 12.97 to 4.70, which indicates that the variance in job satisfaction is partially explained by the individual-level predictors in the model. The agency-level variance of an intercept is even lower in model 2 (0.85) than model 1(0.11), a reduction by about 63.8 percent. This implies that agencies differ in the average score of job satisfaction. In the model, the variance of 0.42 means that the slopes of regression lines differ in direction from agency to agency with a standard deviation of about 0.65 (standard deviation: $\sqrt{0.42} \approx 0.65$).

As noted previously, this model makes the slope of the monetary rewards variable vary at random, and the coefficient of the variable is an average effect of monetary rewards on job satisfaction across agencies. This variable is found to be positively related to job satisfaction ($r=0.68$, $p<0.01$), which implies that the average regression slope of this variable is significantly different from zero and that a significant correlation between monetary rewards and job satisfaction exists at the agency-level. This particular relationship will be discussed in more detail later.

I found a positive correlation between training and job satisfaction ($p<0.01$), which suggests that employees have a higher degree of job satisfaction when receiving more opportunities for job training. It turned out that the level of job satisfaction increases as employees obtain more individual resources ($p<0.01$). The length of work tenure at current agency, whether a union membership or not, and job position (the difference between senior and junior-level workers) were not significant factors in predicting supervisory employees' job satisfaction ($p>0.1$). All social capital factors turned out to be significantly and positively

associated with job satisfaction ($p < 0.01$): higher degrees of team collaboration, trust in supervisors, and mission attachment all positively increased the degree of job satisfaction of public managers. The demographic control variables significantly influence the outcome variable. Although both individual-and agency-level variances have been remarkably reduced, both agency-level intercept and slope variances are still positive (0.11 and 0.42) in model 2, which implies that there is variation left in job satisfaction that is not explained by predictors entered in the model. As a next step, additional variables including institutional factors are entered in model 3 to examine the cross-level interaction effect.

Model 3 specifies a random slope and intercept model using all the independent predictors, three agency-level institutional predictors, and cross-level interaction terms. For random effects, the variances of individual-level residuals have changed little, but the variance of the slope has been sharply reduced from 0.42 in model 2 to 0.18 in model 3, a reduction of 57.1 percent in variance. This implies that institutional factors including the pay systems variable explain differences in the effect of monetary rewards on job satisfaction across agencies. The conditional ICC²⁶ in model 3 is computed as the ratio of intercept variance to total variance after taking into account all individual-and agency-level variables in the model. The conditional ICC (0.02) is about a third the value (0.06) of the unconditional ICC in model 1, indicating that variation in job satisfaction is largely accounted for by institutional factors including pay systems.

For individual-level fixed effects, the magnitude of the regression coefficients has changed little between model 2 and model 3, and the statistical significance of the coefficients remains in model 3. For agency-level fixed effects, the average value of job satisfaction of all agencies is 19.1 after taking into account all other variables, which also have changed little,

²⁶ The conditional ICC in model 3 = $\frac{\tau_0(\text{Model3})}{\tau_0(\text{Model3}) + \sigma^2(\text{Model3})} = \frac{0.10}{0.01 + 4.70} \approx 0.02$

relative to model 1. Particularly, GS agencies have the higher average job satisfaction value than PFP agencies ($p < 0.05$), after controlling for all other variables, which is consistent with the previous simple t-test. In addition, the smaller the agency size and the larger the agency budget, the greater the average job satisfaction for supervisors. Most important, the cross-level interaction variable is positively associated with job satisfaction ($r = 1.38$, $p < 0.10$), indicating that the relationship between extrinsic rewards and job satisfaction varies depending on the two pay systems. This can be interpreted as indicating that supervisory-level employees working in PFP agencies feel a higher degree of job satisfaction than those working in the GS when both groups of employees receive the same amount of reward increase. In other words, the job attitude of employees at the supervisory level is more influenced by extrinsic rewards in the PFP than in the GS system, which is consistent with the hypothesis in this study.

TABLE XVI

HLM PREDICTING JOB SATISFACTION FOR SUPERVISORS

Variable	Model 1	Model 2	Model 3
Fixed Effect			
Intercept (γ_{00})	19.14 (0.15)***	19.11 (0.06)***	19.10 (0.06)***
<i>Work-related factor</i>			
Training		0.47 (0.05)***	0.47 (0.05)***
Individual resource		0.42 (0.05)***	0.43 (0.05)***
Rewards		0.68 (0.20)***	0.58 (0.19)***
Job tenure		-0.01 (0.01)	-0.01 (0.01)
Union membership (yes=1)		-0.09 (0.20)	-0.08 (0.18)
Position (upper level=1)		0.02 (0.08)	0.02 (0.08)
<i>Perceived social capital factor</i>			
Team collaboration		0.25 (0.03)***	0.25 (0.03)***
Trust in supervisor		0.36 (0.02)***	0.36 (0.02)***
Mission attachment		0.28 (0.03)***	0.28 (0.03)***
<i>Sociodemographic factor</i>			
Age		-0.01 (0.00)*	-0.01 (0.00)*
Gender (Male=1)		-0.03 (0.09)***	-0.31 (0.09)***
Race (Minority=1)		-0.25 (0.07)***	-0.25 (0.06)***
Education		-0.22 (0.06)***	-0.21 (0.05)***
<i>Institutional factor</i>			
Pay system (PFP=1)			-0.33 (0.08)**
Agency size			-0.12 (0.04)***
Agency budget			0.06 (0.03)**
Cross-level interaction			
Rewards \times PFP system			1.38 (0.54)**
Rewards \times OR size			0.04 (0.15)
Rewards \times OR budget size			-0.02 (0.05)
Random Effect			
Individual-level variance (σ^2)	12.97	4.70	4.70
Agency intercept variance (τ_0)	0.85***	0.11***	0.10***
Agency slope variance (τ_1)		0.42***	0.18***
Variance explained (%)			
Individual-level		63.8	63.8
Agency-level intercept		87.1	88.2
Agency-level slope			57.1
Deviance	27,673	22,530	22,520
N	5,107	5,107	5,107

*p<0.1, **p<0.05, ***p<0.01; standard error in parenthesis; number of agencies: 44

As has been noted, the HLM model with random intercept and slope enables one to capture relationships between independent and dependent variables across groups. As shown in Figure 8, a total of 44 regression lines are plotted: each regression line is a relationship between rewards and job satisfaction among employees of the agency. It clearly shows that the intercepts and slopes of the regression lines vary across agencies ($p < 0.01$) –the conventional OLS regression model disregards these variations. More important, the slopes of the regression lines in PFP agencies are steeper than those in GS agencies, indicating that monetary rewards are more positively associated with employee's job satisfaction in the PFP than in the GS, after controlling for individual-level variables and agency's size and budget. Yet, the figure shows that there is still variation among agencies after taking into account the pay system variable. This variation is an unobserved property that is not explained by the agency-level variables examined in this study. The intercept variance of 0.10 and the slope variance of 0.18 refer to this unexplained variance in model 3 in Table XVI.

Figure 9 displays the cross-level interaction effect (or moderating effect) of pay systems on the relationship between rewards and job satisfaction. Given that the coefficient of the cross-level interaction term is 1.38 (PFP=1), the slope difference between the PFP and the GS is 1.38: the slope for the PFP agencies is higher by that much. This indicates that employees in the PFP have a higher average value of job satisfaction than those in the GS by as much as 1.38 when one unit increase in monetary rewards is equally given to both the PFP and the GS employees.

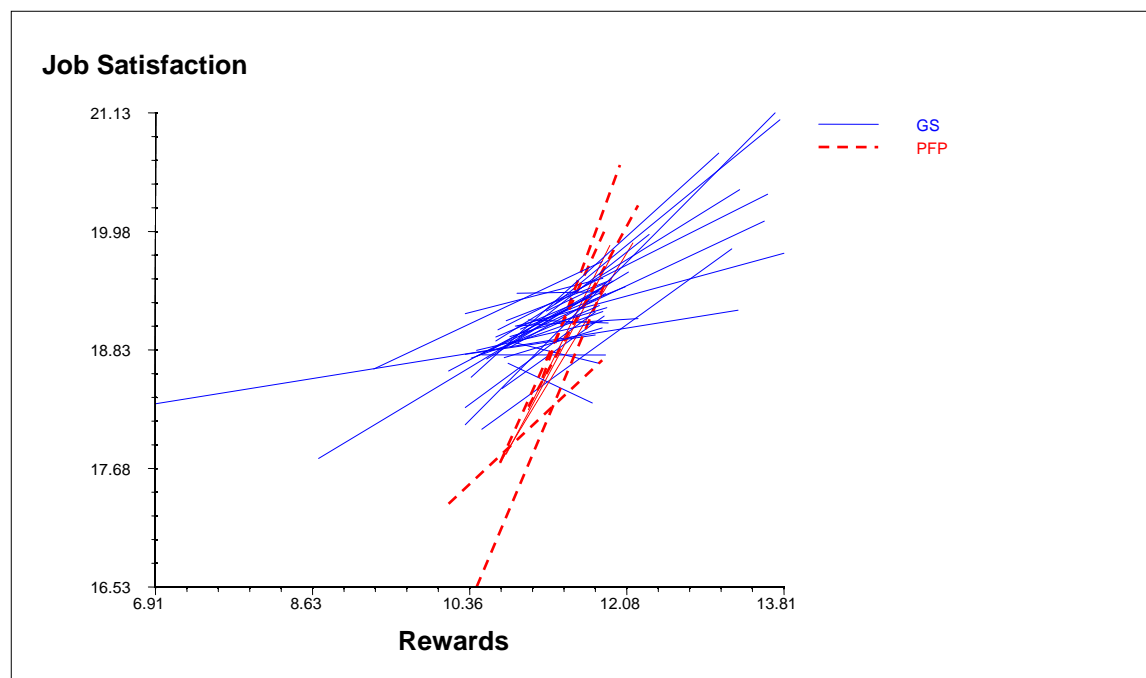


Figure 8. Relationships between Monetary Rewards and Job Satisfaction across Agencies, By Pay Systems for Supervisory Employees (N=44)

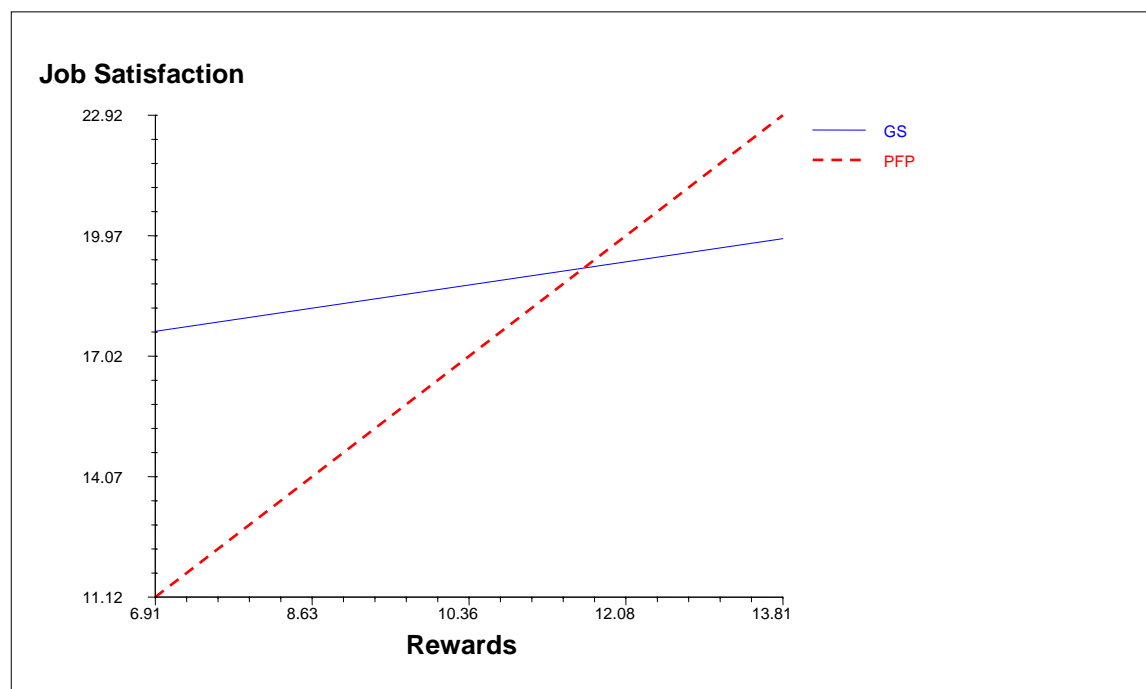


Figure 9. Cross-Level Interaction Effect of Pay Systems on the Relationship between Rewards and Job Satisfaction for Supervisory Employees

5.5.2 Job Satisfaction Models for Nonsupervisors

As shown in Table XVII, the unconditional model (model 1) presents the individual-level variance of 16.47 and agency-level total variance of 0.81, leading to an ICC of about 0.05. The ICC for nonsupervisors is slightly smaller than that for supervisors (0.06), but it is still not ignorable in that about 5 percent of total variation in job satisfaction for nonsupervisors is accounted for by agency-level characteristics in the model. The residual ICC has remarkably dropped to about 0.4 percent ($\frac{0.02}{0.02 + 5.46} \approx 0.004$) after taking into account all other variables in model 3, a reduction by less than a tenth of the unconditional ICC. This indicates that there is little variation left in job satisfaction that can be explained by agencies in the model, after taking into account all individual-and agency-level variables. Put another way, very little correlation exists between two randomly chosen employees within the randomly chosen agency in model 3.

The individual residual variance is reduced by about 67 percent in models 2 and 3, compared to that in the unconditional model, which means that about 67 percent of the variation in job satisfaction is accounted for by all the individual-level variables included in the model, while leaving about 33 percent unexplained at the individual level. For random parts, the variance of the random intercept has decreased by about 95 percent in model 2, and additionally decreased by 2.4 percent due to the additions of three agency-level variables in model 3. This means that job satisfaction for nonsupervisory employees is explained not only by agency differences (mostly: about 95 percent), but also by three agency-level variables (little: about 2.4 percent). In addition, the variance of the random slope has been reduced by 50 percent due to the three agency-level variables: the relationships between monetary rewards and job satisfaction vary across agencies and agency-level variation in job satisfaction can be explained by the three agency variables, including pay systems, by as much as 50 percent.

As can be seen from model 3 in Table XVII, training was found to be positively associated with job satisfaction for nonsupervisory employees ($p < 0.01$). Individual resources were also positively correlated with job satisfaction ($p < 0.01$). Job tenure and union membership did not reach conventional levels of statistical significance ($p > 0.10$), but nonsupervisory employees at the senior level had a higher degree of job satisfaction than those at the junior level ($p < 0.05$), even when age and job tenure were partialled out. As expected, monetary rewards have a strong positive correlation with job satisfaction among nonsupervisors, and this relationship varies across agencies without adding any agency-level variables in model 2 ($\tau_1 = 0.20$, $p < 0.01$) and even after including the pay system variable in model 3 ($\tau_1 = 0.13$, $p < 0.01$).

All the social capital variables are strongly and positively correlated with job satisfaction in the hypothesized directions; team collaboration is found to be positively correlated with job satisfaction ($r = 0.28$, $p < 0.01$); trust in supervisor ($r = 0.32$, $p < 0.01$) and mission attachment ($r = 0.24$, $p < 0.01$). There is little difference in regression coefficients between the supervisor model and the nonsupervisor model regarding work-related and social capital factors, but the regression coefficient ($r = 0.93$) for the monetary rewards variable in the nonsupervisor model is somewhat larger than in the supervisor model ($r = 0.58$). This demonstrates that the average relationship between rewards and job satisfaction among the agencies is stronger for nonsupervisory employees than for supervisory employees.

For the agency-level institutional variables, the pay system variable is found to be negatively related to job satisfaction ($r = -1.48$, $p < 0.10$), indicating that the average value of job satisfaction is higher in agencies adopting the GS system than in those utilizing the PFP, after controlling for all other individual-and agency-level variables. This difference is much larger, compared to the difference (-0.33) in the supervisor model, which shows that difference in the

average level of job satisfaction between the PFP and the GS is more pronounced in the nonsupervisory model than in the supervisor model. As expected, a cross-level interaction correlation reaches a high level of statistical significance ($r=0.76$, $p<0.01$), showing that the relationship between rewards and job satisfaction is stronger for nonsupervisory employees in the PFP than those in the GS. In other words, employees in the PFP get a higher degree of job satisfaction than those in the GS, given the same amount of rewards increase.

TABLE XVII

HLM PREDICTING JOB SATISFACTION FOR NONSUPERVISORS

Variable	Model 1	Model 2	Model 3
Fixed Effect			
Intercept (γ_{00})	17.96 (0.24)***	18.05 (0.05)***	18.03 (0.05)***
<i>Work-related factor</i>			
Training		0.52 (0.03)***	0.52 (0.03)***
Individual resource		0.45 (0.04)***	0.45 (0.04)***
Rewards		0.85 (0.19)***	0.93 (0.12)***
Job tenure		-0.01 (0.01)	-0.01 (0.01)
Union membership (yes=1)		-0.02 (0.10)	-0.03 (0.10)
Position (upper level=1)		0.09 (0.05)**	0.09 (0.05)**
<i>Perceived social capital factor</i>			
Team collaboration		0.28 (0.02)***	0.28 (0.02)***
Trust in supervisor		0.32 (0.01)***	0.32 (0.01)***
Mission attachment		0.24 (0.03)***	0.24 (0.03)***
<i>Sociodemographic factor</i>			
Age		-0.01 (0.01)	-0.01 (0.01)
Gender (Male=1)		-0.07 (0.14)	-0.06 (0.13)
Race (Minority=1)		-0.34 (0.10)***	-0.04 (0.10)***
Education		-0.03 (0.03)***	-0.21 (0.03)***
<i>Institutional factor</i>			
Pay system (PFP=1)			-1.48 (0.75)*
Agency size			-0.10 (0.11)
Agency budget			0.09 (0.04)**

TABLE XVII (continued)

Variable	Model 1	Model 2	Model 3
Cross-level interaction			
Rewards \times PFP system			0.76 (0.24)***
Rewards \times OR size			-0.10 (0.11)
Rewards \times OR budget size			0.04 (0.05)
Random Effect			
Individual-level variance (σ^2)	16.47	5.46	5.46
Agency intercept variance (τ_0)	0.81***	0.04***	0.02***
Agency slope variance (τ_1)		0.26***	0.13***
Variance explained (%)			
Individual-level		66.8	66.8
Agency-level intercept		95.1	97.5
Agency-level slope			50.0
Deviance	66,533	47,251	47,242
N	10,603	10,347	10,344

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; standard error in parenthesis; number of agencies: 44

Figure 11 demonstrates that the intercept and slope variances were statistically significant ($p < 0.01$) in model 3, showing that the average value of job satisfaction varies depending on the agency. In particular, relationships between monetary rewards and job satisfaction differ among the 44 agencies after taking into account all other variables. The regression slopes of the PFP agencies look steeper than those of the GS, which implies that monetary rewards have a stronger effect on the job satisfaction of nonsupervisory employees in the PFP than in the GS system. It is important to note that there is still variance within each pay system as shown in this figure. The slope variance in each system is the difference in the effects of rewards that is not explained by the three agency-level variables employed in this study.

The cross-level interaction effect of most interest in this study is visually displayed in Figure 11. The difference in average regression slopes between the PFP and the GS is 0.76 (see

model 3); the average slope of the PFP is higher than that of the GS by as much as 0.76. As noted previously, this suggests that nonsupervisory employees in the PFP feel more job satisfaction than those in the GS when they receive the same amount of increase in monetary rewards. Although this tendency is identical to both nonsupervisors and supervisors, the effect size in terms of the coefficient of the cross-level interaction term is somewhat different: 0.76 for nonsupervisors vs. 1.38 for supervisors (see Table XV). This suggests that the discrepancy between the PFP and the GS systems in terms of effect of rewards on job satisfaction is more pronounced at the supervisory level– the use of monetary rewards works more for supervisors than for nonsupervisors in the PFP.

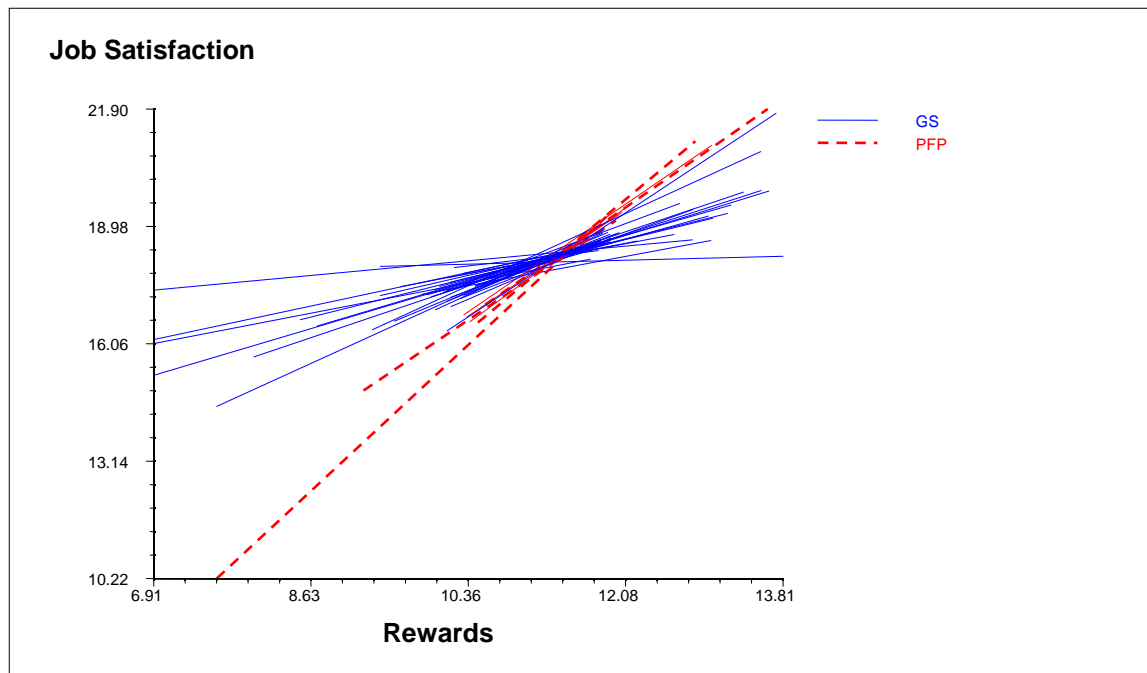


Figure10. Relationships between Monetary Rewards and Job Satisfaction across Agencies, By Pay Systems for Nonsupervisory Employees (N=44)

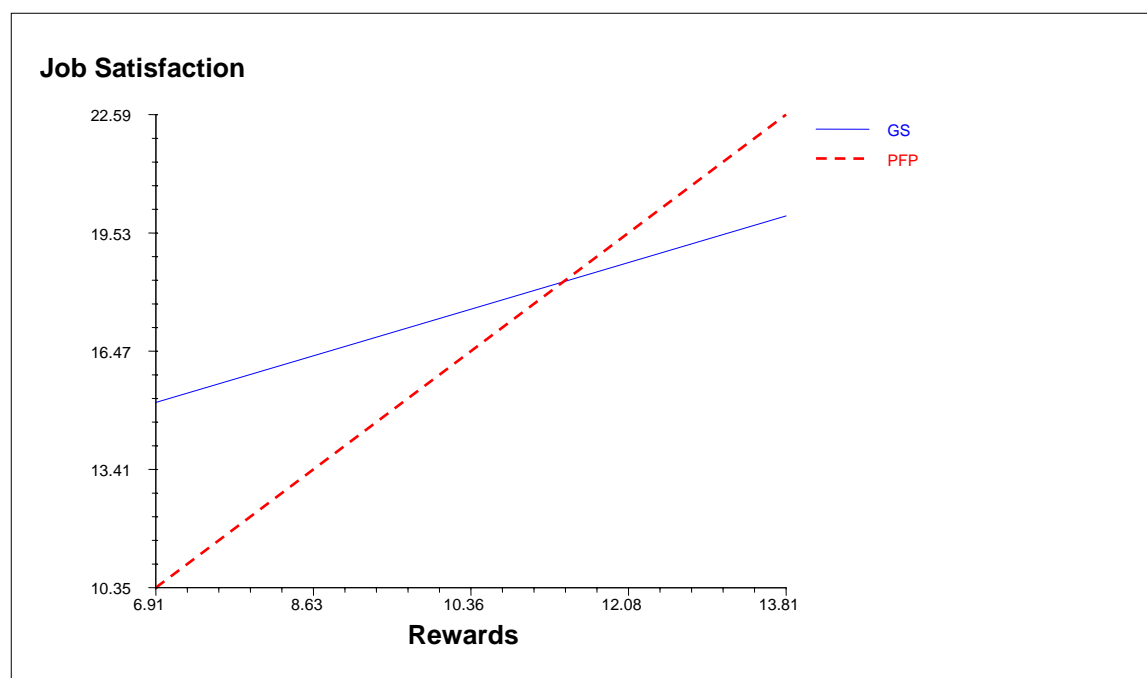


Figure 11. Cross-Level Interaction Effect of Pay Systems on the Relationship between Rewards and Job Satisfaction for Nonsupervisory Employees

5.5.3 Job Turnover Models for Supervisors

In order to examine the extent to which proportion is explained by observed and unobserved agency-level characteristics in this model, the unconditional ICC was computed using the individual residual variance and agency-level intercept variance in model 1. The unconditional ICC of 0.05 indicates that agency-specific features have an effect on employees' job turnover, as those did in the job satisfaction models. The final model (model 3) shows that individual residual variance was reduced by 9.8 percent after the introduction of all the individual-level predictors, agency-level intercept variance was decreased by about 75 percent, and agency-level slope variance was dropped by about 12.5 percent due to agency differences,

indicating that the individual-and agency-level variables used in this model have the power to predict employees' intentions to leave in federal agencies.

As can be seen from model 3 in Table XVIII, training is negatively associated with the job turnover intention of supervisory employees ($r = -0.08$, $p < 0.01$), but individual resources were not significantly related to job turnover intentions. Contrary to expectations, monetary rewards were found to be positively correlated with job turnover intentions, though this variable was not statistically significant ($p > 0.1$). The length of service years was negatively correlated with turnover intention ($r = -0.02$, $p < 0.01$), which means that the longer individuals stay in an agency, the less likely it is that they state their intention to quit. Each of the three social capital variables has negative relationships with job turnover intention, implying that employees' perception of social capital in their agency plays a crucial role in the high degree of job retention found in the federal government. There was no significant difference in the average value of job turnover intention between the two pay systems after all of the individual-level predictors and agency-level control variables were included –this finding is different from the previous comparison analysis with no control variables reported in Table XIV where the average level of job turnover intention in the PFP was significantly greater than that in the GS. The cross-level interaction term has a negative coefficient with modest strength ($p < 0.10$), indicating that the effect of rewards on job turnover intention is negatively stronger in the PFP than in the GS. In other words, high levels of monetary rewards work for job retention for supervisory employees in the PFP more than for those in the GS.

TABLE XVIII

HLM PREDICTING JOB TURNOVER INTENTION FOR SUPERVISORS

Variable	Model 1	Model 2	Model 3
Fixed Effect (γ_{00})	1.86 (0.05)***	1.85 (0.03)***	1.84 (0.04)***
<i>Work-related factor</i>			
Training		-0.08 (0.02)***	-0.08 (0.02)***
Individual resource		0.02 (0.03)	0.01 (0.03)
Rewards		-0.17 (0.14)	0.03 (0.15)
Job tenure		-0.02 (0.00)***	-0.02 (0.00)***
Union membership (yes=1)		-0.02 (0.16)	-0.02 (0.15)
Position (upper level=1)		0.23 (0.10)**	0.22 (0.10)**
<i>Perceived social capital factor</i>			
Team collaboration		-0.03 (0.01)**	-0.03 (0.01)**
Trust in supervisor		-0.05 (0.00)***	-0.05 (0.01)***
Mission attachment		-0.04 (0.01)***	-0.03 (0.01)***
<i>Sociodemographic factor</i>			
Age		0.00 (0.00)	0.00 (0.00)
Gender (Male=1)		0.14 (0.05)***	0.13 (0.05)**
Race (Minority=1)		0.19 (0.04)***	0.18 (0.04)***
Education		0.07 (0.02)***	0.07 (0.02)***
<i>Institutional factor</i>			
Pay system (PFP=1)			-0.04 (0.09)
Agency size			-0.03 (0.03)
Agency budget			-0.02 (0.02)
Cross-level interaction			
Rewards \times PFP system			-0.29 (0.18)*
Rewards \times OR size			-0.13 (0.08)*
Rewards \times OR budget size			-0.02 (0.04)
Random Effect			
Individual-level variance (σ^2)	1.53	1.38	1.38
Agency intercept variance (τ_0)	0.08***	0.02***	0.02***
Agency slope variance (τ_1)		0.08***	0.07***
Variance explained (%)			
Individual-level		9.8	9.8
Agency-level intercept		75.0	75.0
Agency-level slope			12.5
Deviance	16,766	16,292	16,307
N	5,107	5,107	5,107

*p<0.1, **p<0.05, ***p<0.01; standard error in parenthesis; number of agencies: 44

Figure 12 displays the average level of job turnover intentions and the effect of monetary rewards across agencies. Interestingly, it appears that the regression lines of all the PFP agencies show negative directions, whereas those of the most GS agencies pose positive directions—suggesting that the effect of rewards on job turnover of supervisory employees differs depending on pay systems. Figure 13 depicts the difference in the effect of rewards on turnover intention between the two pay systems, demonstrating that an increase in monetary rewards reduces supervisory employees' job turnover intentions in the PFP, but increases job turnover intentions in the GS. It seems strange that rewards can promote job turnover of employees in this manner, but the results of empirical studies on the effect of rewards of job turnover have been mixed in previous studies. A meta analysis conducted by Cotton and Tuttle (1986) found that a majority of studies (29 of 32 studies) have shown negative relationships between pay and job turnover, and only one study has demonstrated a positive relationship. While negative relationships are predominant in prior studies, some recent studies have indicated high levels of pay may increase job turnover. For instance, Moynihan and Landuyt (2008) showed that higher level of actual salary increased the likelihood of job turnover intention of employees in Texas government agencies.

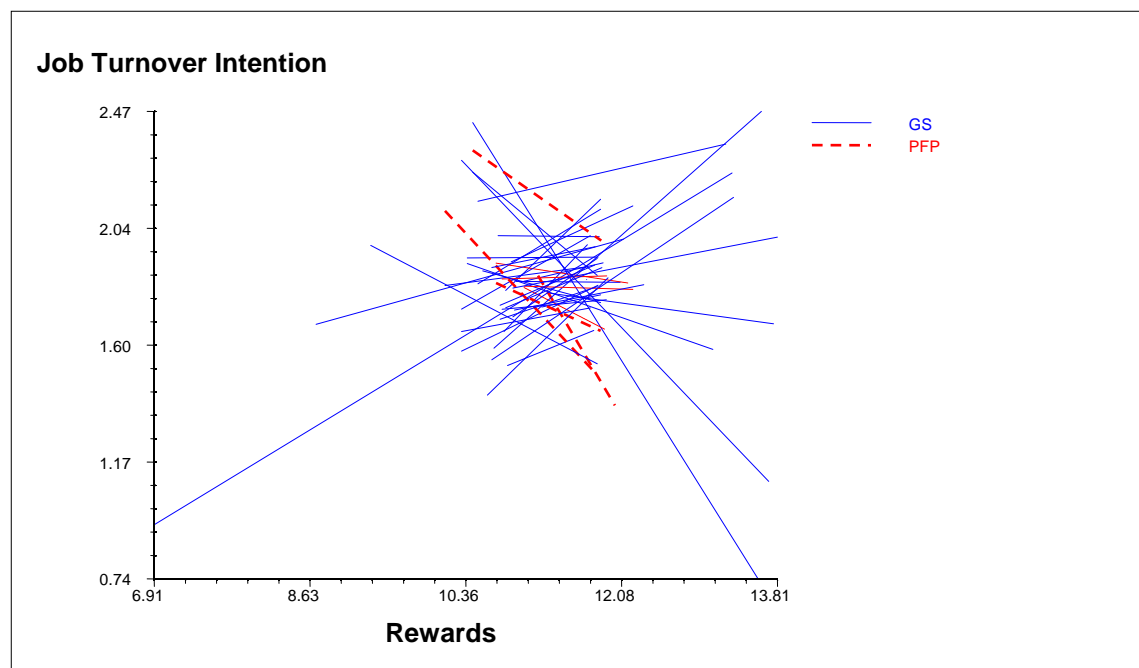


Figure12. Relationships between Monetary Rewards and Job Turnover Intention across Agencies,
By Pay Systems for Supervisory Employees (N=44)

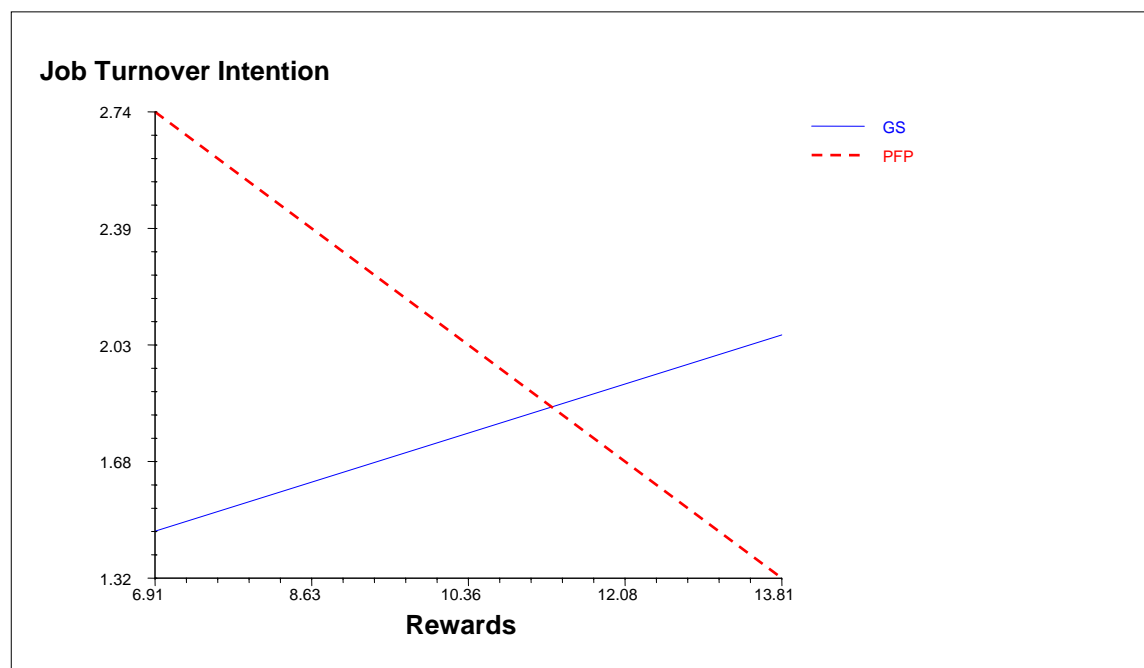


Figure13. Cross-Level Interaction Effect of Pay Systems on the Relationship between Rewards
and Job Turnover Intention for Supervisory Employees

5.5.4 Job Turnover Models for Nonsupervisors

Model 2 in Table XIX shows that the variance of agency-level slope is not statistically significant, which indicates that the effect of monetary rewards on job turnover intentions of public managers does not vary across agencies. For this reason, there is no reason to allow the regression slope to vary in this nonsupervisor category. Yet, because the variance of the intercept is statistically significant ($p < 0.01$), it is appropriate to utilize the random intercept model as a final model (model 3) in this category. Unlike the random intercept and slope model, the average value of job turnover intention differs among agencies but the relationship between rewards and turnover intention does not significantly vary across agencies in the random intercept model.

Training was negatively associated with job turnover of nonsupervisory employees ($r = -0.08$, $p < 0.01$), but individual resources had no effect on turnover intention. The length of service was negatively correlated with the job turnover intention of nonsupervisory employees ($p < 0.05$), which is consistent with the finding for supervisory employees. While union membership had no significant impact on the job turnover intentions of supervisors, it turned out to be positively correlated with job retention among nonsupervisors –union members are more likely to state an intention to stay than non union members.

Not surprisingly, the team collaboration, trust in supervisor, and mission attachment variables are significantly and negatively associated with nonsupervisors' intentions to quit ($p < 0.01$), a finding which is consistent with the results for supervisors. There is no difference in the average level of job turnover intention between employees in both pay systems. The interaction of pay systems and monetary rewards has a significant negative effect on job turnover intentions ($r = -0.29$, $p < 0.01$): employees in the PFP agencies are less likely than those in the GS agencies to state an intention to quit when they receive same amounts of pay increase.

TABLE XIX

HLM PREDICTING JOB TURNOVER INTENTION FOR NONSUPERVISORS

Variable	Model 1	Model 2	Model 3
Fixed Effect (γ_{00})	2.13 (0.04)***	2.13 (0.03)***	2.14 (0.03)***
<i>Work-related factor</i>			
Training		-0.08 (0.01)***	-0.08 (0.01)***
Individual resource		-0.00 (0.02)	-0.00 (0.02)
Rewards		-0.04 (0.05)	-0.04 (0.05)
Job tenure		-0.00 (0.00)**	-0.00 (0.00)**
Union membership (yes=1)		-0.15 (0.03)***	-0.14 (0.03)***
Position (upper level=1)		0.02 (0.03)	0.02 (0.03)
<i>Perceived social capital factor</i>			
Team collaboration		-0.03 (0.01)***	-0.03 (0.00)***
Trust in supervisor		-0.03 (0.00)***	-0.03 (0.00)***
Mission attachment		-0.05 (0.01)***	-0.05 (0.01)***
<i>Sociodemographic factor</i>			
Age		0.02 (0.00)***	0.02 (0.00)***
Gender (Male=1)		0.09 (0.03)***	0.09 (0.03)***
Race (Minority=1)		0.26 (0.03)***	0.26 (0.03)***
Education		0.03 (0.01)***	0.02 (0.01)*
<i>Institutional factor</i>			
Pay system (PFP=1)			-0.01 (0.03)
Agency size			-0.00 (0.04)
Agency budget			0.00 (0.01)
Cross-level interaction			
Rewards \times PFP system			-0.29 (0.11)***
Rewards \times OR size			0.01 (0.04)
Rewards \times OR budget size			-0.01 (0.02)
Random Effect			
Individual-level variance (σ^2)	2.02	1.82	1.82
Agency intercept variance (τ_0)	0.06***	0.03***	0.03***
Agency slope variance (τ_1)		0.02	
Variance explained (%)			
Individual-level			
Agency-level intercept			
Agency-level slope			
Deviance	40,328	34,775	34,524
N	12,089	12,089	12,089

*p<0.1, **p<0.05, ***p<0.01; standard error in parenthesis; number of agencies: 44

Figure 14 depicts regression lines predicting the relationship between turnover intention and monetary rewards for nonsupervisory employees. As noted above, the variance of regression slopes is not significant in this model. The figure explains the random intercept model by showing that the regression slopes do not considerably vary among regression lines—although regression slopes appear to be clearly categorized into two pay systems, the direction of the regression lines does not seem to vary within each category. While the regression lines of the PFP category look negatively parallel, those of the GS category look horizontally parallel. The difference in average regression slope between the PFP and the GS systems is displayed in Figure 15, showing that the effect of rewards on turnover intention is significant and negative in the PFP but does not exist in the GS ($r = -0.29$, $p < 0.01$).

As shown in model 3 in Table XIX, the main effect of rewards on job turnover intentions was not significant ($r = -0.04$, $p > 0.10$), which indicates that an increase in rewards has no impact on the job turnover intentions of nonsupervisory employees in the full sample in which the PFP and the GS employees are pooled. But the cross-level interaction term is strongly significant ($r = -0.29$, $p < 0.01$), showing that the effect of rewards is present in the PFP system but not in the GS. Given that the sample size for the GS is much larger than for the PFP in this study, the regression coefficient of the rewards variable in the GS sample is weighted to the mean of the pooled sample. Accordingly, the main effect will not unmask the impact of rewards on job turnover without a consideration of pay systems.

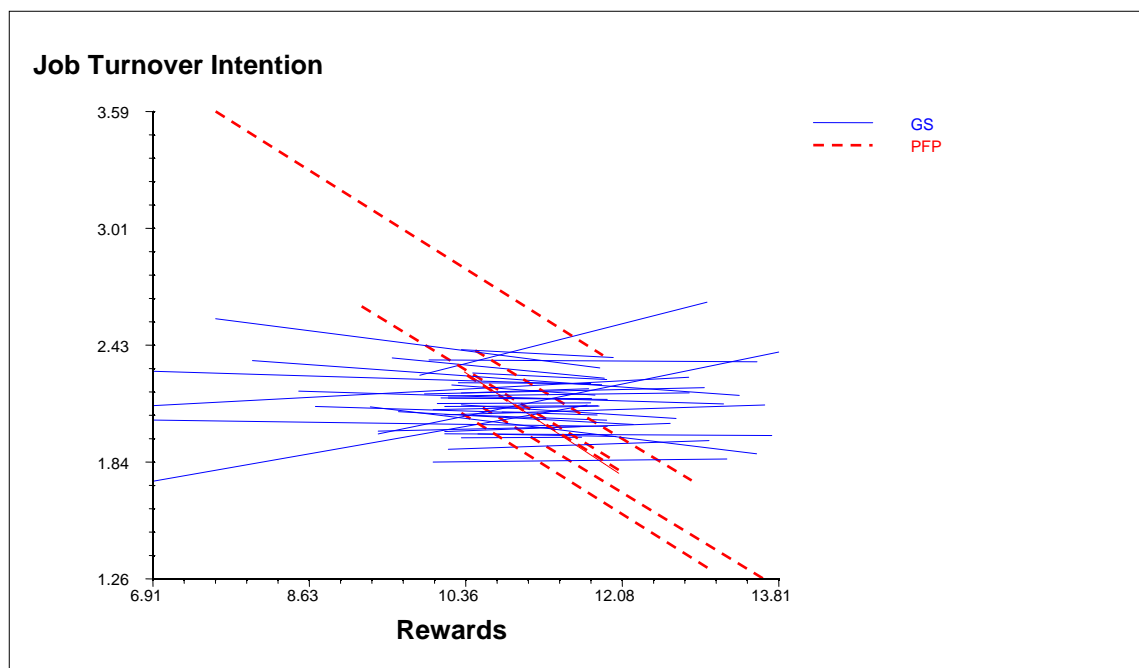


Figure14. Relationships between Monetary Rewards and Job Turnover Intention across Agencies,
By Pay Systems for Nonsupervisory Employees (N=44)

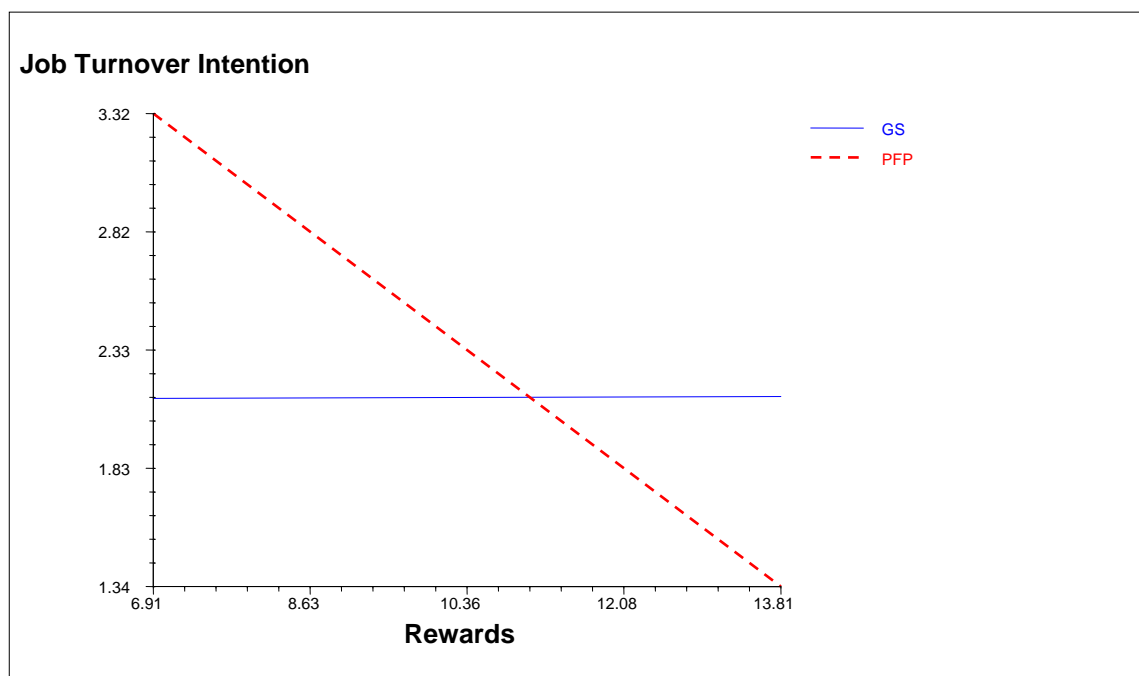


Figure15. Cross-Level Interaction Effect of Pay Systems on the Relationship between Rewards
and Job Turnover Intention for Nonsupervisory Employees

5.6 Chapter Summary

The empirical findings show that the relationship between monetary rewards and job satisfaction is positively correlated for both supervisors and nonsupervisors (hypothesis 1 was confirmed); however, there is no statistically significant relationship between the rewards and job turnover intention, holding all other variables fixed (hypothesis 2 was not confirmed). More importantly, the findings indicate that the relationships vary depending on pay systems, which is unique finding of the study. It was found that given the same amount of reward increase, both supervisory and nonsupervisory employees working in agencies with PFP feel a higher degree of job satisfaction than those in GS agencies, all other things being equal (hypothesis 3 was confirmed). The interpretation of job turnover models is more complicated. While monetary rewards are negatively associated with nonsupervisory employees' job turnover intention in PFP agencies, the rewards do not affect nonsupervisors' turnover intent in GS agencies. For the supervisory level, employees in PFP agencies are less likely to express turnover intent in PFP agencies, whereas those in GS agencies are more likely to report job turnover intention, given the same amount of rewards increase (hypothesis 4 is partially confirmed).

The empirical results are derived from dichotomy of pay systems, simply categorizing the systems according to GS vs. PFP. Thus, the following chapter examines the extent to which there is variability across PFP systems in federal agencies.

TABLE XX
SUMMARY OF HYPOTHESIS TESTS

Hypothesis	Level	Confirmation
H1	Supervisor	Yes
	Nonsupervisor	Yes
H2	Supervisor	No
	Nonsupervisor	No
H3	Supervisor	Yes
	Nonsupervisor	Yes
H4	Supervisor	Partially
	Nonsupervisor	Yes

VI. CASE STUDY: PFP SYSTEMS IN FIVE AGENCIES

6.1 Introduction

Since the Civil Service Act of 1978, over 30 federal agencies have adopted paybanding systems in the form of demonstration projects or independent systems. Although PFP-based payband systems are distinctly different from the traditional GS, there may be differences among PFP agencies regarding compensation practices and policies. The empirical findings of this research indicate that there is variation among eight PFP agencies that have been included in the sample of the study. But as survey data employed in the study do not capture this variation, additional investigation is needed. The chapter explores how compensation policies vary among the eight PFP agencies. The chapter will answer to two core questions: (1) “Are there any variations among PFP agencies regarding structures and designs of the pay system?” (2) “Does the degree of performance orientation vary across the agencies?”

6.2 Procedures

Although there are over 30 agencies with PFP at the federal level, eight PFP agencies that are identified in the sample were used for the case studies. In order to identify a key informant in each agency, postal packages including a cover letter and consent form were sent via surfaced mail to the Director of Human Resources of each agency to ask him or her to have a key informant fill in and sign the consent form and send it back to me in the enclosed postage-paid envelope. In a month, a follow-up phone contact was made to remind them. Through the follow-up contacts, the names and contact information of key informants for five agencies were identified, but contact information was not obtained for three agencies. The five agencies contacted include Internal Revenue Service (IRS),

Federal Aviation Administration (FAA), Federal Deposit Insurance Corporation (FDIC), National Oceanic Atmospheric Administration (NOAA), and National Institute of Standard and Technology (NIST). All interviews were conducted via e-mail attaching survey questionnaires. The specific survey questions are presented in Appendix C.

6.3 Findings

6.3.1 Federal Deposit Insurance Corporation (FDIC)

The FDIC received authority to implement its own compensation system pursuant to the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA). The FDIC used that authority to create a pay-for-performance system that incorporates paybanding and that links annual pay increases to employees' job performance.

The FDIC has two primary paybanding programs: the Performance Management and Recognition Program (PMR) for non-management workforce; the Leadership Performance Management and Recognition Program (LPMR) for supervisors, managers, and executives. The two systems have two different performance criteria: while job standards and behaviors are performance criteria in PMR, objectives and leadership behaviors are key criteria in LPMR. Each criterion, except for behaviors under PMR, is rated on a 5-point scale for all employees (1: unacceptable, 2: improvement required, 3: accomplished practitioner, 4: performance leader, 5: role model). Behaviors under PMR are rated on a 3-point scale: "below target," "at target," "above target." The overall performance rating is determined by the matrix of evaluations of five job standards ratings and three behavioral standards ratings, consisting of five categories.

Under LPMR, the first and second-level supervisors determine the performance standards, with input from the employee. An overall performance rating for managerial personnel is

produced by a matrix in which the summary objectives' rating is combined with the summary leadership behavioral standards ratings. Under PMR, the manager, in consultation with administrative staff and HR determines the performance of job standards, and decides the behavioral standards of employees through negotiation with managers and union. The overall performance rating for non-managerial personnel is determined by a matrix between a summary job standards rating and the summary behavior standards. Some rating elements are in the form of objectives, and individual objectives are linked to organizational objectives for the LPMR.

The PFP programs cover a variety of positions in the agency, including 8,250 employees with about 800 in LPMR, but exclude individuals with a non-permanent appointment of less than one year (e.g., part-time students). Each career group has up to 15 paybands for non-management personnel and 3 paybands for management personnel. The spread of pay band varies ranging from 47.83 percent to 72.90 percent. The pay pool covers base pay increases and lump-sum bonus, both of which are determined by the overall performance rating. Employees with ratings of level 2 or higher will receive a guaranteed basic pay increase ranged between 2 and 4 percent. For instance, an employee with a rating of level 5 will receive a 4 percent basic increase plus an additional increase (lump sum) based on "shared to basic pay": he or she can receive a 6.6 percent total pay increase. An employee who has the overall performance rating of level 4 can receive a 6.0 percent total pay increase; one with the rating of level 2 can receive a 2.0 percent pay increase with no lump sum; one in rating category in level 1 receives no basic pay increase nor lump sum. In general, there is no flexibility for supervisors to adjust the base pay increases because the pay increases are all formula driven.

6.3.2 Internal Revenue Service (IRS)

The IRS was granted the authority to create its own performance-oriented payband system pursuant to the IRS Restructuring and Reform Act of 1998. The Act stipulated that bargaining unit personnel could be included in the system only with the consent of the union. To date, only managerial personnel have been included in the system.

The paybanding system of IRS covers three levels of managerial personnel, including senior manager, department, and frontline managers (excluding Executives). Over 8,000 managers are covered by the PFP. The rating elements for managers' performance includes "retention standard for the fair and equitable treatment of taxpayers," "responsibilities," and "commitments." The first two elements are standardized –do not change from year to year– and are determined by the IRS, but the third element, commitments are created on a yearly basis by a supervisor with input from the manager. The overall ratings are categorized in five levels: "outstanding," "exceeded," "met," "minimally satisfactory," and "not met." The paybands of three levels of positions are as follows:

- The Senior Manager (SM): GS-14 or 15 grade levels of first-level managerial positions, or GS-14 or 15 grade levels of second-level managerial position.
- The Department Manager (DM): GS-11, 12, or 14 grade levels of second-level managerial positions.
- The Frontline Manager (FM): GS-5 through 14 grade levels of supervisory/managerial positions.

The range of the band is between a minimum and maximum rate within the GS grades—the range of the payband is equivalent to that of the GS grades included in the payband. For instance, if a certain front manager has the payband classified as the GS-11 grade, he or she has a minimum

rate of step 1 and a maximum rate of step 10 within the GS-11. The annual adjusting rates of the minimum and maximum in the payband are the same as those in the GS. A promotion refers to moving one pay band to a higher pay band: for example, the FM payband has 11 grade bands (GS 5-15) in which employees can promote from one band to a higher band.

The funding for a Performance Based Increase (PBI) pay pool is determined on an annual service-wide basis. Within-grade increases (WIGI), quality step increases (QSI), and the GS across-the board increases are included in the pay pool. In addition to PBI, managerial personnel in the payband system receive locality pay. All managers with the same performance ratings will receive the same PBI value if they are in the same service domain. The PBI value increases as the rating increases: the PBI value for an “Outstanding” rating is higher than that for an “Exceeded” rating. A bonus pool is separated from a PBI pool. The former is used for a one-time lump payment based on performance rating; the latter is used for a permanent pay increase in base salary.

6.3.3 National Institute of Standards and Technology (NIST)

The NIST Authorization Act of 1987 authorized NIST to use Personnel Management Demonstration Project authority for the purpose of creating a performance-oriented payband system. The Demonstration Project became permanent in 1996 through the National Technology Transfer and Advancement Act of 1995. The new performance system is called the Alternative Personnel Management System (APMS). The APMS has critical rating elements, but different positions have different elements. A certain position has specific required critical elements, and each critical element has two categories: “Required Activities,” “Results.” As the critical element

consists of results, the overall rating is derived from organizational objectives/goals. There are seven overall performance categories as follows:

- Exceptional Contributor (at least 8E; none below S)
- Superior Contributor (at least 6E; none below S)
- Meritorious Contributor (at least 4E; none below S)
- Significant Contributor (at least 3E; up to 2M)
- Contributor (up to 3M)
- Marginal Contributor (4 or more M)
- Unsatisfactory (1 or more U)

The overall rating is determined by the weighted combination of four performance standards:

“Unsatisfactory,” “Minimally Meets Expectations,” “Fully Successfully,” and “Exceeds Expectations.” For instance, if the ratings of a certain employee are E, S, E, S and the plan has weighted 3, 3, 2, 2 on four critical elements, the overall rating would be $3 * E + 3 * S + 2 * E + 2S = 5E, 5S$, which corresponds to the “Meritorious Contributor” rating.

The APMS covers all employees except for those under the Federal Wage System, GS, Experts and Consultants, SES, and ST, totaling about 3,000 employees. Given the total number of employees in NIST are 3,167 (as of Dec. 2010), the coverage of the APMS is pretty high. There are four career paths within the APMS: scientific and engineering (AP), science and environmental technician (ZT), administrative (ZA), and support (ZS). Each career path has 5-level bands but the range of the band varies across the career paths: a minimum pay increase between bands (i.e., promotion) is 6 percent. The APMS system has two different pay pools for pay increases and performance bonus. Both pay increases and performance bonus are determined by annual performance appraisal process. As there is a hard link between the overall performance rating and the pay increase, the supervisor has no discretion for pay increase, but has some discretion for performance bonus.

6.3.4 Federal Aviation Administration (FAA)

The paybanding system of the FAA has three rating elements: generic (the general standard for all employees), custom (the specific standard for each employee), and blended (a combination of generic and custom). The manager, with input from the employee, determines the performance standards. There are nine job categories (or career groups) based on the nature of the work for the paybanding system: student, clerical support, administrative support, technical support, para-professional, professional, technical, engineering, and specialized. Three to five pay band levels exist within each job category: in total, there are 13 pay bands in the system. The number of pay band levels within the job category is based on range of work complexity. The FAA payband system does not have steps within the band. The overall performance rating is derived from the narrative summary provided by the employees. The employee writes up narrative summary to report their accomplishments linked to organizational objectives, and the manager determines whether the employee “accomplishes the objectives” or “does not accomplish”: in other words, the rating scale is only two. The spread of 13 pay bands are as follows:

- A-B: 45%
- C-F: 50%
- G-L: 55%
- M: 35%

The annual pay increase is based on annual agency goal achievement and individual achievement and contributions such as collaboration and customer service. The pay increase for promotion (between pay bands) ranges from 0 to 15 percent; the reassignment increase (within the same pay band) is granted between 1 and 7 percent; the reassignment bonus is granted lump sum payment of 1 to 7 percent.

The pay pool for performance-based increases is comprised of the Comparability increase, WIGI, and QSI. The WIGI and QSI represent 1.6 percent of total salaries, and the Comparability increase varies from year to year—the Comparability increase is 0 percent due to the federal government pay freeze for 2011. A pay increase is converted to lump sum bonuses in the same amount, if the employee is pay-capped in the band and the increase amount exceeds the maximum of the pay band.

6.3.5 National Oceanic Atmospheric Administration (NOAA)

NOAA’s alternative personnel system, which is part of the Commerce Alternative Personnel System (CAPS), was implemented in 1998 in the form of the Demonstration Project. Both supervisory and non-supervisory employees (about 6,700 employees) are covered by the CAPS. Only critical elements are used to evaluate overall performance for employees in the CAPS, including an employee’s major duties and responsibilities that contribute to organizational goals and objectives. The rating official determines which critical elements are appropriate for each position. Each critical element is assigned a weight ranged between 5 points to 60 points, and the weight of all elements yields total 100 points –that is, the maximum overall rating is 100 points. The rating official determines the rating category– “Eligible,” and “Unsatisfactory” – based on total points the employee receives and the pay pool manager makes the final decision.

There are four career paths in the CAPS: scientific and engineering (ZP); scientific and engineering technician (ZT), administrative (ZA), and support (ZS). ZP has two-grade interval professional positions including physical, engineering, biological, and mathematical, computer, and social science. ZT has one-grade internal nonprofessional technical positions that support

scientific and engineering mission. ZA includes two-grade interval positions in administrative and managerial fields such as finance, procurement, personnel, and public information. ZS consists of one-grade interval positions that provide administrative support such as typing, clerical, and assistant. Each career path has five pay bands:

- ZP: I (GS1-6), II (GS7-10), III (GS11-12), IV (GS13-14), V (GS15)
- ZT: I (GS1-4), II (GS5-8), III (GS9-10), IV (GS11-12), V (GS13)
- ZA: I (GS1-6), II (GS7-10), III (GS11-12), IV(GS13-14), V(GS15)
- ZS: I (GS-1-2), II (GS3-4), III (GS5-6), IV (GS7-8), V (GS9-10)

A salary increase accompanies a promotion with a minimum 6 percent and up to the maximum of interval 3 of the pay band. The CAPS Board determines pay increase pools to allocate funds. The pay increase is derived from a base assessment of pre-project costs computed as annual averages over three pre-project years –the costs for all personnel actions of the types replaced by project systems are totaled and averaged. In general, pay increases refer to increases in base salary. Pay increases may be a general increase–annual Comparability increase– or an increase based on competing for different position by either reassignment or promotion, or an increase based on the overall performance rating. Basic pay includes locality pay, but there is no locality pay for those positions covered by a special rate.

6.4 **Conclusion**

It is well documented that the GS and the PFP pay systems are distinctly different in terms of human resource management factors such as compensation policy, pay designs and structures, and performance evaluations. Additionally, the dissertation research demonstrates that organization members' job attitudes are also different between the two pay systems, by empirically showing how the PFP system affects job attitudes. The empirical study, however, did not take into account the unique design features of the PFP in each agency, assuming that federal agencies with PFP are homogenous in terms of compensation designs and structures, and the degree of performance orientation. The case study is to examine the extent to which there is variability across PFP systems. The additional findings are summarized in Tables XXI and XXII.

Table XXI summarizes the structures and designs across the five PFP agencies. Although there are variations regarding PFP designs among the agencies, there are a few common factors. The rating elements of the five agencies are linked to organizational goals and objectives, which reflects the PFP aims to improve organizational effectiveness. All of the agencies have lump sum bonus along with pay increases based on individual job performance. Although most positions are covered by PFP in the four agencies, only supervisor and manager positions are covered in the IRS. Four agencies have one paybanding system, but the FDIC has two: PMR and LPMR. The number of rating elements varies across the agencies ranging from two to six, and the number of rating categories also varies ranging from two to seven. The range of the maximum pay increase rate between 5 and 14 percent, and the NOAA has the highest pay increase range (up to 14 percent). Although the five agencies are classified as the PFP system, the table clearly shows that PFP features and designs vary among PFP agencies.

TABLE XXI**PAYBAND SYSTEM FEATURES AND DESIGNS ACROSS FIVE AGENCIES**

Item	FDIC	IRS	NIST	FAA	NOAA
Number of payband system	2	1	1	1	1
Number of rating elements	4	3	3-6	3	2-6
Rating elements in the form of “objectives”	Yes	Yes	Yes	Yes	Yes
Weightings of rating elements	No	No	Yes	No	Yes
Number of rating category	5&3	5	7	2	2
Rating is assigned each element	Yes	Yes	Yes	NA	Yes
A supervisor’s rating is overridden	Yes	Yes	Yes	No	Yes
Coverage positions	Mostly	Supervisors/ Managers only	Mostly	Mostly	Mostly
Number of career groups	12	1	4	9	4
Number of pay bands in each career path	15&3	3	5	3-5	5
Pay bands overlap	Yes	Yes	Yes	Yes	No
Maximum pay increase (%)	6.6	5	5.5/8.5	6.4	14
Control points within the band	No	No	No	NA	Yes
Promotion within the band	No	No	No	No	Partly
Pay increase plus lump sum bonus	Yes	Yes	Yes	Yes	Yes

Table XXII displays payband system characteristics that determine the degree of performance orientation. In order to evaluate the extent to which a payband system is more or less performance-oriented, I utilize the same criteria as Thompson (2007) used in his research. The eight features used here reflect a link between pay and performance, and they are equally weighted because each criterion is important facet of performance orientation. Hence, I scored “1” when the feature is applied to agency in each item, computing the index of performance-orientation by summing up the scores.

As shown in Table 22, although the five agencies do not apply to the two items: locality pay money allocation and control point, payband features related to the performance orientation vary across the five agencies. For instance, whereas the FDIC designed that employees who

receive the lowest performance rating do not receive the general pay increase (i.g., annual comparability increase), the rest of the agencies do not grant employees such increase. Portion of general pay increase monies are allocated according to individual job performance in three agencies such as the FDIC (only for LPMR), the IRS, and the FAA, but not in the NIST and the NOAA. Only two agencies such as the NIST and the FAA utilize the pay design in which the proportion of the performance-based increase paid as a one-time bonus rather than a performance increase base pay. The table shows that the range of the index between 0 and 4, indicating that while the FAA is the most performance-oriented (“4”), the NOAA is the least performance-oriented (“0”) in this case study.

In sum, the case study found that the five federal agencies with PFP are not homogenous, but there is variability with respect to payband designs, structures, and the degree of performance-orientation. Although the results are derived from the five agencies employed in this study, this conclusion will not change if full reviews of all federal agencies are made. The conclusion of the case study suggests that additional empirical research needs to be done taking into consideration the variation in performance orientation. Future research would be to investigate whether or to what extent there may be variation with respect to job attitudes across PFP systems based on degree of performance orientation. A possible hypothesis would be that the higher degree of performance orientation the system, the greater the impact of a rewards increase on job satisfaction and turnover intention.

TABLE XXII

**PAYBAND SYSTEM FEATURES THAT LEAD TO A GREATER PERFORMANCE
ORIENTATION ACROSS FIVE AGENCIES**

Payband Features	FDIC (PMR)	FDIC (LPMR)	IRS	NIST	FAA	NOAA
General pay increase denied to poor performers	Yes	Yes				
Portion of general pay increase monies allocated according to performance		Yes	Yes		Yes	
Some portion of locality pay monies allocated according to performance						
Direct limit on number of high ratings	Yes				Yes	
Indirect limit on number of high ratings		Yes		Yes		
High rating given disproportionate weight in pay-setting process	Yes		Yes	Yes	Yes	
Mechanisms to limit progression to top of band to top performers (e.g., control point)						
Offset a proportion of the base pay increase with bonuses for some employees				Yes	Yes	
Total	3	3	2	3	4	0

6.5 Chapter Summary

This chapter investigates whether there are differences in payband system features and the degree of performance orientation across the five agencies that have been included in the statistical analysis. Fifteen items are employed to compare payband features, including pay increase rates, rating elements, and pay design features. In addition, eight items are used to compare performance orientation. This empirical study simply categorizes agencies that adopt alternative paybanding systems as PFP, compared to GS, assuming that PFP agencies are

homogenous in terms of managerial practices. The case studies, however, suggest that pay design features and the degree of performance orientation vary across the agencies. The findings carry an important implication for future empirical research on federal-level PFP systems.

The next chapter discusses theoretical and practical implications, and a future research agenda.

VII. CONCLUSIONS

7.1 Findings for the Main Hypotheses

As hypothesized, monetary rewards are significantly positively associated with job satisfaction for both supervisory and nonsupervisory employees. Contrary to my expectations, monetary rewards are not found to be associated with job turnover intention for employees at both levels. The cross-level interaction effect indicates that PFP employees are different from GS employees regarding job attitudes, showing that the former's job satisfaction is more influenced by money than the latter's. That is, individuals working in the PFP agencies feel more satisfaction with their work than their counterparts in the GS when they receive the same degree of monetary reward increases. This phenomenon holds true for both nonsupervisory-and supervisory-level employees. This reflects that positive job attitudes increase to a greater degree for a given increase in monetary rewards in the PFP systems than in the GS systems.

Although job satisfaction is regarded as a robust predictor of job turnover intention—a negative correlation, empirical results for the job turnover models are rather complex in this study. For supervisors, while individuals in the PFP tend to report an intention to remain, those in the GS are inclined to state an intention to quit, as their pay rewards increase. Although it would be expected that pay increases (or pay satisfaction) and turnover would be negatively correlated, this result indicates that the relationship is not entirely straightforward—*pay systems matter*. Some previous studies also found a positive relationship between annual salary and turnover intention. For instance, Moynihan and Landuyt (2008) showed that an actual pay increase positively affects job turnover intentions of public managers working in Texas state agencies. More

interestingly, Miller and his associates (2001) found that the relationship between pay and job turnover varies depending on compensation practices. Analyzing perceptions of Mexican employees working at American-owned plants in Mexican bordertowns, they revealed that while productivity pay increased the likelihood of turnover, profit-sharing and saving plans lowered turnover. For nonsupervisory employees, the relationship was found to be negative in PFP systems, but non-existent in the GS. It is important to note that the main effect of monetary rewards on job turnover intention was non-existent, but the pay system variable unmasked the relationship by showing that the relationship depends on pay systems. Taken together, monetary rewards play a key role in reducing job turnover intent of public managers who work in PFP agencies, but not in GS agencies.

7.2 Findings for Other Determinants

As determinants of job attitudes, work environment variables –training and individual resources–employed in this research were found to be significantly correlated with job satisfaction and turnover intentions of public managers. This indicates that offering a variety of job training programs and material (and nonmaterial) resources for public managers is a vehicle to elicit employees' positive job attitudes in public organizations. Given that training and individual resources are considered important inputs for organizational performance (Brewer, 2006; Brewer & Selden, 2000), it might seem that job satisfaction and turnover intentions mediate a relationship between work environment and organizational outcomes.

This study also examined the extent to which organizational social capital factors predicted job satisfaction and turnover. Perceived team collaboration was found to be a significant predictor of the job attitudes in government agencies. Public managers who feel a

high degree of team collaboration were more likely to report high degrees of job satisfaction and retention in their agency. Team collaboration involves sharing and communicating processes among members within a team, and through the processes, team members become more cohesive and committed to team goals (Rainey, 1997). This finding suggests that employees' positive job attitudes are established through cohesion and commitment as a consequence of collaborative activities within the team. As expected, trust in supervisor facilitates positive job attitudes, which is highly associated with leadership. Leader-member exchange (LMX) theory points out the importance of the role of leadership in shaping the positive attitudes of organizational members, suggesting that leadership processes will be successful when social exchange between a leader and members is maximized (Cogliser & Schriesheim, 2000). The theory posits that a high quality social exchange based on trust between a leader and subordinates will maximize job satisfaction while minimizing job turnover (Henderson et al., 2009).

In addition, mission attachment plays a crucial role in job attitudes of public managers. This indicates that a fit between the mission of an agency and its members significantly influences members' job satisfaction and turnover. This result supports previous studies (e.g., Ihrke, 2004; S. E. Kim & Lee, 2007). For instance, Ihrke (2004) found that radical mission change significantly promoted employees' desire to transfer jobs in the federal government. Kim and Lee (2007) also showed that mission attachment positively affected satisfaction with pay and career advancement, which, in turn, results in curbing turnover intents in nonprofit agencies.

7.3 **Theoretical Implications**

The take-home message of the study is that *pay systems do matter*. A number of studies have focused on public-private differences in attitudes, perceptions, and behaviors in the field of public administration (e.g., Baldwin, 1990; Bozeman, Reed, & Scott, 1992; Buchanan, 1975; Moon, 2000; Pandey & Kingsley, 2000; Rainey, 1982; Rainey & Bozeman, 2000). The underlying assumption of those who investigated the public-private distinctions is that attitudes or perceptions are homogenous among public (or private) sector employees within the sector. This study, however, unmasks distinctions in employee attitudes that exist as a consequence of pay systems within the public sector. Many public administration scholars are concerned that the use of market mechanisms make public employees act in a ‘businesslike’ manner (Houston, 2009; Moynihan, 2008). The results of this study can be interpreted as support for that contention in demonstrating that employees’ positive job attitudes are more influenced by money in agencies with PFP systems than in GS agencies.

The attitudinal gap between the two pay systems can be accounted for by two theoretical sources: the crowding-out and selection-in perspectives. Crowding-out theory posits that high-powered monetary incentives have negative consequences on individuals’ intrinsic motivation. Drawing on the theory, public administration scholars argue that the PFP system may undermine public service motivation of public employees. But little empirical research has been made to test this argument. In fact, the crowding-out phenomenon is difficult to capture in organizational settings: this can be done through experimental designs in which treatment and control groups are compared at two points in time. While not revealing whether or not the public service (or intrinsic) motivation of public employees has changed due to the PFP mechanism, this study clearly demonstrates that public employees’ job attitudes between two pay systems are

systematically different, as theory suggests. Accordingly, crowding-out may be one possible explanation why employees in PFP agencies act more like “market actors” than do those in agencies with GS systems.

Selection-in theory offers another potential explanation. The underlying theory of the perspective is attraction-selection-attrition (ASA) that explains why a certain individual chooses a certain type of organization for employment (Schneider, 1987; Schneider, Goldstein, & Smith, 1995). The ASA framework proposes that individuals are attracted to organizations on the basis of attributes such as personality, values, and the goals, processes, and structures of organization. As a consequence, organizational members become homogenous over time within an organization: attraction-selection makes people analogous with respect to values, perceptions, and attitudes within the organization (Schneider, Goldstein, & Smith, 1995; Schneider et al., 1998). According to the theory, there is a possibility that extrinsically motivated job seekers who place a high value on money are selected into agencies with PFP systems because of high-powered incentive structures, which may result in different job attitudes than those in GS agencies. This study makes the claim that due to either motivational change or selection-in (or both), public managers within PFP agencies are different from those with GS agencies with respect to job attitudes, behaving like organizational actors in the private sector.

Based on the empirical findings, this study addresses issues relating to the identity of public servants. Buchanan (1975) argues that a public service ethic differentiates public servants from private employees. Perry and Wise (1990) propose that public service motivation (PSM) explains why the motivations of public employees are distinctly different from those in the private sector. They define PSM as “an individual’s predisposition to respond to motives grounded primarily or uniquely in public institutions and organizations” (p. 6). Previous

empirical studies have shown that PSM is a unique feature of public employees and that public sector employees have different work values, motivation, and reward preferences (e.g., Buchanan, 1975; Goulet & Flank, 2002; Houston, 2000, 2006; Khojasteh, 1993; Kilpatrick, Cummings, & Jennings, 1964; Posner & Schmidt, 1996; Rainey, 1982; Wittmer, 1991).

The idea that PFP mechanisms work well for public employees is grounded in the assumption that public and private sector managers are alike. However, it is well acknowledged that public servants characterized by PSM place less importance on extrinsic values such as money and promotion than do those in the private sector (Khojasteh, 1993; Rainey, 1982; Wittmer, 1991). The findings clearly indicate that the impact of a pay rewards increase on job satisfaction and turnover intent of employees in PFP systems is greater than for GS employees—it reflects that the former have higher monetary reward preferences than the latter. Based on the findings here, one might argue that it would be a good strategy to utilize high-powered performance-related monetary incentives in order to maximize job satisfaction and minimize turnover. However, conversely, there may be a possibility that high-powered incentive strategies cause public managers to be dissatisfied with their job when they are not satisfied with rewards increases in PFP systems.

Using money as a motivator may trigger the degradation of the quality of service (Slater, 1980), and the undermining of intrinsic and public service motivations of public servants (Bertelli, 2006; Deckop & Cirka, 2000; Houston, 2009; Moynihan, 2008; Perry, Engbers, & Jun, 2009; Weibel, Rost, & Osterloh, 2010). PFP is a compensation system designed to use money to motivate employees to enhance their job performance, which fits with private organizations in which a clear goal of profit maximization exists and where objective measures of performance are available (Perry, Mesch, & Paarlberg, 2006). Many scholars are concerned that the PFP

mechanism induces “hidden costs” in terms of employee morale and motivation in public institutions (e.g., Baker, Jensen, & Murphy, 1988; Weibel, Rost, & Osterloh, 2010). For instance, Moynihan (2008) avers that personnel systems based on market-based mechanisms in government agencies “convert the public servant into a market actor” (p.250). The market actor, *knaves* cannot be transformed into public servants, *knights* replete with a public-spirited bent (Houston, 2009; Moynihan, 2008). The market actor has a tendency to pursue self-interest, rather than public interest, only responding to high-powered incentives. Frey and Osterloh (2005) also assert that high-powered incentive structures have a negative effect on employees by shifting their interest from the work itself to money. Weibel and his associates (2010) state that “extrinsically motivated persons, subject to a pay for performance system, have a strong incentive to fulfill only what is easy to measure, that is, the quantifiable performance-related aspects of a task” (p.404).

The findings of this study bear similarity to a number of theories that indicate that attitudes and perceptions of employees vary depending on compensation systems (i.g., PFP), by revealing that public employees’ job attitudes depend to a larger extent on money in the PFP than in the GS system. Presumably, the attitudinal gap between the two pay systems keeps widening as the difference in pay increase rate between the two systems increases. To the extent that public employees have different value orientations from private managers, using high-powered incentive strategies (i.g., PFP) to motivate them to do a better job does not seem to be an effective strategy in the public sector to the extent that crowding out is occurring and that PFP results in a change in attitudes on the part of public servants.

One interesting finding is a positive association between rewards and turnover intention for supervisory employees in the GS system. This is at odds with expectations. One potential

explanation would be that the meaning of a rewards increase is different between the two pay systems. Unlike in PFP systems where employees at the junior level can receive high levels of rewards as a consequence of the paybanding scheme, the actual rewards increase signifies “seniority” in the GS. Senior-level individuals have a higher chance of getting opportunities for better positions inside and outside government. That is, the higher the salary, the higher the position in GS, which gives senior-level employees a better chance in the job market, leading to higher job turnover intentions. However, the landscape of nonsupervisory employees is different: while a reward increase is negatively associated with job turnover intention in the PFP, it does not affect turnover intent in the GS. This suggests that monetary increases can prevent employees from leaving or quitting in agencies with PFP systems, but not in agencies with GS systems, all other factors being equal.

As discussed earlier, the underlying theories of PFP are principal-agent, expectancy, and goal setting theories. The main assumption of the theories is that money serves as a means to induce employees to attain organizational goals and to enhance organizational performance. Strictly speaking, these theories assume that human beings are extrinsically motivated, downplaying intrinsic or public service motivation. The three theories suggest that monetary rewards positively affect work motivation and job attitudes in ways that maximize their individual and organizational performance. Given that the positive job attitudes of employees are the important determinants of organizational performance and that the effects of extrinsic or monetary rewards on job attitudes vary depending on compensation systems, the effects of extrinsic rewards on organizational performance may also vary depending on the pay systems. Hence, I claim that the theories are appropriately applied to public organizations with PFP as well as to private sector organizations.

7.4 Policy Implications

This study carries important policy implications for personnel management in PFP agencies. Most PFP agencies have paybanding schemes that allow employees to receive pay increases on the basis of performance. Given that the rewards increase in this mechanism is found to establish higher levels of positive job attitudes of public managers for a given monetary reward increase than in GS systems, it appears that money is a strong motivational force in this system. But personnel policy makers must be cautious about using a high-powered incentive as a motivator in public agencies. They need to keep in mind that high-powered monetary incentives can bring about negative consequences as discussed previously, thus institutional arrangements need to be designed to avoid the side effects. For instance, Moynihan's suggestions are noteworthy that a PFP system needs to have a link between performance measures and intrinsic values, cultivate public service motivation of employees through a variety of programs, and reduce high-powered incentives as a motivator (Moynihan, 2008). Formal training and mentoring programs are good strategies to instill public ethics and values in a public employee's mind in agencies with PFP.

In addition, the recruitment process needs to be revamped to utilize public service motivation, ethics, and values as qualification criteria in PFP agencies. It would be a good idea to have a job candidate's degree of PSM along with talents and skills evaluated in the employment process. The PSM literature suggests that individuals with a high degree of PSM are more likely to choose the public sector for employment, but this study indicates that market-based incentive structures in public institutions can attract extrinsically motivated persons who fit better with the private sector. This is not to say that extrinsically motivated job seekers are inappropriate for the public sector, but that they need to hold those values consistent with public service. Hence, this

study strongly suggests that the recruiting process be improved to encourage job candidates with both high-quality talent and public ethics get into the public sector.

The empirical findings also show that job attitudes vary between supervisory-and nonsupervisory-level employees, especially for GS agencies. Specifically, monetary rewards have no impact on job turnover intention of nonsupervisors, whereas the rewards are positively correlated with intent of turnover of supervisors in GS agencies. It would therefore seem that using high-powered monetary incentives is not a good strategy for retaining supervisory employees in GS agencies. The results suggest that the monetary incentive strategy would not result in job retention for nonsupervisory employee working in GS agencies. GS agencies therefore need to have strategies other than pay for performance for retaining human capital.

7.5 Research Implications

The current study focused on only two pay systems while ignoring structural differences among PFP agencies. However, the case studies clearly show that paybanding structures, and compensation policies and practices are somewhat different across the agencies. The HLM models also indicated that unexplained variations at the agency level were left even after all the agency-level variables were included in the models. This means that the unique features of agency with PFP need to be taken into account in the empirical model, not just simplifying the agencies with PFP as one category of the PFP system. Thus, future research needs to examine whether and to what extent job attitudes of employees are accounted for by different PFP features such as compensation policy, pay designs and structures, and the degree of performance-orientation.

In addition, this study raises the issue of organizational echelon in analyzing organizational survey data. It has been found that perceptions of organizations and work attitudes systematically vary depending on positions; employees at the higher level are more likely than their counterparts to report in a positive way (Hughes & Preski, 1997; Payne & Mansfield, 1973; Schneider & Snyder, 1975). In order to take the perceptual difference into account, this study categorized the original sample into two sub-samples (supervisory level vs. nonsupervisory level) in analysis. The findings indicate that relationships between main variables differ between supervisory and nonsupervisory employees. The true relationships will mask unless this issue is appropriately treated in the analytical stage. Accordingly, I suggest that researchers should take position into consideration in a statistical model in which organizational survey data are analyzed.

7.6 Limitations of the Study

There are several limitations that must be considered in this research. First, common source biases may threaten the construct validity for the relationships between individual-level independent variables and the dependent variable in statistical models. The biases usually occur when constructs are measured with individuals' perceptions, yielding deviations observed relationships from the true relationships among constructs (Doty & Glick, 1998; Lindell & Whitney, 2001; P. M. Podsakoff et al., 2003; P. M. Podsakoff & Organ, 1986; Spector, 1994). Podsakoff and Organ (1986) maintain that severe measurement problems arise when measures of variables are obtained from the same respondents, causing artifactual covariance between subjective measures in a model. Put it another way, common source biases are potential threats to organizational research using survey methods based on self reports, leading to a serious confounding influence on relationships between measures. I cannot rule out the possibility that

individual-level correlations between the social capital factor variables (and the work environment variables) and job satisfaction (turnover intention) are inflated due to the common source bias.

Second, there are some measurement issues here. As a key variable, monetary rewards were measured with annual salary of each respondent. The annual net increment of salary between two time points more accurately represents monetary rewards; however, such information is not available in the dataset. Furthermore, information about annual salary is obtained by the retrospective self report of each respondent. Given that questions about income are considered rather sensitive in survey research— although the data were conducted by a self-administered survey mode in this survey, there is no doubt that administrative record information is much more qualified than retrospective information.

Third, I coded two pay systems based on agency identifier in the dataset, assuming that all respondents in PFP agencies were covered by the PFP-based paybanding scheme. Through the case study, I found that not all organizational members in PFP agencies were covered by the paybanding scheme and some of them were still covered by the traditional GS scheme—however, a majority of employees in those agencies were covered by the alternative PFP system. Having employed the secondary survey data in this study, I could not resolve this non-differentiation. However, the survey data were obtained from probability-based random sampling, thus it is presumed that the majority of survey respondents in PFP agencies are in the category of PFP.

Lastly, there is a statistical issue here. The number of observations in the sample (or sample size) plays a key role in the determination of the magnitude of standard errors of estimates in regression analysis. The large sample size leads to generating small standard errors, which, in turn, decreases large t-statistics, thereby inflating the likelihood of type-1 errors. The

2005 MPS utilized here are considered a very large-scale dataset. The relatively large sample size might affect the parameters, standard errors, and significance in a set of analyses in the study.

Despite the limitations, the findings add to the growing body of literature on PFP in the field of public administration by empirically examining the extent to which pay systems moderate the effects of rewards on job attitudes in public organizations.

7.7 Suggestions for Future Research

I conclude the dissertation research with providing some suggestions for future research agenda. For measurement, key variables should be measured with objective personnel information such as administrative record data—e.g., annual salary increases, coverage of PFP, and the like. This would accurately capture genuine relationships among variables while avoiding common source bias.

This research mainly compared employees in PFP and GS agencies within the public sector with regard to public managers' job attitudes. It has been found that attitudes of public managers in the PFP are analogous to those in the private sector to the extent that private sector workers respond to extrinsic motivators. In subsequent research, a comparison needs to be made between individuals in PFP agencies in the public sector and those in private organizations to explore the extent to which their attitudes are similar or different.

This study found attitudinal differences between nonsupervisory-and supervisory-level employees which have important implications for organizational studies. Most of the empirical studies analyze sample data without taking echelon into account. This research suggests that this issue needs to be dealt with by analyzing sample by echelon when perceptual measures are employed. This would accurately capture the behaviors and attitudes of organizational actors.

Lastly, it still remains unclear exactly whether attitudinal distinctions between employees in PFP and GS agencies are due to extrinsically motivated individuals' self selection into PFP-centered organizations, or due to crowding-out phenomena within the organizations. Further investigations should be made to uncover the unanswered point by using appropriate research designs, taking appropriate sample size into account.

APPENDICES

APPENDIX A

TABLE XXIII. PAY SYSTEMS BY FEDERAL AGENCIES IN THE SAMPLE

Sampled agency	Pay systems	PFP starting year
Food Safety and Inspection Service	GS	
Forest Service	GS	
Natural Resource Conservation	GS	
Air Force	GS	
US Army Corps of Engineers	PFP	2007
Census	GS	
National Institute of Standard and Technology	PFP	1988
National Oceanic and Atmospheric Administration	PFP	1998
Patent and Trademark Office	GS	
Defense Contract Management Agency	PFP	2007
Defense Finance and Accounting Service	PFP	2007
Defense Logistic Agency	PFP	2007
Education	GS	
Energy	GS	
EPA	GS	
Federal Deposit Insurance Corporation	PFP	2003
Public Buildings Service	GS	
Center for Disease Control and Prevention	GS	
Indian Health Service	GS	
National Institutes of Health	GS	
Bureau of Customs and Border Protection	GS	
Bureau of Immigration and Customs Enforcement	GS	
FEMA	GS	
Transportation Security Administration	PFP	2003
U.S Coast Guard	GS	
U.S Secret Service	GS	
Housing and Urban Development	GS	
Bureau of Land Management	GS	
Indian Affairs	GS	
National Park Service	GS	
Alcohol, Tobacco, Firearms & Explosives	PFP	1999
Bureau of Prisons/Federal Prison System	GS	
Executive Office of the U.S. Attorney	GS	
Federal Bureau of Investigation	GS	
Labor	GS	
NASA	GS	
U.S. Marine Corps	PFP	2007

TABLE XXIII (continued)

Sampled agency	Pay systems	PFP starting year
OPM	GS	
Social Security Administration	GS	
State Department	GS	
Federal Aviation Administration	PFP	1996
Internal Revenue Service	PFP	2001
Office of the Comptroller of Currency	PFP	1991
Veterans Benefits Administration	GS	
Veterans Health Administration	GS	

APPENDIX B

TABLE XXIV. SAMPLE COMPOSITION BY POSITION ACROSS AGENCY

Agency ID	Position (%)					Total (%)
	Nonsupervisor	Team manager	Supervisor	Manager	SES	
1	191 (38.1)	79 (15.9)	134 (26.7)	93 (18.6)	4 (0.8)	502 (1.4)
2	292 (55.1)	57 (10.7)	106 (20.0)	67 (12.6)	8 (1.5)	532 (1.4)
3	171 (40.0)	62 (14.5)	132 (31.0)	60 (14.1)	1 (0.2)	428 (1.2)
4	230 (45.4)	54 (10.6)	129 (25.4)	90 (17.7)	4 (0.8)	507 (1.4)
5	196 (35.2)	95 (17.2)	158 (28.3)	104 (18.7)	3 (0.5)	558 (1.5)
6	228 (52.4)	52 (11.9)	95 (21.9)	56 (12.9)	4 (0.9)	438 (1.2)
7	206 (44.1)	79 (16.9)	74 (15.8)	95 (20.3)	13 (2.8)	467 (1.3)
8	294 (48.8)	58 (9.6)	170 (28.2)	78 (12.9)	3 (0.5)	604 (1.6)
9	381 (46.9)	107 (13.5)	208 (25.6)	115 (14.7)	1 (0.1)	817 (2.2)
10	314 (45.0)	81 (11.6)	195 (28.0)	103 (14.8)	4 (0.6)	700 (1.9)
11	151 (40.5)	41 (11.0)	114 (30.6)	55 (14.7)	12 (3.2)	375 (1.0)
12	281 (52.2)	65 (12.1)	113 (21.0)	55 (10.2)	24 (4.5)	539 (1.5)
13	233 (44.1)	70 (13.3)	120 (22.7)	54 (10.2)	51 (9.7)	528 (1.4)
14	216 (43.9)	57 (11.6)	130 (26.4)	59 (12.0)	30 (6.1)	493 (1.3)
15	67 (51.1)	12 (9.2)	34 (25.9)	15 (11.4)	3 (2.3)	131 (0.3)
16	176 (33.9)	49 (9.4)	165 (31.8)	120 (23.1)	9 (1.7)	519 (1.4)
17	3 (42.9)	-	3 (42.9)	1 (14.3)	-	7 (0.0)

TABLE XXIV (continued)

Agency ID	Position (%)					Total (%)
	Nonsupervisor	Team manager	Supervisor	Manager	SES	
18	262 (45.2)	87 (15.0)	129 (22.3)	72 (12.4)	29 (5.0)	579 (1.6)
19	248 (53.1)	97 (20.7)	72 (15.4)	45 (9.6)	4 (1.1)	468 (1.3)
20	244 (39.5)	40 (6.5)	233 (37.7)	99 (16.0)	2 (0.3)	620 (1.7)
21	192 (31.5)	79 (13.0)	169 (27.7)	163 (26.8)	6 (1.0)	611 (1.7)
22	138 (39.7)	39 (11.2)	99 (28.4)	64 (18.4)	8 (2.3)	349 (1.0)
23	116 (46.6)	24 (9.6)	68 (27.3)	38 (15.3)	3 (1.2)	258 (0.7)
24	139 (29.7)	53 (11.3)	178 (38.0)	81 (17.3)	17 (3.6)	469 (1.3)
25	283 (42.0)	55 (8.2)	239 (35.5)	82 (12.2)	15 (2.2)	685 (1.9)
26	273 (44.0)	48 (7.7)	178 (28.7)	99 (16.0)	22 (3.5)	623 (1.7)
27	234 (35.4)	126 (19.1)	152 (23.0)	84 (12.7)	65 (9.8)	665 (1.8)
28	178 (46.1)	66 (17.1)	90 (23.3)	38 (9.8)	14 (3.6)	387 (1.0)
29	136 (31.0)	75 (17.1)	133 (30.4)	70 (16.0)	24 (5.5)	439 (1.2)
30	267 (33.4)	143 (17.9)	215 (26.9)	141 (17.6)	33 (4.1)	799 (2.2)
31	146 (24.8)	90 (15.3)	203 (34.5)	148 (25.1)	2 (0.3)	590 (1.6)
32	257 (38.1)	62 (9.2)	257 (38.1)	94 (13.9)	5 (0.7)	678 (1.8)
33	302 (59.0)	65 (12.7)	87 (17.0)	38 (7.4)	20 (3.9)	515 (1.4)
34	227 (45.4)	158 (31.6)	70 (14.0)	28 (5.6)	17 (3.4)	501 (1.4)
36	300 (48.9)	58 (9.4)	176 (28.7)	52 (8.5)	28 (4.6)	616 (1.7)

TABLE XXIV(continued)

Agency ID	Position (%)					Total (%)
	Nonsupervisor	Team manager	Supervisor	Manager	SES	
37	199 (52.1)	43 (11.2)	77 (20.2)	59 (15.4)	4 (1.0)	384 (1.0)
38	336 (43.9)	59 (7.7)	125 (16.3)	229 (30.0)	16 (2.1)	769 (2.1)
39	96 (21.1)	44 (9.7)	91 (20.0)	145 (31.9)	78 (17.2)	455 (1.2)
40	127 (30.5)	50 (12.8)	171 (43.7)	40 (10.2)	3 (0.8)	407 (1.1)
41	115 (26.7)	88 (20.5)	133 (30.9)	90 (20.9)	4 (0.9)	431 (1.2)
42	202 (36.5)	95 (17.2)	145 (26.2)	108 (19.5)	3 (0.5)	553 (1.5)
43	172 (30.4)	105 (18.6)	186 (32.9)	96 (17.0)	6 (1.1)	565 (1.5)
44	168 (33.1)	93 (18.3)	154 (30.3)	88 (17.3)	5 (1.0)	509 (1.4)
45	291 (48.2)	45 (7.4)	150 (24.8)	103 (17.0)	15 (2.5)	605 (1.6)
46	202 (35.4)	67 (11.7)	174 (30.5)	117 (20.5)	10 (1.7)	571 (1.5)
Unidentified*	2,487 (39.1)	1,162 (13.0)	2,413 (27.1)	1,553 (17.4)	292 (3.3)	13,677 (37.0)
Total	12,967 (40.4)	4,235 (13.2)	8,647 (27.0)	5,284 (16.5)	925 (2.9)	36,926** (100)

Note: *unidentified refers to cases in which agency is not reported; **positions are not identified for 4,868 cases.

APPENDIX C

IN-DEPTH INTERVIEW PROTOCOL

Research purpose

This research is a part of a doctoral dissertation that deals with the effects of pay-for-performance on public employee's job attitudes. The dissertation mainly analyzes 2005 Merit Principles Survey data conducted by the U.S. Merit Systems Protection Board in order to test research hypotheses, but the contents of survey data do not fully cover the scope of the dissertation. Thus additional data collection is needed to supplement the results of current survey data analyses.

Procedures

I will make phone calls to the human resource offices of the eight agencies that have adopted pay-for-performance systems in order to identify the key person for each agency's compensation policy. After a key informant is selected and has signed the consent form, s/he will be sent an e-mail with a questionnaire about the pay-for-performance compensation policy of the agency. Upon receipt and review of the questionnaire responses, each informant will be contacted for purposes of a follow-up interview. The purpose of this interview is to clarify information provided in the questionnaire.

Questionnaire script

Dear XXX,

Thank you for your participation in this interview.

My name is Geon Lee, a doctoral candidate in public administration at the University of Illinois at Chicago. The purpose of this questionnaire is to conduct my doctoral dissertation research that deals with comparisons of the pay-for-performance compensation policy among eight federal agencies. Your cooperation will give researchers and practitioners a better understanding of human resource management in the field of public administration and management.

Your participation in this questionnaire is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the University of Illinois at Chicago. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

Taking part in this research study may not benefit you personally, but I may learn new things that will help public managers in federal human resource offices in the future. When the results of the research are published or discussed in conferences, no information will be included that would reveal your identity.

If you have questions, concerns or complaints about this interview, you may contact the Principal Investigator, Geon Lee at (312) 413-0499 or via e-mail at: glee29@uic.edu. You may also contact the faculty sponsor, Prof. James Thompson at (312) 355-0304 or via e-mail at: jthomp@uic.edu

A. Questions regarding the performance appraisal system

1. What are the rating elements? Do all employees have the same rating elements?
2. Who decides the rating elements?
3. Are the rating elements weighted? If so, who decides the weightings?
4. How many rating categories are there?
5. Are some rating elements in the form of “objectives”? Are individual objectives linked to organizational objectives?
6. What proportion of the overall rating is accounted for by the objectives?
7. Is rating assigned each element?
8. Can a supervisor’s rating be overridden?
9. How is the overall rating arrived?
10. Are there constraints on the number of ratings in the highest categories?

B. Questions regarding the paybanding system

11. About how many employees are covered by the PFP in your agency?
12. Does it cover all positions (supervisor & nonsupervisory groups) or part of the positions?
13. If positions are partially covered, what positions are covered?
And what positions are not covered?
14. How many career groups are there?
15. How many paybands are there in each career group?
16. What is the spread within each band?
17. Do the bands overlap?
18. Are bands adjusted upward according to the annual comparability increase?
19. Are bands adjusted according to market factors?
20. When the band is adjusted does everyone within the band receive the same adjustment?
21. Are there control points within the bands?
22. How do control points affect progression through the band?
23. What constitutes a promotion?
24. Can one be promoted within a band?
25. Does a salary increase accompany a promotion?
26. If the bands are adjusted according to market considerations, are the adjustments made by career group, payband, or job series?

C. Questions regarding the pay-for-performance aspects of the paybanding system

27. What monies are included in the pay pool? WIGI? QSI? Promotion? Locality pay?
Comparability increase?
28. What percent of total salaries does the pay pool represent?
29. Can pay increases be granted as bonuses or increases to base salary? On what basis is this determination made?
30. Are awards monies separate from salary increase monies?
31. Does the performance appraisal rating translate directly into a specific pay increase amount?
How much discretion does the supervisor have?
32. Does the same rating translate into the same pay increase across the pay pool?
33. At what organizational level is the pay pool manager?

E-mail script

Dear XXX,

Thank you very much for agreeing to participate in my study.

Attached is the interview questionnaire. Please email the questionnaire back to me within 2 weeks. If you have any questions regarding this interview, please let me know.

Once again thank you very much.

Best wishes,

Geon Lee

APPENDIX D

IN-DEPTH INTERVIEW CONSENT FORM AND LETTER

Leave box empty - For office use only

University of Illinois at Chicago
Research Information and Consent for Participation in Research
“Pay-for-Performance Pay System and Job Attitudes in Government Agencies”

You are being asked to participate in a research study. Researchers are required to provide a consent form such as this one to tell you about the research, to explain that taking part is voluntary, to describe the risks and benefits of participation, and to help you to make an informed decision. You should feel free to ask the researchers any questions you may have.

Principal Investigator Name and Title: Geon Lee / Ph.D. candidate

Department and Institution: Department of Public Administration / UIC

Address and Contact Information: 412 S. Peoria, Suite 615, M/C 336 / 312-413-0499

Why am I being asked?

You are being asked to be a subject in a research study about the pay-for-performance systems in federal agencies. The study is being conducted by Geon Lee, a doctoral candidate in public administration at the University of Illinois at Chicago, as part of his doctoral dissertation work. Your phone number and e-mail address were obtained from an officer in your human resources office. You were asked to participate in this interview because you are considered to be a key informant about the compensation policy of your agency.

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future dealings with the University of Illinois at Chicago. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

What is the purpose of this research?

The purpose of Mr. Lee's doctoral dissertation is to examine how pay-for-performance affects the job behaviors of public managers in federal agencies. Most of the dissertation work will analyze the 2005 Merit Principles Survey data collected by U.S Merit Systems Protection Board. But the contents of the data do not fully cover the scope of the research. Thus, supplementary data are necessary to complete the dissertation research. Specifically, the pay-for-performance systems of the eight federal agencies of interest in this study will be investigated, comparing the systems across the agencies. The questions concern the compensation policies of the agency.

What procedures are involved?

If you agree to participate in this research, your cooperation is requested as follows:

- ➔ Sign this consent form and send it back to me in the enclosed, pre-paid envelope.
- ➔ Once the consent form is received, you will be sent an e-mail with an interview questionnaire in MS word format attached. Please return the questionnaire once it is complete, preferably within two weeks after it is received.
- ➔ Subsequent to receiving the questionnaire you will be contacted for purposes of a follow-up, telephone interview. The purpose of this interview is to clarify any questions that may arise from the questionnaire responses

What are the potential risks and discomforts?

To the best of our knowledge, your participation entails no risk of harm to you.

Are there benefits to taking part in the research?

Taking part in this research study may not benefit you personally. This information, however, give researchers and practitioners better knowledge for pay-for-performance systems of the federal level in the future.

What about privacy and confidentiality?

The only people who will know that you are participating in this research are the Principal Investigator and the faculty sponsor. No information about you, or provided by you during the research, will be shared with others without your written permission, except:

- ➔ If necessary to protect your rights or welfare
- ➔ If required by law.

Who should I contact if I have questions?

If you have questions, concerns or complaints about this interview, you may contact the Principal Investigator, Geon Lee at (312) 413-0499 or via e-mail at: glee29@uic.edu. You may also contact the faculty sponsor, Dr. James Thompson at (312) 355-0304 or via e-mail at: jthomp@uic.edu

Remember:

Your participation in this research is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University. If you decide to participate, you are free to withdraw at any time without affecting that relationship.

Signature of Subject or Legally Authorized Representative

I have read (or someone has read to me) the above information. I have been given an opportunity to ask questions and my questions have been answered to my satisfaction. I agree to participate in this research. I will be given a copy of this signed and dated form.

Signature

Date

Printed Name

Email

Phone number

Nov 8, 2010

Dear XXXXX:

I am a Ph.D. candidate in public administration in the Department of Public Administration at the University of Illinois at Chicago and I am conducting a study of pay-for-performance systems in U.S. federal agencies as part of my doctoral dissertation research. The objective of this research project is to attempt to understand how alternative pay systems differ among eight federal agencies including your agency.

As an outsider, it is very difficult for me to identify a key informant who could provide me with information on your agency's pay-for-performance compensation scheme. I would be grateful if you could provide me with the name and contact information for someone in your office with whom I could discuss the pay for performance system at the Transportation Security Administration. All the responses are treated as confidential and used for a research purpose.

I believe the results of this research help both practitioners and scholars to give better knowledge of pay-for-performance systems of the federal agencies. I am willing to send you the full copy of the dissertation manuscript after the dissertation work is complete. This may help your agency to develop a human resource management policy.

Enclosed with this letter is a consent form that is prerequisite to participating in an interview. Please have the key informant fill in and sign the form, and send it back to me in the enclosed postage-paid envelope. Once I receive the consent form, I will send an electronic version of survey questions to the person via e-mail.

If you have any questions, concerns, or complaints or if you feel you have been harmed by this research please contact Geon Lee at (312) 413-0499 (or glee29@uic.edu) or Prof. James Thompson at (312) 355-0304 (or jthomp@uic.edu). Also, contact the Office for the Protection of Research Subjects (OPRS) if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Illinois OPRS may be reached by phone at (312) 355-2908. This study (Research Protocol #2010-0748) was approved by the OPRS on Sep. 30, 2010.

I'd so much appreciate it if you could cooperate.

Sincerely,

Geon Lee
Ph.D. Candidate in Public Administration
Department of Public Administration
University of Illinois at Chicago

APPENDIX E
IRB EXEMPTION LETTER

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 672)
203 Administrative Office Building
1737 West Polk Street
Chicago, Illinois 60612-7227

Exemption Granted

September 30, 2010

Geon Lee, MPA/MS
Public Administration
UIC
412 S Peoria, Suite 615, M/C 336
Chicago, IL 60607
Phone: (312) 413-0499 / Fax: (312) 996-3358

RE: **Research Protocol # 2010-0748**
“Effects of Pay Systems on the Work Attitudes of Public Managers in Federal Agencies”

Dear Geon Lee:

Your Claim of Exemption was reviewed on September 29, 2010 and it was determined that your research protocol meets the criteria for exemption as defined in the U. S. Department of Health and Human Services Regulations for the Protection of Human Subjects [(45 CFR 46.101(b))]. You may now begin your research.

<u>Exemption Period:</u>	September 29, 2010 – September 28, 2013
Sponsor:	None
Subject Population:	Adult subjects only
Number of Subjects:	Not to exceed 8 subjects
Engaged Performance Site:	UIC

The specific exemption category under 45 CFR 46.101(b) is:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a

manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

You are reminded that investigators whose research involving human subjects is determined to be exempt from the federal regulations for the protection of human subjects still have responsibilities for the ethical conduct of the research under state law and UIC policy. Please be aware of the following UIC policies and responsibilities for investigators:

1. Amendments You are responsible for reporting any amendments to your research protocol that may affect the determination of the exemption and may result in your research no longer being eligible for the exemption that has been granted.
2. Record Keeping You are responsible for maintaining a copy all research related records in a secure location in the event future verification is necessary, at a minimum these documents include: the research protocol, the claim of exemption application, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to subjects, or any other pertinent documents.
3. Final Report When you have completed work on your research protocol, you should submit a final report to the Office for Protection of Research Subjects (OPRS).
4. Information for Human Subjects UIC Policy requires investigators to provide information about the research protocol to subjects and to obtain their permission prior to their participating in the research. The information about the research protocol should be presented to subjects in writing or orally from a written script. When appropriate, the following information must be provided to all research subjects participating in exempt studies:
 - a. The researchers affiliation; UIC, JBVMAC or other institutions,
 - b. The purpose of the research,
 - c. The extent of the subject's involvement and an explanation of the procedures to be followed,
 - d. Whether the information being collected will be used for any purposes other than the proposed research,
 - e. A description of the procedures to protect the privacy of subjects and the confidentiality of the research information and data,
 - f. Description of any reasonable foreseeable risks,
 - g. Description of anticipated benefit,
 - h. A statement that participation is voluntary and subjects can refuse to participate or can stop at any time,
 - i. A statement that the researcher is available to answer any questions that the subject may have and which includes the name and phone number of the investigator(s).

- j. A statement that the UIC IRB/OPRS or JBVMAC Patient Advocate Office is available if there are questions about subject's rights, which includes the appropriate phone numbers.

Please be sure to:

→ Use your research protocol number (listed above) on any documents or correspondence with the IRB concerning your research protocol.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact me at (312) 355-2908 or the OPRS office at (312) 996-1711. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Charles W. Hoehne, B.S., C.I.P.
Assistant Director, IRB # 2
Office for the Protection of Research Subjects

Enclosure(s): None

cc: James R. Thompson, Public Administration, M/C 278
Albert Schorsch, CUPPA, M/C 350

BIBLIOGRAPHY

- Agho, A. O., Mueller, C. W., & Price, J. L. (1993). Determinants of employee job satisfaction: An empirical test of a causal model. *Human Relations*, 46(8), 1007-1027.
- Agranoff, R., & McGuire, M. (2001). Big questions in public network management research. *Journal of Public Administration Research and Theory*, 11, 295-326.
- Agranoff, R., & McGuire, M. (2003). *Collaborative public management*. Washington, D. C: Georgetown University Press.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hill.
- Aronfreed, J. (1968). *Conduct and conscience*. New York: Academic Press.
- Baker, G. P., Jensen, M. C., & Murphy, K. J. (1988). Compensation and incentives: Practices vs. theory. *Journal of Finance*, 43, 593-616.
- Baldwin, J. N. (1990). Perceptions of public versus private sector personnel and informal red tape: Their impact on motivation. *American Review of Public Administration*, 20, 7-28.
- Berman, E. M., West, J. P., & Wang, X. (1999). Using performance measurement in human resource management. *Review of Public Personnel Administration*, 19(5), 5-17.
- Bertelli, A. M. (2006). Motivation crowding and the federal civil servant: Evidence from the U.S. Internal Revenue Service. *International Public Management Journal*, 9, 3-23.
- Blau, F. D., & Kahn, L. M. (1981). Race and sex differences in quits by young workers. *Industrial and Labor Relations Review*, 34, 563-577.
- Bokemeire, J. L., & Lacy, W. B. (1987). Job values, rewards, and work conditions as factors in job satisfaction among men and women. *Sociological Quarterly*, 28, 189-204.
- Bolino, M. C., Turnley, W. H., & Bloodgood, J. M. (2002). Citizenship behavior and the creation of social capital in organizations. *Academy of Management Review*, 27, 505-522.
- Bozeman, B., Reed, P. N., & Scott, P. (1992). Red tape and task delays in public and private organizations. *Administration and Society*, 24, 290-322.
- Breukelen, W. v., Vlist, R. v. d., & Steensma, H. (2004). Voluntary employee turnover: combining variables from the 'Traditional' turnover literature with the theory of planned behavior. *Journal of Organizational Behavior*, 25(7), 893-914.

- Brewer, G. A. (2006). All measures of performance are subjective: More evidence on US federal agencies. In G. A. Boyne, K. J. Meire, L. J. O'Toole & R. M. Walker (Eds.), *Public Service Performance*. New York: Cambridge University Press.
- Brewer, G. A., & Selden, S. C. (2000). Why elephants gallop: Assessing and predicting organizational performance in federal agencies. *Journal of Public Administration Research and Theory*, 10(4), 685-711.
- Bright, L. (2008). Does public service motivation really make a difference on the job satisfaction and turnover intentions of public employees ? *American Review of Public Administration*, 38, 149-166.
- Bright, L. (2009). Why do public employees desire intrinsic nonmonetary opportunities? . *Public Personnel Management*, 38(3), 15-37.
- Brockner, J., Siegel, P., Daly, J., Tyler, T., & Martin, C. (1997). When trust matters? The moderating effect of outcome favorability. *Administrative Science Quarterly*, 42, 558-583.
- Brook, D. A., & King, C. L. (2008). Federal personnel management reform. *Review of Public Personnel Administration*, 28, 205-221.
- Brooke, P. P., Russell, D. W., & Price, J. L. (1988). Discriminant validation of measures of job satisfaction, job involvement, and organizational commitment. *Journal of Applied Psychology*, 73, 139-145.
- Brown, W. A., & Yoshioka, C. F. (2003). Mission attachment and satisfaction as factors in employee retention. *Nonprofit Management and Leadership*, 14, 5-18.
- Buchanan, B. I. (1975). Red tape and the service ethic. *Administration and Society*, 6(3), 423-444.
- Burgess, S., & Ratto, M. (2003). The role of incentives in the public sector: Issues and evidence. *Oxford Review of Economic Policy*, 19(2), 285-300.
- Calder, B. J., & Staw, B. M. (1975). Self-perception of intrinsic and extrinsic motivation. *Journal of Personality and Social Psychology*, 31(4), 599-605.
- Cameron, J., & Pierce, W. D. (1994). Reinforcement, reward, and intrinsic motivation: A meta-analysis. *Review of Educational Research*, 64(3), 363-423.
- Campbell, D. J., & Furrer, D. M. (1995). Goal setting and competition as determinants of task performance. *Journal of Organizational Behavior*, 16(4), 377-389.
- Cheri, O. (1992). The relationship between satisfaction, attitudes, and performance: An organizational level of analysis. *Journal of Applied Psychology*, 77, 963-974.

- Cho, Y. J. (2008). *Trust in managerial leadership within federal agencies: Antecedents, outcomes, and contextual factors*. Unpublished Unpublished doctoral dissertation, Indiana University, Bloomington, IN.
- Choi, S. (2009). Diversity in the US federal government: Diversity management and employee turnover in federal agencies. *Journal of Public Administration Research and Theory*, 19, 603-630.
- Choi, S. (In press). Oranizatoinal justice and employee work attitudes: The federal case. *American Review of Public Administration*.
- Cogliser, C. C., & Schriesheim, C. A. (2000). Exploring work unit context and leader-member exchange: A multi-level perspective. *Journal of Organizational Behavior*, 21(5), 487-511.
- Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: A meta-analysis and review with implications for research. *Academy of Management Review*, 11(1), 55-70.
- Daley, D. M. (2006). Strategic human resources management. In N. M. Riccucci (Ed.), *Public Personnel Management*. New York: Longman.
- deCharms, R., & Muir, M. (1968). Motivation: Social approaches. *Annual Review of Psychology*, 29, 91-113.
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, 18, 105-115.
- Deci, E. L. (1972). Intrinsic motivation, extrinsic reinforcement, and inequity. *Journal of Personality and Social Psychology*, 22, 113-120.
- Deci, E. L. (1975). *Intrinsic motivation*. New York: Plenum Press.
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627-668.
- Deci, E. L., Nezlek, J., & Sheinman, L. (1981). Characteristics of the rewarder and intrinsic motivation of the rewardee. *Journal of Personality and Social Psychology*, 40, 1-10.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press.
- Deckop, J. R., & Cirka, C. C. (2000). The risk and reward of a double-edgedsword: Effects of a merit payprogram on intrinsic motivation. *Nonprofit and Voluntary Sector Quarterly*, 29, 400-418.

- Demski, J., & Feltham, G. (1978). Economic incentives in budgetary control systems. *Accounting Review*, 53, 336-359.
- Denhardt, R. B., & Denhardt, J. V. (2000). The new public service: Serving rather than steering. *Public Administration Review*, 60(6), 549-559.
- Denis, D. J., Denis, D. K., & Sarin, A. (1999). Agency theory and the influence of equity ownership structure on corporate diversification strategies. *Strategic Management Journal*, 20(11), 1017-1076.
- DeSantis, V. S., & Durst, S. L. (1996). Comparing job satisfaction among public-and private-sector employees. *American Review of Public Administration*, 26, 327-343.
- Dess, G. G., & Shaw, J. D. (2001). Voluntary turnover, social capital, and organizational performance. *Academy of Management Review*, 26, 446-456.
- Dirks, K. T., & Ferrins, D. L. (2001). The role of trust in organizational settings. *Organization Science*, 12, 450-467.
- Doty, D. H., & Glick, W. H. (1998). Common methods bias: Does common methods variance really bias results? . *Organizational Research Methods*, 1(4), 374-406.
- Dowling, B., & Richardson, R. (1997). Evaluating performance-related pay for managers in the National Health Service. *International Journal of Human Resource Management*, 8(3), 1997.
- Eisenberger, R., & Cameron, J. (1996). Detrimental effects of reward: Reality or myth? . *American Psychologist*, 51(11), 1153-1166.
- Eisenhardt, K. M. (1988). Agency-and institutional-theory explanations: The case of retail sales compensation. *Academy of Management Journal*, 31(3), 488-511.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Journal*, 14(1), 57-74.
- Ellickson, M. C. (2002). Determinants of job satisfaction of municipal government employees. *Public Personnel Management*, 31(3), 343-358.
- Erez, M., & Kanfer, F. H. (1983). The role of goal acceptance in goal setting and task performance. *Academy of Management Review*, 8(3), 454-463.
- Frey, B. S. (1997). *Not just for the money: An economic theory of personal motivation*. Brookfield, VT: Edward Elgar.
- Frey, B. S., & Osterloh, M. (2005). Yes, managers should be paid like bureaucrats. *Journal of Management Inquiry*, 14(1), 96-111.

- Fulk, J., Brief, A. P., & Barr, S. H. (1985). Trust-in-supervisor and perceived fairness and accuracy of performance evaluations. *Journal of Business Research*, 13, 301-313.
- Gabris, G. T. (1986). Why merit pay plans are not working: A search for alternative pay plans in the public sector- a symposium part I. *Review of Public Personnel Administration*, 7(1), 1-8.
- Gabris, G. T., & Ihrke, D. M. (2000). Improving employee acceptance toward performance appraisal and merit pay systems. *Review of Public Personnel Administration*, 20, 41-53.
- Gabris, G. T., & Simo, G. (1995). Public sector motivation as an independent variable affecting career decision. *Public Personnel Management*, 24, 33-51.
- Gaertner, K. N., & Gaertner, G. H. (1985). Performance-contingent pay for federal managers. *Administration and Society*, 17(1), 7-20.
- Galizzi, M., & Lang, K. (1998). Relative wages, wage growth, and quit behavior. *Journal of Labor Economics*, 16, 367-391.
- GAO. (1987). *Pay for performance: Implementation of the Performance Management and Recognition System*. Washington D. C.: United States General Accountability Office.
- GAO. (2004). *Human capital: Implementing pay for performance at selected personnel demonstration projects*. Washington D.C. : United States General Accountability Office.
- Ginsberg, W. (2008a). *Pay-for-performance: Linking employee pay to performance appraisal*: Congressional Research Service.
- Ginsberg, W. (2008b). *Pay-for-performance: The National Security Personnel System*. Washington, DC: Congressional Research Service.
- Goulet, L. R., & Flank, M. L. (2002). Organizational commitment across three sectors: Public, non-profit, and for-profit. *Public Personnel Management*, 31(2), 201-210.
- Gove, W. R., & Hughes, M. (1980). Reexamining the ecological fallacy: A study in which aggregate data are critical in investigating the pathological effects of living alone. *Social Forces*, 58, 1157-1177.
- Gujarthy, D. N. (2003). *Basic econometrics*. New York: McGraw-Hill.
- Heeringa, S. G., West, B. T., & Berglund, P. A. (2010). *Applied survey data analysis*. Boca Raton, FL: CRC Press.

- Henderson, D. J., Liden, R. C., Glibkowski, B. C., & Chaudhry, A. (2009). LMX differentiation: A multilevel review and examination of its antecedents and outcomes. *The Leadership Quarterly*, 20, 517-534.
- Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The motivation to work*. New York: Wiley.
- Hollensbe, E. C., & Guthrie, J. P. (2000). Group pay-for-performance plans: The role of spontaneous goal setting. *Academy of Management Review*, 25(4), 864-872.
- Hom, P., & Griffeth, R. (1995). *Employee turnover*. Cincinnati, OH: Southwestern.
- Hopkins, A. H. (1983). *Work and job satisfaction in the public sector*. Totowa, New Jersey: Rowman & Allanheld.
- Houston, D. J. (2000). Public-service motivation: A multivariate test. *Journal of Public Administration Research and Theory*, 10, 713-728.
- Houston, D. J. (2006). Walking the walk of public service motivation: Public employees and charitable gifts of time, blood, and money. *Journal of Public Administration Research and Theory*, 16(1), 67-86.
- Houston, D. J. (2009). Motivating knights or knaves? Moving beyond performance-related pay for the public sector. *Public Administration Review*, 69, 43-57.
- Hox, J. (2004). *Multilevel analysis: Techniques and applications*. Nahwah, NJ: Lawrence Erlbaum Associates.
- Hughes, L. C., & Preski, S. (1997). Focus on quantitative methods using key informant methods. *Research in Nursing & Health*, 20, 81-92.
- Huselid, M. A. (1995). The impact of human resources management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38, 635-672.
- Hyde, S. C. (2005). Pay for performance. *Public Manager*, 34, 3-10.
- Igalens, J., & Roussel, P. (1999). A study of the relationships between compensation package, work motivation and job satisfaction. *Journal of Organizational Behavior*, 20, 1003-1025.
- Ihrke, D. M. (2004). Mission change in a federal agency and its link to employee transfer preferences. *American Review of Public Administration*, 34(2), 181-198.
- Ingraham, P. W. (1993a). Of pigs in pokes and policy diffusion: Another look at pay-for-performance. *Public Administration Review*, 53(4), 348-356.

- Ingraham, P. W. (1993b). Pay for performance in the States. *American Review of Public Administration*, 23(3), 189-200.
- Ippolito, R. A. (1987). Why federal workers don't quit. *Journal of Human Resources*, 22(2), 281-299.
- Kalleberg, A. L. (1974). A causal approach to the measurement of inequality in job satisfaction. *Social Science Research*, 3, 299-322.
- Karl, K. A., & Sutton, C. L. (1998). Job values in today's workforce: A comparison of public and private sector employees. *Public Personnel Management*, 27(4), 515-527.
- Kellough, J. E., & Lu, H. (1993). The paradox of merit pay in the public sector. *Review of Public Personnel Administration*, 13, 45-64.
- Kellough, J. E., & Nigro, L. (2005). Radical civil service reform: Ideology, politics, and policy. In S. Condrey (Ed.), *The handbook of human resource management in government*. San Francisco: Jossey Bass.
- Kellough, J. E., & Nigro, L. G. (2002). Pay for performance in Georgia state government. *Review of Public Personnel Administration*, 22, 146-166.
- Kellough, J. E., & Osuna, W. (1995). Cross-agency comparisons of quit rates in the federal service: Another look at the evidence. *Review of Public Personnel Administration*, 15, 58-68.
- Kellough, J. E., & Selden, S. C. (1997). Pay-for-performance systems in state government: Perceptions of state agency personnel managers. *Review of Public Personnel Administration*, 17, 5-21.
- Kellough, J. E., & Selden, S. C. (2003). The reinvention of public personnel administration: An analysis of the diffusion of personnel management reforms in the states. *Public Administration Review*, 63(2), 165-176.
- Kettl, D. F. (2005). *The global public management revolution*. Washington, D.C.: The Brookings Institution.
- Khojasteh, M. (1993). Motivating the private vs. public sector managers. *Public Personnel Management*, 22(3), 391-401.
- Kilpatrick, F., Cummings, M. C., & Jennings, M. K. (1964). *The image of the federal service*. Washington D.C.: Brookings.
- Kim, S. (2002). Participative management and job satisfaction: Lessons for management leadership. *Public Administration Review*, 62, 231-241.

- Kim, S. (2005). Factors affecting state government information technology employee turnover intentions. *American Review of Public Administration*, 35(2), 137-156.
- Kim, S. (2009). IT employee job satisfaction in the public sector. *International Journal of Public Administration*, 32, 1070-1097.
- Kim, S. E., & Lee, J. W. (2007). Is mission attachment an effective management tool for employee retention? An empirical analysis of a nonprofit human services agency. *Review of Public Personnel Administration*, 27, 227-248.
- Kim, S. M. (2005). Individual-level factors and organizational performance in government organizations. *Journal of Public Administration Research and Theory*, 15(2), 245-262.
- Kohn, A. (1996). Why incentive plans cannot work. In R. M. Steers, L. W. Porter & G. A. Bigley (Eds.), *Motivation and leadership at work*. New York: McGraw-Hill.
- Kostova, T., & Roth, K. (2003). Social capital in multinational corporations and a micro-macro model of its formation. *Academy of Management Review*, 28, 297-317.
- Kramer, R. (1999). Trust and distrust in organizations: Emerging perspectives, enduring questions. *Annual Review of Psychology*, 50, 569-598.
- Lane, J.-E. (2000). *New public management*. New York: Routledge.
- Latham, G. P., & Yukl, G. A. (1975). A review of research on the application of goal setting in organizations. *Academy of Management Journal*, 18(4), 824-845.
- Lawler III, E. E. (1971). *Pay and organizational effectiveness: A psychological review*. New York: McGraw-Hill.
- Lawler III, E. E. (1981). *Pay and organizational development*. Reading, MA: Addison-Wesley.
- Leana, C. R., & van Buren, I., Harry J. . (1999). Organizational social capital and employment practices. *Academy of Management Review*, 24, 538-555.
- Lee, G., & Jimenez, B. S. (2011). Does performance management affect job turnover intention in the federal government? . *American Review of Public Administration*, 41(2), 168-184.
- Lee, S. Y., & Whitford, A. B. (2008). Exit, voice, loyalty, and pay: Evidence from the public workforce. *Journal of Public Administration Research and Theory*, 18, 647-671.
- Lenkowsky, L., & Perry, J. L. (2000). Reinventing government: The case of national service. *Public Administration Review*, 60(4), 298-307.
- Leonard, J. (1987). Carrot and sticks: Pay, supervision, and turnover. *Journal of Labor Economics*, 5, 136-152.

- Lepper, M. R., & Greene, D. (1975). Turning play into work: Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. *Journal of Personality and Social Psychology*, 31, 479-486.
- Lepper, M. R., Greene, D., & Nisbett, R. E. (1973). Undermining children's intrinsic interest with extrinsic reward: A test of the "overjustification" hypotheses. *Journal of Personality and Social Psychology*, 28, 129-137.
- Lewis, G. B. (1991). Turnover and the quiet crisis in the federal civil service. *Public Administration Review*, 51, 145-155.
- Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, 86, 114-121.
- Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational behavior and human performance*, 3, 157-189.
- Locke, E. A. (1978). The ubiquity of the technique of goal setting in theories of and approaches to employee motivation. *Academy of Management Review*, 3(3), 594-601.
- Locke, E. A., Feren, D. B., McCaleb, V. M., Shaw, K. N., & Denny, A. T. (1980). The relative effectiveness of four ways of motivating employee performance. In K. D. Duncan, M. M. Gruenberg & D. Wallis (Eds.), *Changes in working life* (pp. 363-368). New York: Wiley.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting & test performance*. Upper Saddle River, New Jersey: Prentice Hall.
- Locke, E. A., Shaw, K. N., Saari, L. M., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin*, 90(1), 125-152.
- Lovrich, J., Nicholas P. (1987). Merit pay and motivation in the public workforce: Beyond technical concerns to more basic considerations. *Review of Public Personnel Administration*, 7(2), 54-71.
- Lynn, L. E., Heinrich, C. J., & Hill, C. J. (2001). *Improving governance: A new logic for empirical research*. Washington, D.C.: Georgetown University Press.
- Magnusson, D., & Endler, N. S. (1977). Interactional psychology: present status and future prospects. In D. Magnusson & N. S. Endler (Eds.), *Personality at the cross-roads: Current issues in interactional psychology* (Vol. 3-31). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Marsden, D., & Richardson, R. (1994). Performing for pay? The effects of 'merit pay' on motivation in a public service. *British Journal of Industrial Relations*, 32(2), 243-261.

- Mastrofski, S. D., Ritti, R. R., & Snipes, J. B. (1994). Expectancy theory and police productivity in DUI enforcement. *Law & Society Review*, 28, 113-148.
- McAllister, D. (1995). Affect-and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38, 24-59.
- Meire, K. J., & Hicklin, A. (2008). Employee turnover and organizational performance: Testing a hypothesis from classical public administration. *Journal of Public Administration Research and Theory*, 18, 573-590.
- Melkers, J. (2006). On the road to improved performance. *Public Performance & Management Review*, 30(1), 73-95.
- Milkovich, G., & Wigdor, A. (1991). *Pay for performance: Evaluating performance appraisal and merit pay*. Washington, DC: National Academy Press.
- Miller, J. S., Hom, P. W., & Gomez-Mejia, L. R. (2001). The high cost of low wages: Does maquiladora compensation reduce turnover? . *Journal of International Business Studies*, 32(3), 585-595.
- Miller, L. E., & Grush, J. E. (1988). Improving predictions in expectancy theory research: Effects of personality, expectancies, and norms. *Academy of Management Journal*, 31(1), 107-122.
- Milward, H. B., & Provan, K. G. (1998). Measuring network structure. *Public Administration*, 76, 387-407.
- Mitchell, T. R. (1982). Expectancy-value model in organizational psychology. In N. T. Feather (Ed.), *Expectations and actions: Expectancy-value models in psychology* (pp. 293-312). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Mobley, W. H. (1977). Intermediate linkages in the relationship between job satisfaction and employee turnover. *Journal of Applied Psychology*, 62, 237-240.
- Moon, M. J. (2000). Organizational commitment revisited in New Public Management: motivation, organizational culture, sector, and managerial level. *Public Performance & Management Review*, 24(2), 177-194.
- Mor barak, M. E., Nissly, J. A., & Levin, A. (2001). Antecedents to retention and turnover among child welfare, social work, and other human service employees: What can we learn from past research? A review and meta-Analysis. *Social Science Review*, 75(4), 625-661.
- Mottaz, C. J. (1985a). The relative importance of intrinsic and extrinsic rewards as determinants of work satisfaction. *Sociological Quarterly*, 26, 365-385.

- Mottaz, C. J. (1985b). The relative importance of intrinsic and extrinsic rewards as determinants of work satisfaction. *Sociological Quarterly*, 26(3), 365-385.
- Moynihan, D. P. (2008). The normative model in decline? Public service motivation in the age of governance. In J. L. Perry & A. Hondeghem (Eds.), *Motivation in public management: The call of public service* (pp. 247-267). New York: Oxford University Press.
- Moynihan, D. P., & Landuyt, N. (2008). Explaining turnover intention in state government: Examining the roles of gender, life cycle, and loyalty. *Review of Public Personnel Administration*, 28, 120-143.
- Muchinsky, P. (1977). Organizational communication: Relationships to organizational climate and job satisfaction. *Academy of Management Journal*, 20, 592-607.
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23, 242-266.
- Newstrom, J., Reif, W. E., & Monckza, R. M. (1976). Motivating the public employee: Fact vs. fiction. *Public Personnel Management*, 5, 67-72.
- Notz, W. W. (1975). Work motivation and the negative effects of extrinsic rewards: A review with implications for theory and practice. *American Psychologist*, 30, 884-891.
- O'Toole, D. E., & Churchill, J. R. (1982). Implementing pay-for-performance: Initial experiences. *Review of Public Personnel Administration*, 2(3), 13-28.
- O'Toole, L. J. (1997). The implications for democracy in a networked bureaucratic world. *Journal of Public Administration Research and Theory*, 7, 443-459.
- Oh, S. S., & Lewis, G. B. (2009). Can performance appraisal systems inspire intrinsically motivated employees? *Review of Public Personnel Administration*, 29, 158-167.
- Paarlberg, L. E., Perry, J. L., & Hondeghem, A. (2008). From theory to practice: Strategies for applying public service motivation. In J. L. Perry & A. Hondeghem (Eds.), *Motivation in public management*. New York: Oxford University Press.
- Pandey, S. K., & Kingsley, G. A. (2000). Examining Red Tape in Public and Private Organizations: Alternative Explanations from a Social Psychological Model. *Journal of Public Administration Research and Theory*, 10(4), 779-799.
- Payne, R. L., & Mansfield, R. (1973). Relationships of perceptions of organizational climate to organizational structure, context, and hierarchical position. *Administrative Science Quarterly*, 18, 515-526.
- Pearce, J. A., & David, F. (1987). Corporate mission statements: The bottom line. *Academy of Management Executive*, 1, 109-115.

- Pearce, J. L., & Perry, J. L. (1983). Federal merit pay: A longitudinal analysis. *Public Administration Review*, 43(4), 315-325.
- Perrow, C. (1986). *Complex organizations* (3 ed.). New York: McGraw-Hill.
- Perry, J. L. (1986). Merit pay in the public sector: The case for a failure of theory. *Review of Public Personnel Administration*, 7(1), 57-69.
- Perry, J. L. (1993). Strategic human resource management. *Review of Public Personnel Administration*, 13, 59-71.
- Perry, J. L., Engbers, T. A., & Jun, S. Y. (2009). Back to the future? performance-related pay, empirical research, and the perils of persistence. *Public Administration Review*, 69(1), 39-51.
- Perry, J. L., Hanzlik, C., & Pearce, J. L. (1982). Effectiveness of merit-pay-pool management. *Review of Public Personnel Administration*, 2(3), 5-12.
- Perry, J. L., Mesch, D., & Paarlberg, L. (2006). Motivating employees in a new governance era: The performance paradigm revisited. *Public Administration Review*, 66(4), 505-514.
- Perry, J. L., & Wise, L. R. (1990). The motivational bases of public service. *Public Administration Review*, 50(3), 367-373.
- Peters, B. G. (2001). *The future of governing*. Lawrence, KS: University of Kansas Press.
- Pillai, R., Schriesheim, C., & Williams, E. (1999). Fairness perceptions and trust as mediators for transformational and transactional leadership: A two-study sample. *Journal of Management*, 25, 897-933.
- Podsakoff, P., MacKenzie, S., R. Moorman, & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *Leadership Quarterly*, 1, 107-142.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12(4), 531-544.
- Poister, T. H. (2003). *Measuring performance in public and nonprofit organizations*. San Francisco, CA: Jossey-Bass.

- Posner, B. Z., & Schmidt, W. H. (1996). The values of business and federal government executives: More different than alike. *Public Personnel Management*, 25(3), 277-289.
- Powers, D. A., & Xie, Y. (2000). *Statistical methods for categorical data analysis*. San Diego, CA: Academic Press.
- Price, J. L., & Mueller, C. W. (1981). A causal model of turnover for nurses. *Academy of Management Journal*, 24, 543-565.
- Propper, C., & Wilson, D. (2003). The use and usefulness of performance measures in the public sector. *Oxford Review of Economic Policy*, 19(2), 250-267.
- Provan, K. G., & Milward, H. B. (2001). Do networks really work? A framework for evaluating public-sector organizational networks. *Public Administration Review*, 61, 414-423.
- Rainey, H. G. (1982). Reward preferences among public and private managers: In search of the service ethic. *American Review of Public Administration*, 16(4), 288-302.
- Rainey, H. G. (1989). Public management recent research on the political context and managerial roles, structures, and behaviors. *Journal of Management*, 15(2), 229-250.
- Rainey, H. G. (1997). *Understanding and managing public organizations* (2nd ed.). San Francisco: Jossey-Bass.
- Rainey, H. G., & Bozeman, B. (2000). Comparing public and private organizations: Empirical research and the power of the priori. *Journal of Public Administration Research and Theory*, 10, 447-469.
- Rainey, H. G., & Kellough, J. E. (2000). Civil service reform and incentives in the public service. In J. Piffner & D. Brook (Eds.), *The future of merit: 20 years after the civil service reform act*. Baltimore: Johns Hopkins University Press.
- Raudenbush, S. W., & Bryk, A. S. (2001). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: SAGE Publications.
- Rich, G. A. (1997). The sales manager as a role model: Effects on trust, job satisfaction, and performance of salespeople. *Journal of the Academy of Marketing Science*, 25, 319-328.
- Risher, H. (2002). Pay-for-performance: The keys to making it work. *Public Personnel Management*, 31(3), 317-332.
- Robinson, W. S. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review*, 15, 351-357.
- Robinson, W. S. (1996). Trust and the breach of the psychological contract. *Administrative Science Quarterly*, 41, 574-599.

- Rynes, S. L., Gerhart, B., & Parks, L. (2005). Personnel psychology: Performance evaluation and pay for performance. *Annual Review of Psychology*, 56, 571-600.
- Sachau, D. A. (2007). Resurrecting the motivation-hygiene theory: Herzberg and the positive psychology movement. *Human Resource Development Review*, 6(4), 377-393.
- Schay, B. W. (1988). Effects of performance-contingent pay on employee attitudes. *Public Personnel Management*, 17(2), 237-250.
- Schneider, B. (1987). The people make the place. *Personnel Psychology*, 40(437-453).
- Schneider, B., Goldstein, H. W., & Smith, D. B. (1995). The ASA framework: An update. *Personnel Psychology*, 48, 747-773.
- Schneider, B., Smith, D. B., Taylor, S., & Fleenor, J. (1998). Personality and organizations: A test of the homogeneity of personality hypothesis. *Journal of Applied Psychology*, 83(462-470).
- Schneider, B., & Snyder, R. A. (1975). Some relationships between job satisfaction and organizational climate. *Journal of Applied Psychology*, 60, 318-328.
- Schulz, E. R., & Tanguay, D. M. (2006). Merit pay in a public higher education institution: Questions of impact and attitudes. *Public Personnel Management*, 35(1), 71-88.
- Selden, S. C. (2009). *Human capital: Tools and strategies for the public sector*. Washington, D.C.: CQ Press.
- Selden, S. C., & Moynihan, D. P. (2000a). A model of voluntary turnover in state government. *Review of Public Personnel Administration*, 20(63), 63-74.
- Selden, S. C., & Moynihan, D. P. (2000b). A model of voluntary turnover in state government. *Review of Public Personnel Administration*, 20, 63-74.
- Shaw, J. D., Delery, J., Jenkins, G. D., & Gupta, N. (1998). An organization-level analysis of voluntary and involuntary turnover. *Academy of Management Journal*, 41, 511-525.
- Simons, T., & Peterson, R. (2000). Task conflict and relationship conflict in top management teams: The pivotal role of intra-group trust. *Journal of Applied Psychology*, 85, 102-111.
- Slater, P. (1980). *Wealth addiction*. New York: Dutton.
- Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis*. Thousand Oaks, CA: SAGE Publications.

- Sorensen, A. B., & Tuma, N. B. (1981). Labor market structures and job mobility. *Research in Social Stratification and Mobility*, 1(67-94).
- Spector, P. E. (1994). Using self-report questionnaire in OB research: A comment on the use of a controversial method. *Journal of Organizational Behavior*(15), 385-392.
- Spector, P. E. (1997). *Job Satisfaction: Application, assessment, causes and consequences*. Thousand Oaks, CA: SAGE Publications.
- Stazyk, E. C. (2009). *Crowding out intrinsic motivation? : The role of performance-related pay*. Paper presented at the 10th National Public Management Research Conference.
- Streib, G., & Nigro, L. G. (1993). Pay for performance in local governments: Programmatic differences and perceived utility. *Public Productivity & Management Review*, 17(2), 145-159.
- Stroh, L. K., Brett, J. M., Baumann, J. P., & Reilly, A. H. (1996). Agency theory and variable pay compensation strategies. *Academy of Management Journal*, 39(3), 751-787.
- Thayer, F. C. (1987). Performance appraisal and merit pay systems: The disasters multiply. *Review of Public Personnel Administration*, 7(2), 36-53.
- Thompson, J. R. (2000). Reinvention as reform: Assessing the National Performance Review. *Public Administration Review*, 60(6), 508-521.
- Thompson, J. R. (2006). The federal civil service: The demise of an institution. *Public Administration Review*, 66, 496-503.
- Thompson, J. R. (2007). *Designing and implementing performance-oriented payband systems*. Washington, DC: IBM.
- Ting, Y. (1997). Determinants of job satisfaction of federal government employees. *Public Personnel Management*, 26(3), 313-334.
- Tompkins, J. (2002). Strategic human resources management in government: Unresolved issues. *Public Personnel Management*, 31, 95-110.
- Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal*, 41, 464-476.
- U.S. Merit Systems Protection Board. (2007). *Accomplishing our mission: Results of the Merit Principles Survey 2005*. Washington, D.C: MSPB.
- Vandenberg, R. J., & Nelson, J. B. (1999). Dissaggregating the motives underlying turnover intentions: When do intentions predict turnover behavior? *Human Relations*, 52(10), 1313-1336.

- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Wang, X., & Berman, E. (2000). Hypotheses about performance measurement in counties: Findings from a survey. *Journal of Public Administration Research and Theory*, 11(3), 403-428.
- Watson, J. M., & Meiksins, P. F. (1991). What do engineers want? Work values, job rewards, and job satisfaction. *Science Technology, & Human Values*, 16(2), 140-172.
- Weibel, A., Rost, K., & Osterloh, M. (2010). Pay for performance in the public sector-benefits and (hidden) costs. *Journal of Public Administration Research and Theory*, 20, 387-412.
- Weiss, J. A., & Piderit, S. K. (1999). The value of mission statements in public agencies. *Journal of Public Administration Research and Theory*, 9, 193-223.
- Whitford, A. B., Lee, S.-Y., Yun, T., & Jung, C. S. (2010). Collaborative behavior and the performance of government agencies. *International Public Management Journal*, 13(4), 321-349.
- Wittmer, D. (1991). Serving the people or serving for pay: Reward preferences among government, hybrid sector, and business managers. *Public Productivity & Management Review*, 14, 369-383.
- Wright, B. E. (2007). Public service and motivation: Does mission matter? . *Public Administration Review*, 67, 54-64.
- Wright, B. E., & Davis, B. S. (2003). Job satisfaction in the public sector: The role of the work environment. *American Review of Public Administration*, 2003(1), 70-90.
- Zey, M. (1998). *Rational choice theory and organizational theory: A critique*. Thousand Oaks: Sage Publications.
- Zeytinoglu, I. U., Denton, M., Davies, S., Baumann, A., Blythe, J., & Boos, L. (2007). Deteriorated external work environment, heavy workload and nurses' job satisfaction and turnover intention. *Canadian Public Policy*, 33, S31-S47.

VITA

GEON LEE

EDUCATION

University of Illinois, Chicago, IL

Ph.D. in Public Administration, 2011

College of Urban Planning and Public Affairs

Specialization: Public Management / Survey Research Methods

Dissertation:

*Pay-for-Performance Pay Systems and Job Attitudes
in Government Agencies*

Dissertation Committee:

Timothy Johnson (co-chair), James Thompson (co-chair), Karen Mossberger,
Sharon Mastracci, and Soonhee Kim (Syracuse University)

University of Michigan, Ann Arbor, MI

Master of Science in Survey Methodology, 2006

Indiana University, Bloomington, IN

Master of Public Affairs (MPA), 2004

Hanyang University, Seoul, South Korea

BA in Public Administration, 1995

FIELDS OF INTEREST

Human Resource Management, Public/Nonprofit Organization Theory, Public Performance Management, Survey Research Methods, Quantitative Methods, Organizational Research Methods

PUBLICATIONS

Peer-Reviewed Journals

Lee, Geon. (forthcoming) “Uncovering the Blurring of Sectors: A Comparison of Perceived Organizational Values between Public and Nonprofit Sectors.” *International Review of Public Administration*

Lee, Geon., Jennifer Benoit-Bryan, and Timothy Johnson. (forthcoming) “Survey Research in Public Administration: Assessing Mainstream Journals with a Total Survey Error Framework.” *Public Administration Review*.

Lee, Geon., and Benedict Jimenez. 2011. “Does Performance Management Affect Job Turnover Intention in the Federal Government?” *American Review of Public Administration* 41 (2): 168-184.

Lee, Geon., and Karen Mossberger. 2009. “The Effect of Threat Climates on Collaborations among Local Governments: An Exploratory Approach with Perceptions of U.S. City Officials.” *International Review of Public Administration* 13(3): 51-63.

Internet Journal

Johnson, P. Timothy., Geon Lee, and YoungIk Cho. 2010. “Examining the Association between Cultural Environments and Survey Nonresponse.” *Survey Practice*: June

Book

Lee, Geon. 2008. “Mode-related Errors,” “Network Sampling.” In *Encyclopedia of Survey Research Methods*, eds. Paul Lavrakas. Thousand Oaks, CA: SAGE Publications

PUBLICATIONS UNDER REVIEW

Jung, Chan Su., and Geon Lee. “Goals, Planning, and Performance in the U.S. Federal Government.” Under review at *American Review of Public Administration* (Revise and Resubmit)

CONFERENCE PRESENTATIONS

Benoit-Bryan, Jennifer., Geon Lee., and Timothy Johnson. 2011 “The Effects of Neighborhood Level Characteristics on the Reliability and Validity of Self-reports of Health Data” Paper presented at the 66th annual conference of the American Association for Public Opinion Research, Phoenix, AZ, May 12-15

Lee, Geon. 2011. “Sector Differences within the Public Sector: The Impact of Pay Systems on the Job Attitudes of Public Managers” Paper presented at the 69th annual conference of Midwest Political Science Association, Chicago, IL, March 31-April 3.

Lee, Geon., and Do-Lim Choi. 2011. “Public Service Motivation and Sector Choice Decisions: Evidence from Undergraduate Job Seekers in Korea” Paper presented at the 72th annual conference of the American Society for Public Administration, Baltimore, MD, March 11-15.

Lee, Geon. 2010. “Pay Systems and Work Motivation: Comparing Public Managers’ Work Values between the Pay-for-Performance and General Schedule Systems in Federal Agencies” Paper presented at the Southeastern Conference on Public Administration (SECOPA), Wilmington, NC, Oct. 13-16.

Lee, Geon. 2010. “A Position Bias Issue of Subjective Performance Measures in Empirical Research.” Paper presented (poster session) at the 71th annual conference of the American Society for Public Administration, San Jose, CA, April 9-13.

Rao, Kumar., and Geon Lee. 2009. “Dealing with Extremely Long Response Lists in a Mixed-Mode Survey Environment.” Paper presented at the annual conference of the Midwest Association for Public Opinion Research, Chicago, IL, Nov. 20-21.

Lee, Geon., Jennifer Benoit-Bryan, and Timothy Johnson. 2009. “Survey Methods in Public Administration Research: A Content Analysis of Journal Publications.” Paper presented at the 10th National Public Management Research Conference, Columbus, OH, Oct. 1-3

Lee, Geon., and Kumar Rao. 2009. “Examining the Relationship between Survey Response Elicitation, Response Motivation, and Satisficing: A Case Study of Web-based Panel Survey.” Paper presented (poster session) at the 64th annual conference of the American Association for Public Opinion Research, Hollywood, FL, May 14-17

Lee, Geon., and Benedict Jimenez. 2009 “Does Organizational Performance Make a Difference to Public Employees’ Job Turnover in the Federal Government?” Paper presented at the 67th annual conference of Midwest Political Science Association, Chicago, IL, April 3-6

Lee, Geon., Jennifer Benoit-Bryan, and Timothy P. Johnson. 2009. “Survey Methodology in Public Administration Research: An Assessment of Journal Publications” Paper presented at the ST&E Research Policy Symposium, College of Urban Planning and Public Affairs, University of Illinois, Chicago, March 17-18

Lee, Geon., Timothy P. Johnson, and Young Ik Cho. 2008. "The Effect of Cultural Context on Refusal and Noncontact in a RDD Telephone Survey" Paper presented at the annual conference of the Midwest Association for Public Opinion Research, Chicago, IL, Nov 21-22.

Huang, Wan-Ling., Geon Lee, and Eric Welch. 2008. "The Determinants of Research Collaboration: The Impacts of the Work Environment" Paper presented at the annual conference of the American Political Science Association, Boston, MA, Aug 28-31.

Lee, Geon., and Timothy P. Johnson. 2008. "Cultural Associations with Survey Response in the 2000 Census." Paper presented at the 63rd annual conference of the American Association for Public Opinion Research, New Orleans, LA, May 14-17.

Lee, Geon., and Karen Mossberger. 2008. "Local Governments' Collaboration in Emergency Situations" Paper presented at the 69th annual conference of the American Society for Public Administration, Dallas, TX, March 7-11.

Lee, Geon. 2007. "Is Cultural Context a Matter in Reporting Errors? Comparisons of Self-Reported and Measured Weight and Height." Paper presented at the annual conference of the Midwest Association for Public Opinion Research, Chicago, IL, November 16-17

Lee, Geon. 2007. "Mode Differences in Responses to Sensitive Questions: Comparisons of CAPI and ACASI in the 2002 National Survey of Family Growth (NSFG)." Paper presented at the 62nd annual conference of American Association for Public Opinion Research, Anaheim, CA, May 12-15

GUEST LECTURE

"Total Survey Error and Web Surveys" in Internet Surveys (PA 584), Jan 11, 2011

SERVICES

Reviewer for the Review of Public Personnel Administration, 2011

PROFESSIONAL EXPERIENCES

August 2006 – Present	Research Associate, Survey Research Laboratory, University of Illinois at Chicago
July 2004 – June 2006	Research Associate, Survey Research Center, University of Michigan, Ann Arbor, MI
May 2005 – August 2005	Summer Internship, Survey Research Center,

University of Michigan, Ann Arbor, MI

January 1996 – June 2002

LG Investment & Securities Company,
Headquarter, Seoul, Korea

PROFESSIONAL TRAINING

June 2006 58th Annual Summer Institute in Survey Research Technique
Taken class: Hierarchical Linear Modeling (HLM)
University of Michigan

February 2010 Making the Virtual Classroom A Reality
Online Instruction Program by University of Illinois
Taken class: Online Learning

PROFESSIONAL SKILLS

SAS 9.13, STATA 10.1, SPSS 16, HLM 6.0, Mplus

AWARDS AND FELLOWSHIPS

Dean's Scholar Awards Scholarship, 2010-2011(\$20,000)
University of Illinois at Chicago

Distinguished Graduate Scholar Awards, 2006-2010 (\$ 80,000 plus tuition waiver)
College of Urban Planning and Public Affairs (CUPPA), University of Illinois at Chicago

Survey Methodology Program Fellowship, 2005-2006 (\$7,500)
University of Michigan

Academic Merit Scholarship, 1992-1993 (tuition waiver)
Hanyang University

PROFESSIONAL MEMBERSHIPS

American Society of Public Administration
Public Management Research Association
American Association for Public Opinion Research
Midwest Association for Public Opinion Research
Midwest Political Science Association