
http://dx.doi.org/10.1177/0734371X10394401


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Working hard for more money or working hard to make a difference? Efficiency wages, public service motivation and effort


Abstract

The issue of how much to pay government employees to ensure optimum effort level is a complex one. Government employees are generally reported to be less motivated by high wages than their private sector counterparts. There is substantial empirical evidence that many performance-based pay schemes are either meaningless or dysfunctional in the public sector. Yet, it is common knowledge that most people do not seek employment without expecting some sort of remuneration for their effort. Drawing on the efficiency wage theory and public service motivation (PSM) literature, this article constructs a model to examine the relationship of wages and PSM in determining the effort levels of the public sector workforce in 15 countries that include the United States, Great Britain, and Australia.

Keywords

public service motivation, pay systems, employee attitudes, behavior and motivation, human capital, international public personnel administration

How effective are efficiency wages in raising the effort levels of government employees? The efficiency wage theory dictates that paying employees above the market clearing rate or a wage premium guarantees maximum effort (Shapiro & Stiglitz, 1984; Solow, 1979). Otherwise, many employees will devote minimum effort to their work. The public service motivation (PSM) literature however contests the primacy of wages as a driver of worker effort (Andersen, 2009). It argues that prosocial, other-oriented motives also matter (Perry & Hondeghem, 2008). Compared to their private sector counterparts, government employees are expected to display a higher level of PSM, defined as the general, altruistic motivation to serve the interests of a community of people, a state, a nation or humankind (Rainey & Steinbauer, 1999). The PSM literature proposes that government employees would devote
greater effort to accomplishing policy (Andersen, 2009). But the fact that these individuals are strongly driven to pursue the common good does not imply that monetary rewards are not relevant to them (Brewer et al., 2000).

A substantial body of research and writing, ranging from economics to psychology and sociology, has emphasized the significance of money to humans and societies (Baker & Jimerson, 1992; Furnham & Argyle, 1998; Mitchell & Mickel, 1999). According to Mitchell and Mickel (1999), money possesses three dimensions: affective, symbolic and behavioral. The affective component is based on the way in which people view money. Some see money as important, valuable and attractive, whereas others see it as being less useful. The symbolic perspective takes into account the attributes that people value and associate with money. Money can signify status and power, and generate respect from others. It can also be used to indicate achievement and recognition for one’s effort, and thus support employee work morale. The behavioral dimension focuses on actions, such as saving or investing money. The fact that money can be exchanged for most goods, services and privileges suggests that money allows people to achieve a desired standard of living. Money, it seems, can have instrumental or symbolic motivational properties. If valued for its instrumental function, money motivates because it can produce outcomes that satisfy physiological or psychological needs. On the other hand, if money is valued for its symbolic function, it can generate social comparison information, which can indicate a person's standing regarding psychological aspirations for valued aspects of social life (e.g., status) (Stajkovic & Luthans, 2001). Because of these instrumental and symbolic functions, wages can satisfy both lower-order and higher-order needs (Pinder, 1984; Rainey, 1991).
This article aims to provide a better understanding of the complex relationships between wages, PSM, and the effort of government workers. We will investigate whether the effort levels of government employees are influenced more by efficiency wages or PSM. In order to address this question, we will start by determining whether the public sector workforce receives higher wages than their private sector counterparts, or efficiency wages. We will then proceed to estimate how much change in the effort levels of government employees is related to a change in their wages. This examination of the relationship between wages and effort will be followed by that between PSM and effort. We will estimate how much change in the effort level of workers is associated with a change in their level of PSM. In this way, we can compare which of the two factors – efficiency wages or PSM – accounts for a larger change in the effort levels of the public sector workforce.

This article is organized as follows. We will begin by reviewing two strands of literature: the efficiency wage model, and the PSM literature. Each of these two strands of literature has investigated the impact of their preferred determinant of effort. Although multiple motives can coexist and shape behavior, few attempts have been made to integrate the findings from these two strands (cf. Andersen, 2009). We will formulate a framework that combines these two perspectives together in order to explain the relationships between wages, PSM and effort. We will pilot this model using a small group (9,961) of full-time government employees from 15 countries in the 2005 ISSP dataset: USA, Canada, Great Britain, Australia, New Zealand, several countries in Europe (e.g., Denmark and France) and Asia (Japan and Taiwan), Israel, and Russia. We will analyse the data of the public sector respondents from each country at two levels: aggregate and organizational rank. Several studies have reported variations in the PSM levels of employees at different organizational levels (e.g., Crewson, 1995). Since employees at different organizational levels are likely to
receive different wage rates, an analysis at the organizational level provides an opportunity to more closely examine the complex relationships between wages, PSM and effort.

Our research also has the potential to contribute to both the efficiency wage and PSM literature. As noted by Davis and Gabris (2008), most research on efficiency wage theory had focused primarily on the private sector workforce. Our study is one of a few that tests this theory in the public sector. Moreover, despite the increase in empirical research on PSM in recent years, PSM’s association with wages has not received as much attention as its relationship with other factors, such as personal characteristics (e.g., gender) (DeHart-Davis et al., 2006), and organizational factors (Kim, 2005; Moynihan and Pandey, 2007). Yet, for most people, a desire and/or need to earn an income is one of the primary reasons for working. Wages may also affect entrant quality and motivation. By designing a model that integrates both the efficiency wage and PSM literature, and testing it on the public sector workforce from various countries, this research aims to provide a better understanding of the complex interaction between PSM and wages in determining effort levels. The findings may help to improve the design of employee compensation policies and public sector performance.

**An efficiency wage perspective on wages and effort**

The efficiency wage literature maintains that firms should offer their employees a wage rate that is above the market clearing rate. Paying employees a wage premium raises productivity, workplace cohesiveness, employee responsibility and loyalty, and reduces shirking (Westley & Schmidt, 2006). Conversely, a wage that is below the prevailing market rate can contribute to employee dissatisfaction and other negative attitudes (e.g., outrage and a desire for
revenge), which can lead to more shirking or sabotage activities, and ultimately a high turnover (Akerlof & Yellen, 1986; Solow, 1979).

Perhaps the best known efficiency wage model is the shirking model (Foster & Wan, 1984; Shapiro & Stiglitz, 1984). This model assumes that: (i) firms require effort from their employees in order to produce goods and services, (ii) employees’ effort is imperfectly observable, and (iii) employees who are found to be providing less than their contractual level of effort would lose their jobs. If employees receive utility from leisure, and have an incentive to shirk on the job, and their work is difficult to observe, then the model argues that employees’ effort can be elicited through either external or internal monitoring. External monitoring occurs when firms utilize supervisors and equipment to oversee employees’ effort. External monitoring works best in an environment where it is easy for managers to observe and evaluate employees. But external monitoring is costly and impractical in many industries and occupations (Krueger & Summers, 1988; Shapiro & Stiglitz, 1984). Due to factors, such as technology and the manner in which work is organized, it is usually difficult to observe an individual employee's contribution to output.

If the costs of shirking are perceived to be high for firms, then they would have an incentive to establish policies that foster internal or self monitoring among employees. Employees would self monitor if they view their job as being relatively attractive in that they receive a wage rate that is above what they could command if employed elsewhere. Paying employees this wage premium is argued to raise the costs of shirking and lower the employees’ incentive to shirk because the wage represents a loss to the employees in the event that they are caught shirking (Yellen, 1984). Since alternative employment is less attractive, employees will perceive that they would have more to lose if they are caught
shirking. It is thus in the firms’ interest to offer their employees a wage rate that makes them indifferent between providing the contractual effort level and shirking on the job.

Other efficiency wage models present similar lines of argument. The gift exchange model maintains that firms pay high relative wages to elicit feelings of gratitude from employees and high effort levels (Akerlof, 1982). When firms offer their employees a gift in the form of a wage that is above the market rate in exchange for their effort, the employees are assumed to reciprocate with loyalty and higher effort levels (Danthine & Kurmann, 2007; Schmidt, 2000). The labor turnover model asserts that firms should offer high relative wages in order to make the current job more attractive than alternative jobs to employees, and reduce turnover (Salop, 1979; Stiglitz, 1985). Finally, if employees are heterogeneous and wages are positively associated with ability, then the adverse selection model of efficiency wages claims that firms that offer low wages will attract predominantly low-ability employees. By increasing wages, these firms can attract higher ability employees (Weiss, 1980). Efficiency wage models thus claim that a firm can raise employees’ effort and lower its production costs by increasing the wage rate above the market rate.

Empirical support for the efficiency wage theory in the public sector is sparse because most studies were conducted in the private sector. Davis and Gabris (2008), however, tested the use of efficiency wages as a tool for strategic compensation in local government. They examined whether the municipalities in a single suburban metropolitan area of Chicago that implemented above-market wages enjoyed a better reputation for high quality performance. Using two instruments – a salary and fringe benefits survey, and a reputational service quality survey – they found that a high wage rate is a significant predictor of increased reputational service quality. Leavitt and Morris (2008) utilized interviewed the human resource directors
in seven cities of a metropolitan region of Virginia about the use of market-based pay. They found that most of the interviewees adopted a perspective similar to that proposed by the adverse selection model and labor turnover model of efficiency wage theories in that they viewed market-based pay systems as one strategy to attract and retain a highly qualified workforce. It is apparent that the efficiency wage literature proposes a direct relationship between high relative wages and high effort level.

A PSM perspective on wages and effort

Both public administration academicians and practitioners have long maintained that there are people in the public sector who have strong norms and emotions about performing public service (Brewer et al., 2000; Pattakos, 2004). These public spirited individuals are said to possess high levels of PSM. Workers with high levels of PSM also put considerable effort into their work (Alonso & Lewis, 2001; Brewer & Selden, 1998; Bright, 2000). But not everyone in the public sector workforce can be expected to have high levels of PSM; the level of PSM is likely to vary across the public sector workforce. Studies of public service and altruistic motives report that employees at higher organizational levels tend to express more altruistic and service motives and values than those at lower organizational levels (e.g., Crewson, 1995). The rank and file, such as clerical and custodial staff, were found to express lower levels of general public service and altruistic motives.

When it comes to the efficacy of wages as a driver of employee effort, one view is that the public sector workforce is generally less motivated by high wages. A large body of comparative research conducted between the public and private sector workforce tend to report that many public sector employees are less driven by monetary rewards, but more
driven by intrinsic rewards, such as an opportunity to help others (Lawler, 1971; Rainey, 1982, 1991; cf. Gabris & Simo, 1995). Even university students who aspire to enter the public sector are reported to have less interest in monetary rewards than their counterparts who intend to join the private sector (Chetkovich, 2003; Taylor, 2005). These studies, along with those that reported an insignificant relationship between government workers’ pay and their PSM levels (e.g., Taylor, 2008) suggest that monetary rewards do not contribute to or diminish one’s desire to perform public service (Brewer & Selden, 1998).

This view that the public sector workforce is not primarily motivated by high wages however does not imply that monetary rewards are irrelevant to all government workers. Earlier, Rainey (1982) has indicated the importance of monetary rewards to many government employees. Although Crewson (1997) reported that government employees are less likely than their private sector counterparts to be driven by monetary rewards, his results show that wages are an important motivator for a majority of employees (approximately 80 per cent), both in the public and private sectors. Similarly, Taylor’s (2005) survey of university graduates found that while the respondents who favored the private sector were more motivated by high wages than their counterparts who were attracted to the public sector, the latter group was more concerned about receiving comparable wages than the former group, suggesting that wages do matter to prospective government job applicants. In addition, Brewer et al. (2000) found empirical evidence that monetary rewards are relevant to some individuals with high levels of PSM. Monetary rewards were significantly related to two of the four conceptions of PSM that they studied. It appears that monetary rewards are relevant to some individuals with high levels of PSM but not to others, based primarily on their conceptions of public service and the public interest.
Frey and associates (Frey, 1997; Frey & Jegen, 2001) highlighted the dual impact of monetary rewards by distinguishing between situations in which rewards are perceived as controlling, and situations in which they are viewed as supportive. Frey argued that monetary rewards can ‘crowd out’ employees’ intrinsic motivation and reduce employees’ effort if they see the reward as a device to control their behavior, or if the incentive scheme conflicts with their views (e.g., professional norms). In this case, it is likely that high wages at the expense of an employee’s PSM can cause him/her to experience alienation. On the other hand, monetary rewards can ‘crowd in’ employees’ intrinsic motivation when they perceive the rewards as supportive, i.e., an acknowledgement of their work effort and their high intrinsic work motivation. Monetary rewards can sometimes serve intrinsic purposes. For example, an employee who receives a small monetary reward for an accomplishment may not be very motivated by the token reward (instrumental value), but he/she may be highly motivated after receiving recognition for the accomplishment of a job (symbolic value). Here, the monetary reward merely serves as the vehicle or conduit through which intrinsic motivation travels.

The research framework

This research framework is divided into two parts. We begin our analysis with the efficiency wage model, followed by the PSM model. Under the efficiency wage model, effort \( E \) per employee \( i \) is a function of the employee’s wage in the organization \( W_n \) relative to the prevailing wage outside the organization \( W_e \), as summarized in the equation below.

\[
E_i = \frac{W_n}{W_e}
\] (1)
According to Shapiro and Stiglitz (1984), firms cannot force their employees to exert full effort. Rather, they can make work attractive so that workers would choose not to shirk for fear of losing their job. This line of argument assumes the presence of a competitive market where employees are indifferent to jobs because there are identical and similar paying jobs available in the labor market. As a result of this indifference to jobs, employees are less likely to exert high effort but are more likely to shirk. The worst case scenario that they lose their job for substandard performance or engaging in shirking activities will have a minimum impact on them because they can always find another similar paying job easily. In order to induce workers to exert maximum effort, firms must give something to employees (Akerlof, 1982). Paying a wage premium or a wage rate that is higher than the market rate would serve as an incentive to increase effort level (Yellen, 1984). When $W_n$ is greater than $W_e$, workers are motivated to apply greater effort for fear of losing their job and their wage premium.

The efficiency wage theory assumes that effort level follows closely that of wage premium. The effort level ($E$) of a government worker ($i$) is thus derived by taking the ratio of his/her wage ($W_n$) and the prevailing wage outside his/her organization ($W_e$). This ratio captures the intensity of the worker’s effort. All things being equal, the larger the wage premium, the greater the effort exerted. A ratio above 1 implies that workers will exert full effort in performing their job duties because they are paid wages higher than their counterparts outside their organization. A ratio of above 1 suggests that the efficiency wage is being paid.

The positive relationship between effort and high wages may not continue indefinitely for various reasons. Figure 1 indicates that at point A, the wage paid is $W_0$ and the corresponding effort level is $E_0$. Beyond this point, an increase in wage leads to an increase in the effort
level of employees. This will continue until point B which represents the optimal level of effort \( E_n^* \). At this point, the wage is at \( W_n^* \), which is the efficiency wage level. After point B, subsequent wage increases will cause effort level to fall. A wage increase from \( W_n^* \) to \( W_n \) will result in a decline in effort from \( E_n^* \) to \( E_n \).

<Insert Figure 1 here>

One possible reason why an increase in wage beyond \( W_n^* \) will lead to a reduction in effort is derived from the backward bending labor supply curve (Gravelle & Rees, 2004). Orthodox labor supply models tend to predict a positive labor supply reaction to an increase in wages. Employees would substitute labor with leisure, and vice versa. They would supply more labor when wages are high, and consume more leisure when wages are low (Lucas & Rapping, 1969). Although this prediction is straightforward, it is difficult to verify and not universally accepted. Camerer et al. (1997) reported negative elasticities on the labor supply of New York cabdrivers, which suggests the existence of a backward labor supply curve in the New York cab industry. Once cabdrivers meet their daily income target, they quit working. This implies a particular work/leisure preference function in which the negative income effect outweighs the substitution effect of a wage rise. This is always an empirical question for a particular type of labor supplied.

Another reason for the drop in effort despite an increase in wages beyond the optimum point can be drawn from the body of literature on the negligible or negative impact of the pay for performance schemes on the effort levels of government employees. There is substantial empirical evidence showing that many pay for performance schemes are either meaningless or dysfunctional in the public sector (Ingraham, 1993; Perry et al., 2009; SSCFPA, 1993). For
instance, in her review and empirical investigation of high performance bonus systems in
government, Heinrich (2007, 281) concluded that ‘high performance bonus systems are more
likely to encourage misrepresentation of performance and other strategic behaviors than to
recognize and motivate exceptional performance or performance improvements’.

In order to ensure that employees exert maximum effort level, Solow (1979) stated that it
is worthwhile to raise the wage rate as long as one per cent rise in wages brings forth more
than one per cent rise in effort. Once this ceases to be the case, firms should stop raising
wages. This relationship between wages and effort will be measured using the elasticity
concept. The elasticity concept is basically a mechanism that is used to measure the
responsiveness of a change (Δ) in one variable on another variable (Marshall, 1920). It will
determine how much a change in one variable (e.g., wages) affects the change in another
variable (effort).

Accordingly, the relationship between wages and effort, and the optimum efficiency wage
can be determined by working out the elasticity of effort with respect to wage (e), as shown
below.

\[ e = \frac{\Delta \log E_i}{\Delta \log W_n} \]  

(2)

where \( \log \) is logarithms. The data are converted into logarithms, which is the conventional
approach of measuring elasticity (Holt & Samuelson, 1946).

Like the efficiency wage theory, the PSM literature also argues that a perceived practical
benefit of PSM is its link to organizational performance (Brewer, 2008; Brewer & Selden,
2000; Kim, 2005). Drawing from job design research findings, Perry and Wise (1990)
propose that job characteristics can have a motivating impact on effort. Workers with high
levels of PSM are likely to be motivated by particular attributes in the public service, such as activities that provide opportunities to address questions of social equity, pursue social programs, advocate a valued special interest, and express loyalty to country. Wright (2004) clarified that if government employees who are motivated to make a worthwhile contribution to society perceive that their work is important to accomplishing organizational goals that benefit society, then they will exert higher effort levels. Their concern for the public or social service, including their conviction that their effort can affect the valued service, motivates them to raise their effort levels (Francois, 2000).

In order to determine how much change in PSM contributes to effort, our model will estimate the elasticity of effort with respect to PSM ($e_f$).

$$e_f = \Delta \log PSM_i / \Delta \log E_i$$

(3)

**Method**

**Sample**

Like the research of Brewer and Selden (1998) and Brewer (2003), this study attempts to use a representative random sample. It utilizes data from the 2005 International Social Survey Programme (ISSP): Work Orientations which adopts a multi-staged stratified random sampling of citizens aged 18 years or older (16 years and older for Japan) across different countries. Fifteen countries are selected for this study: USA, Canada, Great Britain, Denmark, France, Germany, Spain, Bulgaria, Slovenia, Russia, Israel, Japan, Taiwan, Australia, and New Zealand. The total number of respondents is 20,787. The next step involves selecting only the respondents who are in full-time employment, and those working in the public sector and private sector; others are removed from the dataset. Private sector
respondents include self-employed individuals. The final number of respondents is 9,961. On average, the respondents were 41.7 years, and worked 44 hours per week. A majority of them were males (57%), married (63%), held higher than secondary school qualifications (26%), belonged to a religious denomination (73%), worked in the private sector (70%), but had never been a trade union member (50%), and did not hold a supervisory position at work (61%). This final sample is representative of the larger sample on the above demographic variables with the exception of age, education and working hours. Most of the respondents in the larger sample were older (with a mean age of 47.6 years), held lower educational qualifications (23% had secondary school qualifications), and worked shorter hours (a mean of 40 hours per week). These discrepancies between the final and original samples can be explained by the fact that the original sample includes casual and part-time workers, and the unemployed, while the final sample only takes into account the full-time employed.

**Measures**

This study utilizes the following measures:

1. Employee effort. Given the difficulties in obtaining a direct objective measure of employee effort, this model utilizes a proxy in the form of the ratio between internal wages and external wages. For our purposes, the internal wage is represented by the wage paid to government workers while the external wage is the private sector wage. Based on the central tenet of the efficiency wage model that effort is a function of relative wage, this use of a wage difference as a proxy of effort has been adopted by Goldsmith et al. (2000) in their empirical study of efficiency wages. A mean annual wage (expressed in the country’s currency) is calculated for each country’s full-time
workforce by sector; one for public sector workers, and another for private sector workers. The wages for most countries are expressed as net income in the datasets, but there are a few, like the USA, Great Britain, Canada and Australia, which provide gross income. This does not present a major limitation in this study because the relative wage value for each country is derived from calculating the wages between the public and private sectors within that country, and not across countries.

2. Employee PSM. Since people with high levels of PSM are characterized with a strong sense of public service, the PSM levels of the respondents are measured using two items in the dataset that cover such matters: ‘A job that allows someone to help other people’; and ‘A job that is useful to society’. On a 5-point Likert scale, ranging from ‘not at all important’ (1) to ‘very important’ (5), the respondents indicated the importance they personally placed on the existence of each item in a job. An average score of the two items is calculated for each respondent, followed by a mean score by sector. In this way, a mean PSM value can be determined for the public sector workforce of each country. Factor analysis (principal component, varimax rotation) of the two items measuring the PSM index revealed a single construct. Cronbach’s alpha = 0.79. Although these two items had been used as a proxy of PSM (Lewis & Frank, 2002; Taylor 2008), it should be noted that the ISSP is not designed to measure PSM. While an approach such as this has been frequently applied in PSM research (Kim 2005; Lewis & Frank, 2002; Naff & Crum, 1999), it is suboptimal compared to Perry’s (1997) rigorous measurement scale.

3. Employee organizational level. Since the ISSP dataset does not provide the respondents’ organizational level across different countries, a proxy is again used.
The closest item distinguishes between the respondents in supervisory from those in non-supervisory roles. The respondents in supervisory roles are assumed to occupy a higher organizational level than those in non-supervisory roles.

Results

The following results of the government workforce for each of the 15 countries are presented: the efficiency wage ratio, the elasticity of effort with respect to wages \((e)\), and the elasticity of effort with respect to PSM \((ef)\). The efficiency wage ratio shows the ratio between government workers’ wages and those of their private sector counterparts. The \(e\) value explains the magnitude and direction of the relationship between government workers’ wages and their effort. The \(ef\) value indicates the association between government workers’ PSM and their effort. These two elasticity constructs show how a change in one variable (wages or PSM) affects the change in another variable (effort). The findings are first presented at the aggregate level, followed by the organizational rank level.

Aggregate findings

The first column in Table 1 shows the efficiency wage ratio of the public sector workforce. The mean value of 1.02 for the government workforce across the 15 countries is found to be above unity. This suggests that government wages in most countries, such as Australia and New Zealand, were slightly above the market rate. There are a few exceptions; government workers from USA, Denmark, France, Bulgaria and Russia were generally paid below the prevailing market wages.
The second column in the table shows the data on the elasticity of effort with respect to wages ($e$). It was estimated to have a mean value of 0.24 for the respondents across the 15 countries. This signifies that a rise in government wages by 0.24 per cent is associated with one per cent rise in the effort levels of government workers, and vice versa. A small $e$ value signifies that a small change in government wages is required to change the effort level of the public sector workforce by one per cent. Government workers with relatively small $e$ values are those from countries, such as Denmark and Slovenia. The comparatively high $e$ value in government workers from countries, such as Bulgaria and Spain, implies that these workers require a greater rise in wages in order to raise their effort level by one per cent.

The third column in Table 1 presents the data on the elasticity of PSM with respect to effort ($ef$). Its mean value for the respondents across the 15 countries is 0.61. A change in the level of PSM by 0.61 per cent is related to one per cent change in the effort level. A higher $ef$ value thus points to the greater importance of PSM in bringing about a change in effort level by one per cent. In the case of the American respondents, the data show that 0.68 per cent change in their PSM levels is associated with one per cent change in their effort level. In comparison, a similar change in effort level is associated with 0.56 per cent change in the PSM level of the French respondents. It appears that PSM is more important in influencing the effort levels of the American than French respondents.

A comparison of the two elasticity values in Table 1 indicates that the $ef$ value of the respondents is higher than the $e$ value. On average, the $ef$ value of the public sector workforce across the 15 countries is 0.61, which is greater than the $e$ value of 0.24. This trend of higher
ef value than e value is observed for the public sector workforce in every of the 15 countries studied. The results points to the significance of PSM in bringing forth a rise in the level of effort. The central research question in this study is answered affirmatively. PSM contributes to a larger change in the effort levels of government workers than wages.

Findings by organizational level

Given the vast complexities and variations across the sample, the dataset is next analysed by the respondents’ organizational level. The findings in Table 2 are differentiated between the respondents in a supervisory role and those in a non-supervisory role. A comparison of the efficiency wage ratio across countries shows different patterns. The American government respondents in a non-supervisory position were better paid than their private counterparts in a similar position. But this trend is reversed at the supervisory level. The respondents in a supervisory position appeared to receive lower wages in the public sector than private sector. For other countries, such as Great Britain, government employees in non-supervisory positions received slightly lower wages while those in supervisory positions received slightly higher wages than their private sector counterparts in a similar position. There are also countries in which the respondents show a similar sectoral wage gap across job levels. For some countries, such as Australia, the government respondents in both supervisory and non-supervisory positions were slightly better paid than their private sector counterparts in similar positions. For other countries, such as Denmark and France, government workers in supervisory and non-supervisory positions received lower wages than those of private sector workers in similar positions. For some countries, such as Canada and New Zealand, the wage gap between the government workforce and private sector workers appeared to narrow slightly when one moves from a non-supervisory to a supervisory position.
There are slight variations in the $e$ and $ef$ values of the public sector workforce as one progresses from non-supervisory to supervisory positions. Taking the American sample as an example, the relatively lower $e$ value at supervisory positions suggests that employees in non-supervisory positions required a slightly greater change in wages to bring about one per cent change in their effort level compared to those in supervisory positions. The higher $ef$ value at the supervisory than non-supervisory positions implies that PSM accounts for a greater change in the effort level for those in supervisory than non-supervisory positions.

<Insert Table 2 here>
Discussion

This paper attempts to develop a model to explain the complex relationships between wages, PSM and effort among the public sector workforce. The model, which was piloted on government employees from 15 countries, presents five prominent findings. First, government employees from many countries are found receive an efficiency wage. The full-time public sector employees in the countries studied appeared to receive higher wages than their private sector counterparts, thus dispelling the view that government employees are generally underpaid compared to private sector employees. Countries that failed to meet the efficiency wage specification in the public sector are USA, Denmark, France, Bulgaria and Russia.

This finding of the American sample can contribute to the debate about the wage gap between the public and private sectors (Parker, 2010; Rosenberg, 2008). Although a report by a staunchly conservative Washington think tank acknowledged that federal government employees in some highly skilled occupations earned less than they would in the private sector, it asserted that the American federal workers received significantly higher salaries than their private sector counterparts (Sherk, 2010). This study, which is not confined to federal government employees, displays a different pattern. Importantly, our analysis found that American respondents in non-supervisory positions earned more than their private sector counterparts, but those in supervisory positions received wages less than they would in the private sector. Our findings support those of Donahue (2008), who argued that lower level employees in the US public sector are well compensated compared to those in the private sector, but at higher levels, this trend is reversed with higher wages in the private sector than public sector. This study also found that despite being paid less than they would in the private
sector, government respondents in supervisory positions show higher $ef$ values than those in non-supervisory positions who are paid more than their private sector counterparts. This study shows that PSM appears to be more important to the respondents at supervisory or higher levels than those at non-supervisory or lower levels in that the effort levels of the former group are shaped to a larger extent by PSM than those of the latter group.

Second, the positive relationship between wages and effort, as shown in the positive values in the elasticity of effort with respect to wages, $e$, supports the literature on the motivating effects of wages on performance among government workers (Crewson, 1997; Gabris & Simo, 1995). They show that wages are important to many government workers (Rainey, 1982). As mentioned earlier, wages possess instrumental and symbolic properties. In the latter case, wages can serve as an acknowledgement of employees’ work effort and their high intrinsic work motivation. Moreover, the fact that pay for performance schemes are widespread in the public sector despite the substantial empirical evidence showing that these schemes are either meaningless or dysfunctional in the public sector (Heinrich, 2007; Perry et al., 2009) would suggest that public sector compensation policies possibly have important symbolic value to both government officials and citizens. The public sector wage system can be viewed as a means to hold government officials accountable and ensure that they are working hard.

Third, the high value in the elasticity of PSM with respect to effort, $ef$, confirms the significance of PSM in shaping effort. This research supports previous research that PSM is strongly linked to desirable behavioral consequences in the form of high performance (Alonso & Lewis, 2001; Brewer & Selden, 1998; Bright, 2000; Naff & Crum, 1999). Fourth, despite the finding of the motivating properties of wages, this study shows the relative
importance of PSM in raising the effort levels of government employees. For all countries studied, the elasticity of PSM with respect to effort, $e_f$, is estimated to be greater than the elasticity of effort with respect to wages, $e$. Taking the American public sector workforce as an example, on average, 0.68 per cent increase in PSM contributed to one per cent rise in their effort. In comparison, 0.20 per cent rise in wages accounted for one per cent increase in their effort. The higher $e_f$ value compared to the $e$ value suggests that PSM is a more cost-effective way to raise government employees’ effort than wages. Staff wages usually represent a major expenditure for many firms and governments. The White House, for example, recently paid out about US$39 million in salaries to its 470 employees (Long, 2010). Many managers in the public sector face ‘the principal's moral hazard constraint’ in which bonuses large enough to bring about the incentive effect are considered to be prohibitively expensive (Miller & Whitford, 2007). Davis and Gabris (2008) also noted that the idea of paying public employees a high wage is likely to be a hard pill for some elected officials and members of the public to swallow. Therefore, PSM presents an attractive complementary mechanism that can be used to motivate staff to higher performance, particularly when it is found to impact on effort to a larger degree than wages.

Fifth, the different values of $e$ and $e_f$ across the 15 countries highlight the varying emphasis placed on wages and PSM as a driver of effort by the public sector workforce in different countries. The public sector workforce from Spain and Bulgaria, for example, required a greater change in wages than those in Denmark in order to change their effort by a similar amount. Similarly, government workers from USA and Israel appeared to be more driven by PSM to raise their effort than their French and Japanese counterparts.
The results of the American respondents are worthy of special mention. Although their efficiency wage ratio of 0.60 is the lowest among the 15 countries, they require a smaller change in wages to raise their effort than some of their foreign counterparts with relatively higher efficiency wage ratio, such as Great Britain and Germany. In addition, their $ef$ value of 0.68 is significantly higher than the 15-country average of 0.62. In fact, it is higher than that of any other country. The effort levels of the American public sector workforce appear to be most profoundly shaped by PSM. Notably, the results suggest that wages account for a relatively small proportion of the American group’s output in the form of effort put forth.

Given the above findings, it is hoped that this research will encourage others to investigate the complex relationship between wages and PSM in affecting government employees’ actions. Further research can examine other aspects of the public sector compensation system, such as promotional opportunities, on employees’ performance. This research has examined the effects of wages on the level of worker effort. Further research can investigate the effects on the quality of effort. There is also value in analysing other behavioral outcomes of wages and PSM, such as absenteeism, turnover, and whistle-blowing. Using the US Merit Systems Protection Board data on federal employees since 1980, Near and Miceli (2008) found that whistle-blowers generally receive higher wages. Retaliation was also found to be inversely related to wages received. Miceli and Near (1992) concluded that employees who are relatively powerful and blow the whistle are less likely to suffer retaliation than those who are less powerful, with power measured by demographic variables (and include wage level) and perceived support from others. It is thus possible for wages to interact with PSM in determining the incidence of whistle-blowing activities of government employees.
This study is subject to a few shortcomings. The first relates to the small sample size. This model is piloted on a small group (9,961) of full-time public sector employees. This small size is particularly prominent when the analysis is conducted at the respondents’ organizational level. Although the ISSP dataset is assumed to represent a representative random sample of a country’s citizens based on its multi-staged stratified random sampling method, a good sample would include some or all of the following: different levels of government (central, regional and local), different levels of the hierarchy (executives, middle managers, and street level bureaucrats), different occupations (e.g., sanitation workers, military personnel, social service workers, regulatory bureaucrats, etc.), and different demographic groups (age, race, gender, religion, etc.). Many of these variables are not available in the dataset, making it difficult for us to verify the robustness of the sample. The second limitation involves the use of cross-sectional data, which cannot be subjected to time series analysis. The third pertains to the reliance on pre-existing survey research data. In particular, the findings are constrained by the items used to determine PSM. Although our proxy of effort has been used in efficiency wage research, the fact that we use a proxy for effort rather than a direct measure should be noted as a limitation of this study. Future research should be conducted on a larger sample size, across time, and with stronger and established measures of PSM, notably Perry’s PSM instrument (Coursey & Pandey, 2007; Perry, 1996, 1997; Vandenabeele, 2008). Nevertheless, the findings in this study support the descriptive literature and empirical studies containing assertions about the significance of PSM in the public sector workforce. Although wages and PSM both possess motivational properties, the effort levels of many government workers, especially those at supervisory levels, seem to be affected more by PSM than wages..


Figure 1: The relationship between effort and wage
<table>
<thead>
<tr>
<th>Country</th>
<th>Efficiency wage ratio</th>
<th>$e$</th>
<th>$ef$</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA (N = 150)</td>
<td>0.60</td>
<td>0.20</td>
<td>0.68</td>
</tr>
<tr>
<td>Canada (N = 190)</td>
<td>1.07</td>
<td>0.21</td>
<td>0.62</td>
</tr>
<tr>
<td>Great Britain (N = 91)</td>
<td>1.09</td>
<td>0.23</td>
<td>0.61</td>
</tr>
<tr>
<td>Denmark (N = 380)</td>
<td>0.83</td>
<td>0.18</td>
<td>0.61</td>
</tr>
<tr>
<td>France (N = 273)</td>
<td>0.88</td>
<td>0.23</td>
<td>0.56</td>
</tr>
<tr>
<td>Germany (N = 129)</td>
<td>1.20</td>
<td>0.23</td>
<td>0.60</td>
</tr>
<tr>
<td>Spain (N = 54)</td>
<td>1.22</td>
<td>0.33</td>
<td>0.63</td>
</tr>
<tr>
<td>Bulgaria (N = 130)</td>
<td>0.85</td>
<td>0.40</td>
<td>0.65</td>
</tr>
<tr>
<td>Slovenia (N = 104)</td>
<td>1.15</td>
<td>0.18</td>
<td>0.60</td>
</tr>
<tr>
<td>Russia (N = 338)</td>
<td>0.78</td>
<td>0.26</td>
<td>0.61</td>
</tr>
<tr>
<td>Israel (N = 111)</td>
<td>1.14</td>
<td>0.27</td>
<td>0.64</td>
</tr>
<tr>
<td>Japan (N = 48)</td>
<td>1.25</td>
<td>0.28</td>
<td>0.59</td>
</tr>
<tr>
<td>Taiwan (N = 162)</td>
<td>1.17</td>
<td>0.22</td>
<td>0.61</td>
</tr>
<tr>
<td>Australia (N = 218)</td>
<td>1.08</td>
<td>0.21</td>
<td>0.61</td>
</tr>
<tr>
<td>New Zealand (N = 191)</td>
<td>1.03</td>
<td>0.21</td>
<td>0.61</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>1.02</strong></td>
<td><strong>0.24</strong></td>
<td><strong>0.61</strong></td>
</tr>
</tbody>
</table>

Tables 1-2:

$e$ = elasticity of effort

$ef$ = elasticity of PSM

N = number of public sector respondents
Table 2  Efficiency wages and elasticity values of full-time government employees in non-supervisory (low) and supervisory (high) positions

<table>
<thead>
<tr>
<th>Country</th>
<th>Efficiency wage ratio</th>
<th>$e_{low}$</th>
<th>$e_{high}$</th>
<th>$ef_{low}$</th>
<th>$ef_{high}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A. (N = 101, 49)</td>
<td>1.16</td>
<td>0.36</td>
<td>0.22</td>
<td>0.19</td>
<td>0.63</td>
</tr>
<tr>
<td>Canada (N = 94, 94)</td>
<td>1.10</td>
<td>1.04</td>
<td>0.22</td>
<td>0.21</td>
<td>0.61</td>
</tr>
<tr>
<td>Great Britain (N = 43, 48)</td>
<td>0.97</td>
<td>1.16</td>
<td>0.23</td>
<td>0.23</td>
<td>0.61</td>
</tr>
<tr>
<td>Denmark (N = 249, 119)</td>
<td>0.87</td>
<td>0.86</td>
<td>0.18</td>
<td>0.18</td>
<td>0.61</td>
</tr>
<tr>
<td>France (N = 156, 115)</td>
<td>0.89</td>
<td>0.88</td>
<td>0.23</td>
<td>0.22</td>
<td>0.59</td>
</tr>
<tr>
<td>Germany (N = 62, 67)</td>
<td>1.21</td>
<td>1.16</td>
<td>0.24</td>
<td>0.23</td>
<td>0.61</td>
</tr>
<tr>
<td>Spain (N = 38, 16)</td>
<td>1.23</td>
<td>1.18</td>
<td>0.33</td>
<td>0.32</td>
<td>0.63</td>
</tr>
<tr>
<td>Bulgaria (N = 86, 43)</td>
<td>0.86</td>
<td>0.72</td>
<td>0.40</td>
<td>0.37</td>
<td>0.69</td>
</tr>
<tr>
<td>Slovenia (N = 67, 33)</td>
<td>1.10</td>
<td>1.28</td>
<td>0.18</td>
<td>0.18</td>
<td>0.60</td>
</tr>
<tr>
<td>Russia (N = 79, 79)</td>
<td>0.75</td>
<td>0.79</td>
<td>0.26</td>
<td>0.25</td>
<td>0.60</td>
</tr>
<tr>
<td>Israel (N = 52, 59)</td>
<td>1.10</td>
<td>1.14</td>
<td>0.27</td>
<td>0.26</td>
<td>0.64</td>
</tr>
<tr>
<td>Japan (N = 42, 3)</td>
<td>1.46</td>
<td>0.88</td>
<td>0.28</td>
<td>0.26</td>
<td>0.58</td>
</tr>
<tr>
<td>Taiwan (N = 121, 41)</td>
<td>1.34</td>
<td>0.97</td>
<td>0.22</td>
<td>0.21</td>
<td>0.60</td>
</tr>
<tr>
<td>Australia (N = 106, 106)</td>
<td>1.09</td>
<td>1.07</td>
<td>0.21</td>
<td>0.21</td>
<td>0.59</td>
</tr>
<tr>
<td>New Zealand (N = 99, 92)</td>
<td>1.09</td>
<td>1.02</td>
<td>0.22</td>
<td>0.21</td>
<td>0.60</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>1.08</strong></td>
<td><strong>0.97</strong></td>
<td><strong>0.25</strong></td>
<td><strong>0.24</strong></td>
<td><strong>0.61</strong></td>
</tr>
</tbody>
</table>

The figures in parentheses indicate the number of respondents at non-supervisory positions followed by that at supervisory level.