Pay-for-Performance and Work Motivation: Comparing Motivation between Two Compensation Systems in US Federal Agencies*

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Abstract: While private-sector managerial practices are being widely adopted in the public sector, few studies have investigated how market mechanisms influence the motivation or behavior of members of public organizations, or whether there is a systematic difference in employee motivation or behavior between market-centered settings and traditional civil service environments within the public sector. Analyzing large-scale survey data, this study investigates the difference in employee motivation between two compensation systems in the US federal government: pay-for-performance and general schedule. The empirical findings show that employees working in pay-for-performance systems tend to place a higher value on extrinsic values such as pay, performance ratings, and promotion than those in general-schedule systems. This indicates that market-centered managerial practices may undermine the public service motivation of public servants while attracting extrinsically motivated employees to the public sector.

Keywords: pay-for-performance, pay systems, motivation

INTRODUCTION

It is well documented that public organizations are different from their private counterparts in many respects—the goals of the organization, institutional rules,

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personnel systems, and employee motivations and behaviors (e.g., Buchanan, 1975; Rainey, 1982). Over the past three decades, much research has revealed differences between private and public organizations in behaviors and perceptions of individuals—known as *sector difference*—in the field of public administration. Since the New Public Management movement, public-sector organizations have adopted many managerial principles from the private sector. Pay-for-performance (PFP) is one common managerial practice 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 increases are based on seniority. As the PFP system is pervading in the public sector, it has become a recurrent theme in public administration research; it lies at the heart of disputes in the literature over the effects of market-based mechanisms on public organizations (Houston, 2009; Perry, Engbers, & Jun, 2009).

Bureaucracy is considered an organizational system in which monopoly causes resources to be inefficiently allocated (Niskanen, 1971). In order to correct bureaucratic inefficiency, administrative reforms such as New Public Management have extensively adopted market-based managerial practices. The market is an efficient institution that corrects inefficiency that results from bureaucratic monopoly and inflexibility, and market-based mechanisms are considered efficient and effective.

A large body of public administration research has documented differences in motivation, values, and attitudes between market- and nonmarket-based organizations (Baldwin, 1990; Bozeman, Reed, & Scott, 1992; Buchanan, 1975; Pandey & Kingsley, 2000; Rainey, 1982; Rainey & Bozeman, 2000). However, little research has investigated how market mechanisms influence motivation in members of public organizations, and whether there is a difference in motivation between employees in market-centered settings and those in traditional civil service environments. As PFP is increasingly applied to the public sector, whether it positively or negatively influences motivation of public employees is a focal research interest to public administration scholars (Bertelli, 2006; Houston, 2009; Stazyk, 2009). This study addresses the issue by assuming PFP as a strong market mechanism influencing public employees' motivation and behavior.

Given that most of the critical studies about the adoption of private-sector-based managerial practices are descriptive, this empirical study will make a significant contribution to the public administration literature by uncovering whether there are motivational gaps between the two pay systems within the public sector. Additionally, the findings of this study are important in that revealing the difference in employee motivation between the two settings within the same sector seems analogous to a program evaluation of PFP as a market-based system in the public sector, which will

give insight and suggest implications for both public administration scholars and practitioners in public organizations.

BACKGROUND

While GS is a system in which pay increases are made solely on a basis of seniority or longevity of job tenure, PFP allows employees to receive pay increases on the basis of their job performance. The latter is intended to improve individual performance (Lawler, 1971, 1981) and organizational performance and productivity (Locke, Feren, McCaleb, Shaw, & Denny, 1980; Risher, 2002; Rynes, Gerhart, & Parks, 2005; Schulz & Tanguay, 2006). Previous studies have shown that employees' perceptions of PFP are rather positive. For instance, Lovrich et al. (1981) 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 state government employees viewed merit pay as a motivator to improve their job performance, clarify their 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 employee turnover, and attract competent job seekers (Kellough & Selden, 1997; Milkovich & Wigdor, 1991; Risher, 2002). Additionally, PFP improves communication between supervisors and subordinates (Ingraham, 1993; Streib & Nigro, 1993).

Agency theory is recognized as a powerful perspective justifying PFP in the public sector. Agency theory typically deals with the relationship between a principal and an agent; the former hires the latter to "get things done" to achieve organizational goals (Lane, 2000; Lynn, Heinrich, & Hill, 2001; Stroh, Brett, Baumann, & Reilly, 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 or her self-interest (Eisenhardt, 1989; Lynn et al., 2001). The problem stems from the proposition that the principal has little information about the behaviors of the agent—information asymmetry.

The principal has two primary options for dealing with information asymmetry: (1) observing the agent's behaviors by establishing monitoring systems such as additional layers of supervision, and (2) adopting a contract using performance-contingent incentives, which enables the agent to be aligned with the preferences of the principal (Demski & Feltham, 1978; Denis, Denis, & Sarin, 1999; Eisenhardt, 1988, 1989; Perrow, 1986). Eisenhardt (1989) argued that while monitoring is used in a short-term

contract, monetary incentives should be used in a long-term contract. Although the monitoring mechanism can minimize the shirking by agents, it entails high transaction costs, and some behaviors are difficult to monitor (Denis et al., 1999; Lynn et al., 2001). Instead, performance-based incentives are recognized as a cost-effective tool for resolving goal conflicts and challenges between the principal and agent (Eisenhardt, 1988; Lynn et al., 2001).

PFP has been adopted in federal government agencies in the United States since the Civil Service Reform Act of 1978, which required all federal agencies to adopt a merit-based compensation system for middle-level employees and Senior Executive Service members. PFP is operated in two ways in the United States: demonstration projects and independent systems. Under the Civil Service Reform Act, federal agencies can, with congressional authorization, implement demonstration projects that flexibly design personnel system aspects such as compensation, promotion, and recruitment. The Office of Personnel Management supports the design, implementation, and evaluation of federal demonstration projects. Since 1980, it has approved 18 demonstration projects, and the projects of 10 agencies are currently ongoing, including at the National Nuclear Security Administration, Air Force Research Laboratory, and Naval Research Laboratory.

Independent systems are permanent alternative performance-based pay programs managed independently by designated agencies as authorized by Congress. Examples include the Federal Aviation Administration, Internal Revenue Service, Government Accountability Office, and Transportation Security Administration. The Office of Personnel Management plays a crucial role in implementing and overseeing alternative PFP systems and improving their human resource management practices on the basis of evaluations and review results. Currently, over 30 agencies have adopted PFP systems as either demonstration projects or independent systems, covering over 360,000 federal employees (OPM, 2008). These are reviewed in table 1.

Table 1. Pay-for-Performance Systems in Federal Agencies

Agency	Start date	Total employees
Demonstration projects		43,676
Defense Department (DoD)—Navy's China Lake facility	1980	3,843
Commerce Department—National Institute of Standards and Technology	1988	2,700
Commerce Department—various components	1998	7,440
DoD—Acquisition Workforce	1999	2,267
DoD—Science and Technology Laboratory		

Agency	Start date	Total employees
DoD—Air Force Research Laboratory	1997	2,631
DoD—Aviation and Missile Research Development and Engineering Center	1997	2,623
DoD—Army Research Laboratory	1998	1,868
DoD—Medical Research and Material Command	1998	1,345
DoD—Naval Sea Systems Command	1998	12,701
DoD—Engineer Research and Development Center	1998	1,528
DoD—Naval Research Laboratory	1999	2,322
DoD—Communications-Electronics Research, Development and Engineering Center	2002	1,833
Energy Department—National Nuclear Security Administration	2008	2,093
Independent systems		311,687
Transportation Department—Federal Aviation Administration	1996	37,020
Treasury Department—Internal Revenue Service	2001	8,176*
Government Accountability Office	2002	2,746
Homeland Security Department—Transportation Security Administration	2006	61,475
Treasury Department—Tobacco Tax and Trade Bureau	2003	127
Justice Department—Bureau of Alcohol, Tobacco, Firearms and Explosives	2001	279
Intelligence Community	2006	**
National Geospatial-Intelligence Agency	1998	**
DoD—National Security Personnel System	2004	187,000
Treasury Department—Office of Thrift Supervision	1989	1,015
Treasury Department—Office of the Comptroller of the Currency	1991	3,129
National Credit Union Administration	1992	904
Federal Deposit Insurance Corporation	2003	5,021
Farm Credit Administration	1993	264
Commodity Futures Trading Commission	2006	500
Federal Housing Finance Board	1995	136
Office of Federal Housing Enterprise Oversight	1992	259
Securities and Exchange Commission	2002	3,636
Government-wide executive pay		8,305
Senior Executive Service	2004	7,338
Senior Foreign Service	2004	967
Grand total		363,668

Source: OPM, 2008.
* Number includes only supervisory employees.
** Data were not provided by the agency.

LITERATURE REVIEW AND HYPOTHESES

Work Motivation

Work motivation has long been recognized as a work-related attitude along with job satisfaction and organizational commitment (Rainey, 1997), and serves to achieve an organization's goals (Osterloh & Frey, 2000). In recent years, much research has been carried out on intrinsic-extrinsic motivation in public administration (see, for example, Bertelli, 2006; Moon, 2000; Moynihan, 2008; Oh & Lewis, 2009; Stazyk, 2009)—especially on the specific motivation of public servants, known as *public service motivation*. Perry and Wise (1990) coined this term to explain the unique identity of public servants, and their motivation as distinct from that of employees of private organizations. A large body of research has identified that public employees have higher degrees of public service motivation than do private workers (see Gabris & Simo, 1995; Houston, 2000; Jurkiewica, Massey, & Brown, 1998; Wittmer, 1991).

While many types of motivation can be conceptualized, motivation is frequently divided into two categories: intrinsic and extrinsic (Atkinson, 1964; Calder & Staw, 1975; Notz, 1975; Sansone & Harackiewicz, 2000). Although the dichotomy between intrinsic and extrinsic motivation is not clear-cut, the concepts have been widely used in a variety of academic disciplines including psychology (Cameron & Pierce, 1994; Frey, 1997; Notz, 1975). Intrinsic motivation derives from the expected pleasure of work itself rather than its outcomes, and operates in pursuit of self-administered rewards rather than tangible rewards offered by external authorities (Shamir, 1991), while extrinsic motivation is induced by an external intervention (Frey, 1997).

Motivation will be intrinsic if a person in an organization works to fulfill its norms without receiving commands or monetary incentives. Fischhoff (1982) asserted that intrinsic motivation is a primary motivation among human beings. Deci (1975) stated that "intrinsically motivated behavior is a behavior which is motivated by a person's need for feeling competent and self-determining in dealing with his environment" (p. 100). Deci argued that an intrinsically motivated person seeks to behave in a way that causes him or her to feel competent and self-determining, and the person's need for these feelings motivates goal-directed behavior within the organization. (For instance, he described conquering challenges as a way to make a person feel competent and self-determining.) In addition, Deci and Ryan (1985) suggested that interest, enjoyment, and satisfaction are key emotions in accordance with intrinsic motivation.

In contrast, extrinsic motivation refers to "the performance of an activity because it leads to external rewards (e.g., status, approval, or passing grades)" (Deci, 1972, p. 113). Extrinsically motivated individuals anticipate compensation for their work results, and

their work motivation largely stems from tangible rewards such as money. The typical institutional design for extrinsically motivated people is to link work outcomes and monetary incentives: pay-for-performance (Osterloh & Frey, 2000).

Luthans and Keitner (1975) coined the terms contrived rewards and natural rewards to describe means of motivating workers; the former refers to extrinsic values such as money and promotion, which may work well for extrinsically motivated people; the latter refers to intrinsic values, including recognition, challenging assignments, and autonomy. Whether intrinsic or extrinsic values are more appropriate for motivating individuals to work better depends on assumptions about human nature. There are two contrasting views of human behavior in organizations: neoclassical economics and behavioral views (Osterloh & Frey, 2000). While the behavioral perspective assumes that individuals are intrinsically motivated to pursue organizational goals, the neoclassical economics view postulates that individuals are utility maximizers who pursues their self-interests instead of organizational goals (Caporaso & Levine, 1992).

In the neoclassical economics view, the use of extrinsic incentives is considered a reliable means to motivate employees to work in a goal-oriented manner, though this view also acknowledges the existence of intrinsic motivation. Moynihan (2008) contended that the market model emphasizes extrinsic values, while the normative model emphasizes intrinsic values, indicating that the adoption of the market model by public organizations would have a detrimental effect on intrinsically motivated employees. Normatively, it may be that the use of intrinsic motivation is preferred over extrinsic motivation for organizations to accomplish their goals (Osterloh & Frey, 2000). However, it may not be possible to use only intrinsic employee incentives, nor is it desirable to rely heavily on monetary incentives (Frey, 1997).

Public administration scholars have had an interest in sectoral differences with respect to intrinsic and extrinsic motivations. Prior empirical research has shown that employees in the private sector are more likely to be extrinsically motivated than those in the public sector (Rainey, 1982; Schuster, 1974; Solomon, 1986; Wittmer, 1991). Newstrom and his colleagues (1976) found that public employees placed less importance on direct and indirect economic benefits as an organizational reward than did private employees. Crewson (1997) and Houston (2000) showed that public employees perceived intrinsic rewards (such as helping other people or society) as a more important job factor than extrinsic values (such as high income), to a greater extent than private employees.

Work Motivation and Pay Systems in the Public Sector

As the PFP scheme is commonly used in the public sector, many public administra-

tion scholars have raised the motivational issue on the basis of social psychological theories, proposing that extrinsic rewards may undermine intrinsic and public service motivations of public employees—that is, the crowding-out effect is a major concern (Bertelli, 2006; Houston, 2009; Moynihan, 2008). Moynihan (2008) averred that market-based mechanisms including PFP pose a threat to public service motivation, and that they attract only extrinsic-reward-centered workers to the public sector, which may "convert the public servant into a market actor" (p. 250).

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 empirically investigated how PFP affects the motivation of employees in public agencies. Analyzing perceptions of employees working in the Internal Revenue Service, Bertelli (2006) found that the crowding-out phenomenon exists among supervisory-level employees under the PFP-based pay banding system using high-powered incentives; in contrast, crowding-in takes place among non-supervisors under the general schedule pay system.

Stazyk (2009) investigated the 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 revealed that the variable pay systems could crowd out intrinsic motivation with higher levels of public service motivation and concluded that the relationship between the PFP system and intrinsic motivation is highly contextual. Bertelli (2006) argued that a well-designed PFP scheme should crowd in intrinsic motivation. Deckop and Cirka (2000) claimed that the relationship between PFP and intrinsic motivation is contingent on the fairness of performance appraisal systems. They found that employees in nonprofit organizations who perceived that their performance appraisal system was significantly unfair encountered a reduction in intrinsic motivation after the implementation of a PFP system.

By contrast, social psychologists highlight psychological contexts to explain the crowding effects of external rewards, maintaining that the extrinsic rewards can result in either the crowding-in or crowding-out effect depending on individuals' perceptions of the rewards. Deci (1971) made the claim that external rewards should crowd out intrinsic motivation when individuals perceive them as a control mechanism, while the rewards should crowd in intrinsic motivation if individuals perceive them as a role of information (see also Deci, 1972, 1975; Deci & Ryan, 1985). Similarly, Frey (1997) predicted a crowding-out effect when individuals perceive external incentives as controlling, but a crowding-in effect when they perceive them as supporting their own values. Andersen and Pallesen (2008) confirmed Frey's predictions, finding that researchers in the Danish public education sector crowd out intrinsic motivation when

they perceive financial incentives as controlling, whereas they crowd in intrinsic motivation when they perceive financial incentives as supportive.

Deci and Ryan (1985) claimed that contingent rewards led to a reduction in intrinsic motivation. They argued that "competitively contingent rewards are the most controlling, performance-contingent less so, and task-contingent even less than performance-contingent" (p. 81). In their terms, it seems reasonable to think that PFP is perceived as a controlling mechanism in organizations. Moynihan (2008) expressed concern that market control systems could make it difficult for public employees to exercise moral judgment or act in accordance with public demands and preferences. In addition, a PFP scheme using high-powered financial incentives can change institutional values from public values such as public ethics to self-utility maximization in the public sector, so that public employees become extrinsically motivated. Thompson (2006) stated that the introduction of PFP in the public sector was a deinstitutionalization process by which public ethics values were transferred to instrumental values. Taken together, it is hypothesized that public employees in a PFP system are more likely than those in a GS system to pursue extrinsic values but less likely to pursue intrinsic values.

> **Hypothesis 1:** Employees working in a PFP system show a higher level of extrinsic motivation than those working in a GS system.

> **Hypothesis 2:** Employees working in a PFP system show a lower level of intrinsic motivation than those working in a GS system.

METHODS

Data

The data analyzed here are from the Merit Principles Survey collected by the Merit System Protection Board in 2005. The Board regularly investigates how successful federal agencies are at accomplishing their organizational goals and dealing with the difficulties of public employees. The target population of the survey consists of 1.8 million full-time employees working in federal agencies. A probability-based multi-stage random sample design was employed for the sample to be representative of the population. A total of 36,926 employees participated in interviews via e-mail, achieving a response rate of about 50 percent. The dataset has agency-level identifiers, so that two different groups have been identified: PFP and GS agencies. In total, 45 agencies were included in the sample: 13 with a PFP system and 32 with a GS system. From

the PFP group, only seven agencies were included in the analysis: the Federal Deposit Insurance Corporation; National Institute of Standards and Technology; National Oceanic and Atmospheric Administration; Transportation Security Administration; Bureau of Alcohol, Tobacco, Firearms and Explosives; Federal Aviation Administration; and Office of the Comptroller of the Currency.[1] The GS group included the Environmental Protection Agency, Social Security Administration, and others.

Variables

In order to measure the work values of employees, 12 survey questions were utilized along with the question, "How important are each of the following in motivating you to do a good job?" (table 2). Exploratory factor analysis was used to examine the underlying factor structures and their internal reliability of measurement. As the table shows, varimax rotation generated two factors for the 12 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, the Cronbach's alpha coefficient of reliability for each was examined. Both factors had a high value of alpha: 0.78 for factor 1 and 0.79 for factor 2. The six items in 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, this study uses the term *intrinsic values* for this value. Factor 2 includes six items, including "a cash award of $1,000," "desire for a good performance rating," and "increased chances for promotion," and is termed *extrinsic values*. The response category for each variable was a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and all scores were recoded as 1 for "strongly agree" and "agree," 0 for "strongly disagree" and "disagree." The scores of the neutral category and "DK" option were excluded from the analysis.

The main independent variable of interest was the pay system in which an individual was working—a dummy variable coded as 1 for the PFP system and 0 for the GS system. To accurately capture the relationship between pay systems and employee motivation, some variables should be controlled for. It may be that people with a high

1. The Internal Revenue Service was excluded because it has both GS and PFP systems (for nonsupervisory and supervisory employees, respectively). Five additional agencies were excluded because their PFP policies were implemented after 2005, when the survey was conducted.

Table 2. 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) Cash award of $100	0.019	0.717
(8) 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) Time-off award of eight hours	0.029	0.660
(12) Non-cash recognition (for example, letter of appreciation)	0.256	0.515
Eigenvalue for all items	2.59	2.30
Variance explained by each factor (%)	46.1	44.2
Reliability coefficient of alpha	0.78	0.79

Note: The varimax method was utilized for rotation.

Table 3. Correlation Matrix of 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 0.10 level

Table 4. Mean and Standard Deviation of Main Variables in the Two Pay Systems

Factor	Variable	PFP	GS
		Mean (SD)	Mean (SD)
Intrinsic	Not letting down supervisor	4.15 (0.88)	4.19 (0.86)
	Not letting down coworker	4.42 (0.70)	4.40 (0.71)
	Recognition	3.95 (0.85)	3.91 (0.90)
	Personal pride	4.74 (0.48)	4.75 (0.49)
	Duty as a public servant	4.27 (0.75)	4.40 (0.70)
	Helping agency meet its goal	4.33 (0.68)	4.41 (0.67)
Extrinsic	Reward of $100	2.89 (1.10)	2.91 (1.12)
	Reward of $1,000	3.83 (1.02)	3.83 (1.03)
	Promotion	3.70 (1.09)	3.87 (1.04)
	Good performance rating	4.05 (0.87)	4.12 (0.86)
	Time off reward	3.23 (1.14)	3.30 (1.16)
	Non-cash recognition	3.18 (1.10)	3.25 (1.16)

Note: All values were uncontrolled average scores on the basis of a five-point scale.

level of income are more likely to value extrinsic rewards than their counterparts. Therefore, the income variable needs to be controlled for. Other sociodemographic control variables that might affect perceptions and attitudes, such as age, race, gender, and years of education, were introduced into the statistical model.

Statistical Model

The dependent variable is a binary response. There are three approaches to developing a model for the dichotomy outcome variable: the linear probability, logit, and probit models (Gujarity, 2003). The linear probability model is a typical linear model using OLS estimation with binary outcome, following the Bernoulli probability distribution. Although it is easy to use, it has some weaknesses. As the error disturbances are not assumed to be normally distributed because they follow the Bernoulli distribution, the variance of errors is not constant, resulting in heteroscedasticity; the estimator is inefficient and the standard error is over- or under-estimated. In addition, this model may produce a predicted value that is negative or greater than 1, though the range of the value is from 0 to 1(Gujarity, 2003; Long, 1997).

The logit and probit models are alternative approaches to resolving the problems of the linear probability model. Both resort to the maximum likelihood estimation

method, which provides consistent, efficient, and asymptotically normal estimates (Long, 1997). The logit model uses the logit link function to transform the mean of linear probability to the value in a natural log of odds, which makes the probability of the predicted value lie within the range of 0 to 1. The errors are assumed to have logistic distribution in the model: mean=0, variance=$\pi^2/3$ (≈3.29). The logit model resorts to a cumulative logistic function[2] to predict the probability of the outcome variable. In contrast, the errors are assumed to have normal distribution with mean of 0 and variance of 1 in the probit model, which uses the cumulative normal distribution function.[3] Although the two models use different distribution functions, estimates derived from both models are similar. The logit model, however, is preferred because of comparative simplicity in interpretation (Gujarity, 2003). For this reason, this study utilizes the logit model (or logistic regression) to test the hypotheses.

RESULTS

Table 5 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 system have a tendency to be recognized in the agency, compared with those in the GS system (odds ratio: $e^{(0.32)} = 1.38$). In other words, an employee's odds of being recognized in a PFP system are 38 percent greater than those in a GS system.

For public service duty, there is a significant difference in perceptions between PFP and GS employees ($p < 0.001$) after controlling for all other variables. It can be interpreted that GS employees are about twice as likely as PFP employees to report that public service duty is important to them as a work motivator.[4] Given that the

2. $P(Z) = \dfrac{1}{1+e^{-z}}$

3. $P(Z) = \int_{-\infty}^{X0} \dfrac{1}{\sqrt{2\sigma^2\pi}} e^{-(X-\mu)^2/2\sigma^2}$

4. The odds ratio for PFP employees is $e^{(-0.70)}=0.497$. In order to interpret the odds ratio more easily, I recalculated the odds ratio for GS employees as 1/0.497=2.01 (odds ratio for GS employees).

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. However, there is no significant difference in employees' helping behaviors within their agencies.

Job position is positively associated with a set of intrinsic values. This indicates that the higher the 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 employees perceive intrinsic values as important after controlling for all other variables. Given that the proportions of employees in a high job position and distributions of income differ across the agencies, position and income are important control variables to take into account the reporting bias in these models.

Table 5. 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
Pay systems (PFP =1)	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)
Income	-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***

Note: Numbers in parentheses are standard errors
*p < 0.10, **p < 0.05, ***p < 0.01
N = 31,101

For extrinsic values (see table 6), there is no significant difference between the two groups in perceptions of a $100 reward. However, perceptions of a $1,000 reward differ between the two groups ($p < 0.01$), indicating that PFP employees are more likely than those in a GS system to report that a reward of $1,000 is an important work motivator. The odds of stating that a reward of $1,000 is an important motivation are 23 percent greater (odds ratio: $e^{(0.21)}=1.23$) among employees in the PFP systems than among those in the GS systems after controlling for all other variables. It is speculated that $100 may be considered by both groups to be too small an amount to be a work

motivator, but that a reward of $1,000 is differently perceived by the two groups. This motivational gap between the two groups would likely 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, suggesting that public managers in the PFP systems are about 1.2 times (odds ratio: 1.22) more likely than their counterparts in the GS systems 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 for extrinsic values. The odds of reporting that a good performance rating is an important motivator for PFP employees are about 1.6 times (odds ratio: $e^{(0.48)}=1.62$) greater than for GS employees. This indicates that employees in the PFP agencies place higher importance on good performance ratings than those in the GS agencies. There is no significant difference in perception of the time-off reward between the groups; however, non-cash recognition such as a letter of appreciation may be a more important value in GS agencies than in PFP agencies (odds ratio: $e^{(-0.14)}=0.87$; $p < 0.05$).

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

Table 6. Logit Models Predicting Perceptual Differences in Extrinsic Values between PFP and GS Systems

Variable	$100 reward	$1,000 reward	Promotion	Good performance rating	Time-off reward	Non-cash recognition
Pay systems (PFP =1)	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)***
Income	-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***

Note: Numbers in parentheses are standard errors
*p < 0.10, **p < 0.05, ***p < 0.01
N = 31,078

for pay systems and other demographic variables.

In short, the direction of regression coefficients is not fully consistent with the 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 systems have a higher propensity to hold these values than those in the GS systems, after controlling for other sociodemographic variables.

CONCLUDING REMARKS

This empirical study suggests that public employees in PFP systems are more likely to place importance on money, promotion, and performance, whereas those in GS systems place a value on duty as a public servant. Prior studies of sectoral difference have emphasized a public-versus-private distinction with respect to motivation and attitudes, but the current study empirically uncovers differences within the public sector depending on compensation policy. 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 recognized that public servants characterized by public service motivation place less importance on extrinsic values such as money and promotion than do those in the private sector (Khojasteh, 1993; Rainey, 1982; Wittmer, 1991). Georgellis, Iossa, and Tabvuma (2011) found that individuals in the United Kingdom who place a high value on intrinsic values have a tendency to work for the public sector and that higher extrinsic rewards reduce the willingness of intrinsically motivated persons to choose public-sector employment. The difference in employee motivation between two pay systems within the public sector was masked by the public-private distinction, but this study has clearly revealed differences within the public sector, demonstrating that individuals are more motivated by extrinsic values such as money, good performance rating, and promotion in market-based PFP systems than in GS systems.

These findings uphold the crowding-out perspective. Crowding-out theory posits that high-powered monetary incentives have negative consequences on individuals' intrinsic motivation, undermining it while reinforcing extrinsic motivation. Crowding-out is mainly demonstrated by experiments in the psychology field, but public administration scholars have recently tested the theory in the context of public organizations (for example, Bertelli, 2006; Georgellis et al., 2011). The main message of the

studies is that high-powered monetary incentives undermine intrinsic motivation, making public employees pursue extrinsic values in public organizations. While not revealing whether or not the public service (or intrinsic) motivation of public employees has changed due to the PFP mechanism, this study suggests that the job attitudes of public employees in the two pay systems are systematically different. Accordingly, crowding-out may be one possible explanation why employees in PFP agencies behave more like "market actors" than do those in agencies with GS systems. Thompson (2006) contended that market considerations in the public sector may weaken the value-oriented behavior of actors: "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).

The findings can also be accounted for by a selection-in perspective that individuals are attracted to organizations on the basis of attributes such as personality, values, and the goals, processes, and structures of the organization. In other words, 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. At present, the maximum pay increase rate of PFP systems is about 10-12 percent within the same pay band. It might seem that extrinsically motivated people choose federal agencies with PFP for employment, as the maximum pay increase rate increases within the paybanding level. Market actors have a tendency to pursue self-interest, rather than public interest, only responding to high-powered incentives. Frey and Osterloh (2005) also asserted that high-powered incentive structures have a negative effect on employees by shifting their interest from the work itself to money.

Based on these findings, this study makes the claim that 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, and thus institutional arrangements need to be designed to avoid such 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 also good strategies to instill public ethics and values in public employees in agencies with PFP.

There is a methodological limitation to be addressed in this study. The empirical findings were derived from secondary survey data. Empirical tests for the crowding-out and selection-in phenomena need to be conducted with an appropriate research design for which the motivational changes of employees can be observed with time, or attitu-

dinal gaps between job candidates can be identified at the pre-entry level. Future research needs to use appropriate designs to identify these relationships. Despite the limitations, these findings make a contribution to the public administration literature by revealing that PFP as a private-sector managerial practice influences employee motivation and job candidates' preferences for employment.

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