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Rhea Molato*

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Abstract

This paper estimates the wage differential between public sector employees and their private sector counterparts in a developing country, the Philippines. It finds that public sector workers in this country are receiving an hourly wage premium over private sector employees of similar background. This wage premium is associated with a higher degree of pro-social behaviour among government workers relative to private sector workers. However, government employees are found to be working fewer hours than their counterparts in the private sector. College graduates are more likely to work in the government than non-college graduates but among college graduates, those with more specialized skills tend to be employed in the private sector rather than the public sector.

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1 Introduction

Wage-setting in the public sector differs from that in the private sector. Basic theory suggests that the market wage rate must be set equal to a worker's marginal output. In the public sector, output takes some non-material form which is not fully observable nor perfectly measurable. By its nature, an employee's output in the public sector does not render itself nearly as measurable as a private sector worker's productivity. As such, his wage rate cannot be simply tied up with his own marginal output that is partly unobservable. This is how determination of wages in the public sector begins to depart from the market standard of setting wage rates. However, competitiveness in the labor market points to the private sector as a reference point when the government as an employer considers sorting among workers. To get an idea of the type of workers who enter the public workforce relative to the kind of workers in the private sector, the relative wage rates between the public and private sectors can give an indication.

This paper measures the difference in hourly wages between public and private sector employees in the Philippines. Upon observing this differential, I proceed with examining the characteristics of public sector workers relative to their private sector counterparts.

Public-private wage differentials are of interest for both developed and developing countries where micro data on individuals and households are used to estimate the wage differentials. Controlling for factors that affect earnings and sector selection, studies find a general pattern where most developed countries pay a wage premium on public sector workers (Krueger 1988 and Poterba and Reuben 1994 for the United States; Disney and Gosling 1998 for the United Kingdom; Mueller 1998 and Mueller 2000 for Canada; Depalo *et al.* 2011 and de Castro *et al.* 2013 for a selection of European countries)¹ while developing countries and transition economies pay lower wages on public sector employees

¹ A review of existing literature on developed countries can be found in Gregory and Borland 1999.

than on private sector workers (Adamchik and Bedi 2000 for Poland; Panizza et al. 2001 for the Dominican Republic, Nicaragua, Panama and Uruguay; Gorodnichenko and Sabirianova 2007 for Ukraine).

The literature on public service characterizes public sector workers as having higher pro-social motivation than private sector employees (Francois 2000; Francois and Vlassopoulos 2008; Gregg et al. 2011). This pro-social motivation takes various forms, most common among which is altruism. Buurman *et al.* (2012) and Buurman and Dur (2012) confirm that public sector workers tend to be more altruistic than private sector employees. Apart from being altruistic, government employees are also found to be relatively lazy and risk averse (Bellante and Link 1981; Buurman *et al.* 2012; Dur and Zoutenbier 2013).

This paper finds that public sector workers in the Philippines are receiving higher hourly wages than private sector workers. It also finds that the Philippine public sector is composed of employees who are more pro-social, who work fewer hours and who are less specialized in skills compared with their private sector counterparts.

The higher wage rates in the public sector indicate that the Philippine government consists of workers who will have received lower wages if they had been employed in the private sector. The market wage rates applicable to these workers are lower than what they are receiving as employees in the government. This finding may serve as a signal on the quality of workers who are presently employed in the Philippine public sector. If the existing pool of government employees have counterparts in the private sector who are subject to lower wage rates, then the quality of these employees corresponds to the quality of their counterparts who are valued by the market at a lower rate.

The rest of the paper is organized as follows. Section 2 describes the micro data set I used and the estimation approach I applied in measuring the public-private wage differentials. Section 3 presents the estimated wage differentials in every occupation group. Section 4 proceeds with describing the quality of workers who are presently employed in the Philippine government and which worker qualities are associated with the public wage premium. Section 5 discusses al-

ternative empirical strategies in measuring the public-private wage differentials and compares them with the main estimation approach used in this paper. Section 6 gives a summary and conclusion. The Appendix contains tables and figures presenting the estimation results.

2 Data and empirical strategy

I estimate the public-private wage differentials using data from the merged Labor Force Survey (LFS) and Family Income and Expenditure Survey (FIES), conducted by the National Statistics Office of the Philippines. The LFS contains information on individual-level employment, wages, hours worked and demographics. The FIES includes information on household-level earnings and expenditures. The LFS and FIES are based on cross sectional observations of households drawn from a nationally-representative sample. I incorporate survey weights in all my estimations to account for the complex sampling design. As the set of LFS respondents comprises an overlap with the set of FIES respondents, these two data sets can be merged by the National Statistics Office. I use the latest wave of the merged dataset which is available for the year 2009. This wave covers approximately 38,400 households and 186,800 individuals.²

I restrict my sample to employees whose primary occupations belong in private establishments, government, or government corporations. I exclude from the sample all self-employed individuals, employers, family workers, and workers in private households. I also exclude army personnel and government officials (they are not reasonably comparable with any private sector job). This leads to an estimation of 33,998 employees, of whom 6,211 (18%) belong to the public sector and 27,787 (82%) belong to the private sector.

I use a linear regression model to estimate the wage differentials between public and private sector workers within the same occupation group.³ I control

² More information on the LFS and FIES can be found on the official website of the National Statistics Office of the Philippines: www.census.gov.ph (in English).

³ Each employee is classified into one of the major occupation groups based on the Philippine

for demographic factors such as gender, age, marital status and family size. In addition, I include control variables for educational attainment and type of educational qualification, variables which can also proxy for unobservable factors affecting an individual's decision to select in either the private or the public sector. Sectoral preferences, for instance, may be reflected in the type of educational background and the level of schooling. I also include region fixed effects to account for variations in standards and costs of living by region of residence.

The regression equation takes a Mincerian form, specified as:

$$\ln(hwage_i) = c + \alpha_j \cdot \mathbf{occ}_j + \beta_j \cdot (pub_i \times \mathbf{occ}_j) + \delta \cdot \mathbf{dem}_i + \gamma \cdot slevel_i + \theta \cdot \mathbf{stype}_i + \sigma_r \cdot \mu_r + \varepsilon, \quad (1)$$

where $hwage_i$ is employee i 's hourly wage rate calculated as basic pay per day (in cash) from his primary occupation divided by his normal working hours per day, $\mathbf{occ}_j$ represents a vector of occupation categories, pub_i is an indicator which takes the value 1 if an employee belongs to the public sector and 0 if private sector, $pub_i \times \mathbf{occ}_j$ is an interaction term for public sector workers in every occupation category, $\mathbf{dem}_i$ is a vector of employee i 's demographic characteristics that include age, gender, marital status and family size, $slevel_i$ is an indicator for skill level which takes the value 1 if employee i is a college graduate and 0 if non-college graduate, $\mathbf{stype}_i$ is a vector of college degree types⁴ representing

Standard Occupation Classification (PSOC). These occupation groups include leaders (executives, managers and supervisors), professionals (teaching professionals, science professionals, health professionals, business professionals and legal professionals), associates (associate teaching professionals, associate science professionals, associate health professionals, associate business professionals and associate legal professionals), clerks, service workers (salespersons and personal service workers), agriculture workers (farmers, forestry workers, fishermen), craft workers (construction workers, metal workers, handicraft workers, food and craft workers), operators (plant operators, machine operators, drivers), unskilled workers (janitors, messengers, market vendors, among others) and a residual group of workers unclassified in the survey. The occupation group of operators is chosen as the reference category.

⁴The types of college degree include arts, social sciences, physical sciences, engineering, health sciences, agriculture, education, services and general programs. General college degree

employee i 's specialization in skills, μ_r controls for region fixed effects,⁵ and ε is an error term which is assumed to be uncorrelated with the covariates. *Age* and its squared form, *age*², are used as proxy for experience because age is proportional with experience and the survey does not contain a direct question on employees' work experience.

The variable of interest is the vector β_j which represents the wage differential between public sector and private sector employees within each occupation group j . Positive values of β_j indicate that public sector workers are receiving a wage premium over their private sector counterparts while negative values of β_j indicate a wage penalty on public sector workers relative to their equivalents in the private sector. I estimate the value of β_j through survey-weighted Ordinary Least Squares (OLS).

Table 1 (in the Appendix) summarizes the average hourly wage rates among all workers and within each occupation group. Public sector workers in general earn higher average wages than private sector workers. The difference in average wages is more pronounced among associates, service workers, craft workers and unskilled workers. Among professionals and operators, the average wage of public sector workers are almost as much as the average wage of private sector employees.

While the averages in Table 1 are indicative of an overall positive wage gap between public and private sector workers, a proper comparison within each occupation group requires controlling for observable factors that may explain individual earnings. Table 2 shows that public and private sector employees differ in observable characteristics. On average, government employees are older than private sector employees, are composed of more female workers and more married persons, belong to households of smaller family size, and are composed

is the reference category.

⁵The regions represented in the sample are Ilocos, Cagayan, Central Luzon, Bicol, Western Visayas, Central Visayas, Eastern Visayas, Zamboanga, Northern Mindanao, SOCCSKSARGEN, Davao, National Capital Region, Cordillera Administrative Region, Autonomous Region in Muslim Mindanao, CARAGA, CALABARZON and MIMAROPA. Ilocos Region is used as the reference category.

of more college graduates relative to private sector workers. These factors are correlated with higher wages⁶ (see Table 3). To properly estimate the wage differential between public sector employees and their private sector counterparts, it is important to control for these observable factors so that only the wages of workers with similar background can be compared. The results of this estimation are presented in the next section.

3 Public-private wage differential

Table 4 presents the wage gap by occupation group estimated through OLS using the linear regression model in eq. (1). Because I take the natural logarithmic values of hourly wage as dependent variable, the coefficient estimates of β_j represent the estimated difference in hourly wages as a percentage of private sector workers' hourly wage.

3.1 Without region fixed effects

Column (1) shows the estimated wage gap controlling for demographic factors, skill level, skill types and occupation fixed effects, without including region fixed effects. This estimation procedure compares employees residing across the whole country. The estimation results show significant differences in wage rates between the public and the private sectors. Public sector workers taking on leadership positions (executives, managers and supervisors) receive hourly wages that are 20.9 percent more than the hourly wages of their counterparts in the private sector (p-value: 0). Likewise, professionals in the public sector receive a wage premium of 14.8% (p-value: 0).

Service workers are found to receive the highest wage premium in the public sector, equivalent to 22.4% of private service workers' hourly wage. This esti-

⁶In contrast to many other countries, women in the Philippines earn higher wages than men on average. This is supported by empirical studies (for example, Sakellariou 2004) which elaborate that women's higher average wages can be explained by higher levels of human capital investment among women.

mate is statistically significant up to the 1% level (p-value: 0). Service workers refer to those who provide personal and protective services (according to the Philippine Standard Occupation Classification). Their jobs include child care, preparation and serving of food and beverages, fire-fighting, police work and sales. The large premium in the public sector for service workers may be due to strong competition within the private sector. The service industry comprises 47.5% of the Philippine economy⁷ and thus a major fraction of the labor force. Strong competition in the private labor market may be driving down the private sector wage rate which translates into a higher premium in the public sector where wages are standardized by law.

Unskilled public sector employees, whose jobs include office helpers and cleaners, messengers, doorkeepers and garbage collectors, receive 15.9% more than their counterparts in the private sector (p-value: 0). Agriculture workers in the public sector are also found to receive a wage premium over private agriculture workers (approximately 18.2%) even though the wage premium is less precisely estimated for this group (p-value: 0.121). The wage gaps estimated for associates, craft workers and unclassified workers (which are all negative) are economically and statistically insignificant.

Finally, estimates that do not control for region fixed effects show that clerks in government offices are receiving lower wages than private sector clerks residing across the whole country. This wage penalty of 14.3% is both economically significant and statistically significant at the 1% level (p-value: 0). This can be interpreted to mean that a government clerk in one region is earning less than a private clerk who could be living in another region. We need to verify whether this wage differential is due to geographical location or not. In other words, we need to see whether the wage penalty remains if we compare public and private sector clerks residing in the *same* region. If it disappears, then this wage gap can be attributed merely to regional variations in living standards and not on the sector of employment.

⁷Source: National Statistical Coordination Board

3.2 With region fixed effects

In column (2), I control for region fixed effects in order to compare employees within the same region. Controlling for region fixed effects filters away institutional factors that may vary across regions. Such regional variation is supported by statistical accounts in Table 5 which shows how per capita levels of consumption vary by region. For instance, consumption in the National Capital Region is equivalent to 186% of the national average while in a region like Northern Mindanao, consumption is as low as 75% and in the poorest region (ARMM), consumption is only 46% of the national average.

Estimates in column (2) of Table 4 indicate that the public-private wage differentials are positive, if not statistically different from zero, across all occupation groups. It signifies that public sector employees compared to their private sector counterparts within the same region are actually receiving a higher wage rate. The public wage premium is highest among leaders, 33.6% (p-value: 0). This is followed by the wage premium among public professionals, 27.5% (p-value: 0), and public sector service workers, 25.4% (p-value: 0). Even after controlling for region fixed effects, the public wage premium for unskilled workers remain positive at 11.3% (p-value: 0).

Contrary to the estimate in column (1), public sector associates are found to receive higher wage rates (5.8%; p-value: 0.113) compared to private sector associates in the same region. The reversal of direction in column (2) indicates that the (insignificant) wage penalty earlier estimated for public sector associates may be due to regional heterogeneity. Indeed, an inspection of geographic distribution in Table 6 reveals that private sector associates are more concentrated in regions characterized with higher standards of living (National Capital Region and CALABARZON, where consumption per capita are above the national average), while public sector associates are evenly dispersed across all regions. This explains the private wage advantage displayed in column (1) that was overturned after controlling for region fixed effects in column (2).

The private sector wage advantage for clerks and craft workers disappear

once region fixed effects are controlled for. This indicates that public and private sector clerks (craft workers) residing in the same region are receiving basically equivalent hourly wage rates. This finding reflects a similar situation as associates in terms of geographic distribution. Table 6 reveals that a majority of private sector clerks and craft workers are located in regions where per capita consumption levels are above the national average. Thus, the private sector wage advantage estimated for these occupation groups in column (1) appears as a consequence of comparing public sector workers with private sector employees who are mostly concentrated in regions with higher standards of living. When comparing employees located in the same region, it occurs that clerks and craft workers in the public and private sectors are not subject to a significant wage differential.

The wage premium for public agriculture workers remain positive but statistically insignificant. It cannot be said that farmers, fishermen and forestry workers employed by the government are earning more than the private agriculture workers in the same region.

3.3 Richer regions vs. poorer regions

In Table 7, I present wage differentials within each of two subsets of regions classified according to economic activity. Richer regions refer to those with consumption per capita on or above the median while poorer regions pertain to those below the median consumption level. It shows that in most cases, the public wage premium is higher within the subset of poorer regions. For instance, public sector professionals are receiving a wage premium of 44.4% in poorer regions (p-value: 0) and only 9.1% in richer regions (p-value: 0). Service workers receive a public wage premium of 53.0% in poorer regions (p-value: 0) compared to 14.9% in richer regions (p-value: 0). These large premia may be explained by weaker competition between the public and private sectors in poorer regions where the economy is less vibrant and thus private sector wages are lower than in richer regions. Richer regions, on the other hand, have a

competitive private sector where market wage rates can catch up with public sector wage rates.

3.4 By age bracket

In this sub-section, I show how the public-private wage differentials vary with years of experience. Public sector workers may have longer years of work experience relative to private sector workers, which make them more eligible for higher pay. Indeed, Table 2 supports that on average, government workers are older than private sector employees. Since experience is directly proportional with age, government employees can be said to have more years of work experience than private sector employees on average. The OLS estimates presented in Tables 4 and 7 account for this potential endogeneity by including *age* and *age*² as proxy for experience among the demographic variables. These explanatory variables turn up with the expected coefficients: positive for *age*, 2.3%, and negative for *age*², -0.023%, both statistically significant at the 1% level. These estimates confirm the standard inverted U-shaped relationship between age and wages – increasing during early years and decreasing later on.

In order to observe the pattern between experience and the public wage premium, I estimate the public-private wage gap at different age brackets. I sub-divide the sample into 5-year age groups and apply OLS on eq. (1) for eage age bracket. The idea is to group together employees who have more or less similar years of work experience and to find the pattern in observed wage differentials between less experienced workers and more experienced workers. These OLS estimates used the full set of demographic variables except *age* and *age*².

Figure 1 (in the Appendix) illustrates the pattern between experience and the public wage premium on four occupation groups where the estimated differentials are statistically significant: leaders, professionals, service workers and unskilled workers. It depicts an inverted U-shaped pattern similar to the relationship earlier found between age and hourly wage rates. It shows that the

public wage premium varies with age, and thus experience, and remains positive throughout most of an employee’s career. Among employees of similar experience levels, the public sector employees appear to be receiving a premium over their private sector cohorts.

3.5 By gender

On average, the proportion of females to males in the public sector is higher than the proportion in the private sector (Table 2). I proceed with examining whether women are receiving a higher or lower public wage premium compared to men. I sub-divide the sample into two groups, male and female, and apply OLS to estimate eq. (1) in each group. This allows me to estimate the public wage premium within the sub-sample of women and compare it with the public wage premium within the sub-sample of men. These regressions used the full set of demographic variables except gender.

Table 8 shows that the difference in the levels of public wage premia between men and women vary depending on the occupation group. Among leaders and among professionals, women are receiving a higher public wage premium than the public wage premium received by men. Female leaders in the public sector are receiving 46.1% more (p-value: 0) than female leaders in the private sector. Male leaders, on the other hand, are receiving a public wage premium of 20.6% (p-value: 0.001) over their counterparts in the private sector. Female professionals employed in the government earn 34.6% more (p-value: 0) than their counterpart female professionals in private establishments. On the other hand, male professionals in the government receive a wage premium of 13.2% (p-value: 0.001) over male professionals employed in the private sector.

For service workers, the story is different. Female service workers are receiving a lower public wage premium (15.7%; p-value: 0.033) than male service workers (25.4%; p-value: 0). Among unskilled workers, the public wage premium among men remains positive and significant (13.4%; p-value: 0) while the public wage premium among women disappears.

4 The quality of government workers

In this section, I describe the type of workers in the public sector relative to their counterparts in the private sector. Then I examine the qualities of government employees associated with the public wage premium measured in the previous section.

4.1 Skill level and skill types

One may wonder whether the wage premium observed in the public sector reflects positive skill selection among government workers. In other words, could it be that public sector workers are better-skilled than their private sector counterparts? It can be seen in Table 2 that a higher percentage of government employees are college graduates (55%) compared to only 15% among private sector employees. I proceed with testing whether public sector workers are equipped with superior skill levels and skill types within each occupation group, controlling for observable factors such as gender, age, civil status, family size and region fixed effects.

For every occupation group j , I estimate the following probit model on employee i 's probability of being in the public sector:

$$\Pr(pub_{i \in j}) = c + \delta_j \cdot \mathbf{dem}_{i \in j} + \gamma_j \cdot slevel_{i \in j} + \theta_j \cdot \mathbf{stype}_{i \in j} + \sigma_j \cdot \boldsymbol{\mu}_r + \varepsilon_j, \quad (2)$$

where $pub_{i \in j}$ is an indicator which takes the value 1 if employee i in occupation group j belongs to the public sector and 0 if private sector, $\mathbf{dem}_{i \in j}$ represents the demographic characteristics of employee i in occupation group j , $slevel_{i \in j}$ refers to the skill level attained by employee i in occupation group j , $\mathbf{stype}_{i \in j}$ pertains to the skill type acquired by employee i in occupation group j , $\boldsymbol{\mu}_r$ stands for region fixed effects and ε_j is the error term. Skill level is measured by a dichotomy between college graduates and non-college graduates (non-college degree holders are taken as reference group in skill level). Skill types are distinguished according to the category of college degrees (among college graduates), with general college degree as reference category. General college degrees com-

prise Bachelor of Arts and Bachelor of Science programs with no field of specialization (based on the Philippine Standard Classification of Education). The specialized skill types belong to one of the following college degrees: education, arts, social sciences, physical sciences, engineering, agriculture, health sciences and services. The probit estimates on each of these college degrees, represented by $\hat{\theta}_j$, represent the relative probability of working in the public sector for college graduates with a specialized degree compared to college graduates with a non-specialized degree.

Table 9 presents the marginal effects resulting from this probit estimation. It shows that among employees in the leaders' occupation group, college graduates are more likely to be in the public sector. Service workers who have obtained a college degree are also significantly more likely than non-college graduates to be employed in the government. Thus, the public wage premia among leaders (33.6% based on Table 4) and service workers (25.4%) can be explained in part by their higher skill levels in terms of college educational attainment.

On the other hand, college graduates who are working as professionals are not significantly more likely to choose employment in the public sector. The wage premium that public sector professionals are receiving (27.5%) cannot be associated with higher skill levels among government employees in this occupation category.

Among employees classified as unskilled workers (helpers, cleaners, messengers, and others) the public wage premium (11.3%) is associated with higher skill level among government-employed workers. College graduates in this occupation category are significantly more likely to be in the public sector compared with non-college graduates. Public sector employees in this occupation category comprise 5% of all workers who report unskilled jobs as their primary occupation. Among public sector workers in this group, 7% are college graduates compared to 1% among the private sector workers. Unskilled workers in the public sector usually take on jobs as helpers and cleaners in offices, sweepers, construction and maintenance laborers, messengers, package and luggage porters while those in the private sector include farmhands and other manual

farm laborers, hand packers and other manufacturing manual laborers, construction and maintenance laborers, helpers and cleaners in offices and hotels, messengers, package and luggage porters.

Analysis can also be made on whether the public wage premium reflects specialization in the type of skills that public sector workers possess. Table 9 shows that employees with more specialized college degrees are in many cases less likely to be working in the public sector. Among leaders, those with a college degree in education, social science, physical science, engineering, agriculture and services are significantly less likely to be in the public sector compared to those with non-specialized college degrees (Bachelor of Arts and Bachelor of Science in general programs).

Only among professionals is one specialized degree more inclined to be in the public sector. Professionals holding a college degree in education are significantly more likely to be government employees. This observation is in line with the fact that this occupation group consists of teaching professionals (60.47% in the sample) and public sector professionals in general receive a significantly positive wage premium over private sector professionals (27.5%).

The rest of the occupation groups exhibit either a negative probability or a non-significant difference in probability of public sector employment among workers holding a specialized college degree. While this paper does not seek to explain the reasons behind these differences in probability, it shows that the differential probabilities (when they are significant) are not associated with the public wage premium except for teaching professionals. Specifically, the public wage premium among leaders, service workers and unskilled workers do not reflect more specialization in skill types in the public sector.

4.2 Effort level

Among the ranks of objective factors associated with the public-private wage differential, another candidate points to the level of effort that public sector employees exert on the same type of job. I estimate the public-private differential

in effort levels measured by the employees' response to a survey question on total number of hours worked during the past week.⁸ Total number of hours worked is an observable measure of effort that is also used in standard empirical studies. Although it does not perfectly capture effort in a strict sense, other dimensions of effort are not as directly measurable as hours worked. Thus, I take this variable as proxy for effort level, which is reported in the survey data.

To estimate the public-private differential in hours worked, I use the following regression equation:

$$\begin{aligned} hours_i = c + \phi_j \cdot \mathbf{occ}_j + \lambda_j \cdot (pub_i \times \mathbf{occ}_j) + \delta \cdot \mathbf{dem}_i + \gamma \cdot slevel_i \\ + \theta \cdot \mathbf{stype}_i + \sigma_r \cdot \boldsymbol{\mu}_r + \varepsilon, \end{aligned} \quad (3)$$

where $hours_i$ refer to employee i 's total number of hours worked in one week, and the covariates $\mathbf{occ}_j$, pub_i , $\mathbf{dem}_i$, $slevel_i$, $\mathbf{stype}_i$ and $\boldsymbol{\mu}_r$ are as defined in Section 2 for eq. (1). Controlling for occupation fixed effects through the vector $\mathbf{occ}_j$ effectively accounts for occupation-specific demands on effort level. The variable of interest, λ_j , captures the differential in total hours worked between public and private sector workers within the same occupation group.

Table 10 reports the hours differential estimated through OLS. In contrast to the positive wage premium observed for public sector workers, it shows that government employees report less hours of work than their counterparts in the private sector. Public sector executives, managers and supervisors work 2.34 hours less in a week compared with executives, managers and supervisors in the private sector (p-value: 0.001). Significant differences are also observed among public sector associates, who work 4.65 hours less than their private sector counterparts (p-value: 0), public sector clerks (4.53 hours less; p-value: 0), public sector service workers (10.46 hours less; p-value: 0) and public sector craft workers (1.90 hours less; p-value: 0.014). Professionals in the civil service also tend to report fewer hours of work than counterpart professionals in the private sector (0.70 hours; p-value: 0.072) although this difference is smaller

⁸This is not the same variable I used in calculating the hourly wage rate. For the hourly wage rate, I used as denominator the number of normal working hours *per day*.

than the hours differential in other occupation groups.

Public sector workers are generally found to work fewer hours than their counterparts in the private sector, and thus exert less effort, while they receive higher wage rates. Figure 2 illustrates the discrepancy in wages and effort levels between public and private sector employees in each occupation category. It depicts the irony that government employees are earning higher wages than their equivalents in the private sector yet they are exerting less effort. This is consistent with other studies, both theoretical and empirical, which find that in general government employees exert less effort than private sector workers (for example, Buurman *et al.* 2012 and Dur and Zoutenbier 2013).

4.3 Pro-social motivation

The analysis so far cannot in large part associate the observed public wage premium with public employees' effort levels nor specialization in skills. Examining the wage premium then leads one to check out other dimensions that distinguish public sector workers from private sector employees.

There is a growing consensus in the literature that individuals with more pro-social orientation tend to select into the public sector (Francois 2000; Francois and Vlassopoulos 2008; Gregg *et al.* 2011; Buurman *et al.* 2012; Buurman and Dur 2012). In this sub-section, I show that public sector employees in the Philippines exhibit higher levels of pro-social behaviour relative to their private sector counterparts. Moreover, this pro-social premium corresponds with the public wage premium described in the previous section. I measure pro-social behaviour as a household's total gifts and contributions to others, a value reported in the survey data as the sum of gifts and contributions outside the family, contributions to church, contributions to other institutions, and other gifts and contributions. Giving behaviour represents pro-social motivation in the sense that it consists of transfers for the benefit of its recipients while involving tangible costs to the benefactor. While there are arguably many forms of pro-social action and pro-social motivation itself, in its pure form, is not perfectly

measurable, giving behaviour is both directly observable and directly correlated with pro-social motivation. For this reason, I use the value of total gifts and contributions as a proxy measure of pro-social motivation.

I estimate the public-private differentials in giving behaviour through the following linear regression:

$$\ln(gifts_m) = c + \phi_j \cdot \mathbf{occ}_j + \tau_j \cdot (pub_i \times \mathbf{occ}_j) + \delta \cdot \mathbf{dem}_i + \gamma \cdot slevel_i + \theta \cdot \mathbf{stype}_i + \sigma_r \cdot \boldsymbol{\mu}_r + \varphi \cdot hwage_i + \varepsilon, \quad (4)$$

where $gifts_m$ refer to the total value of gifts given by household m where employee i belongs, $hwage_i$ is the hourly wage rate received by employee i , and the rest of the covariates are as defined in Section 2 for eq. (1). Controlling for hourly wage rates allows for comparison of giving behaviour among employees of the same income levels and eliminates the pure income effect on giving.

The variable of interest is τ_j which stands for the difference in the value of gifts given by households where public sector employees belong and the value of gifts given by households where private sector employees belong. Table 11 presents the results of this estimation procedure. It shows that public sector employees belong to households who give substantially more than the households where private sector employees belong, holding all other observable factors constant. In every occupation group (except agriculture workers, where the public sector consists only 1%), the public sector premium in gift-giving is economically and statistically significant. For instance, the public-private differential in gift-giving among professionals is equivalent to 25.6% of total gifts given by households where private sector professionals belong (p-value: 0). Likewise, service workers in the public sector are giving more with the difference equivalent to 25% of the total gifts given by their counterparts in the private sector (p-value: 0.001).

Figure 3 illustrates the association between the public wage premium and the public premium in pro-social behaviour. In occupation groups with significant levels of public wage premium (leaders, professionals, service workers and unskilled workers), the corresponding premium in pro-social behaviour is

also substantial. For each of these occupation groups, the pro-social premium among government employees is of almost equal size as, if not bigger than, its respective public wage premium.

The wage advantage that public sector workers receive in comparison to their private sector colleagues are found to reflect the higher level of pro-social behaviour that government workers exhibit relative to private sector employees. Among the factors examined in this paper, pro-social behaviour is by far the one most consistently associated with the public wage premium. It is worth examining whether this differential in giving behaviour may be motivated by less altruistic reasons like reciprocity. It can be checked whether public sector employees are giving more in expectation of receiving more in return. This can be analyzed from column (2) in Table 11. It shows the public-private differential in gifts received by household m where employee i belongs, estimated using the same set of regressors in eq. (4). I use $\ln(\textit{gifts received})$ as outcome variable so the estimates of τ_j in this case express the public-private differential as a proportion of gifts *received* by households where private sector employees belong.

Column (2) shows that in most occupation groups, the value of gifts received by households where public sector employees belong is not significantly different from the value of gifts received by households where their private sector counterparts belong. Thus, it does not give evidence that the public premium in gift giving is met with a corresponding premium on gifts received by public sector workers. In cases where the difference is weakly significant (at the 10% level), public sector employees appear to be receiving less gifts. Only the group of unskilled workers stand out. Unskilled workers in the public sector are found to be receiving more gifts than their counterparts in the private sector (13.7%; p-value: 0.044) and this difference is statistically significant. These public sector unskilled workers are also giving more than those in the private sector (40.6%; p-value: 0) as column (1) indicates. For this group, the public-private differential in *net gifts given* may be more salient. Net gifts given by household m where employee i belongs is measured as the difference between total gifts and contributions to others and the value of gifts it received. Column

(3) shows that the net gifts given by households where public sector unskilled workers belong is higher than the net gifts given by the households of their private sector counterparts. The difference is estimated as 21.8% of the net gifts given by households of private sector unskilled workers (p-value: 0.085). This public-private differential is closer to the size of the public wage premium (11.3%; p-value: 0) earlier found for unskilled workers than is the differential in total gifts given (40.6%; p-value:0). Thus, the public-private differential in net gifts given by unskilled workers is a better reflection of the public wage premium in this occupation group. Nevertheless, the positive association between pro-social behaviour and public wage premium remains across all occupation groups where the public-private wage differentials are significant.

4.4 Risk aversion

Since the government offers more job security and predictability than private sector employers, it may be inclined to attract workers who are more risk averse than private sector workers. Existing studies in other countries confirm this hypothesis (Bellante and Link 1981; Buurman *et al.* 2012; Dur and Zoutenbier 2014). In this sub-section I test whether public and private sector workers in the Philippines exhibit different levels of risk aversion and if so, whether this difference corresponds to their wage differentials.

I compare risk aversion levels between public and private employees using proxy indicators of risk aversion available in the data set. The only proxy variables contained in the survey which can capture some aspects of risk aversion are tobacco consumption and spending on alcoholic beverages, both at the household level. Because these two commodities pose health risks, lower consumption levels may indicate higher degrees of risk aversion. I estimate differential rates of risk aversion between public and private sector workers based on consumption

of commodity $k \in \{tobacco, alcohol\}$ with the following regression equation:

$$\begin{aligned} \ln(con_m^k) = & c^k + \phi_j^k \cdot \mathbf{occ}_j + \rho_j^k \cdot (pub_i \times \mathbf{occ}_j) + \delta^k \cdot \mathbf{dem}_i + \gamma^k \cdot slevel_i \\ & + \theta^k \cdot \mathbf{stype}_i + \sigma_r^k \cdot \boldsymbol{\mu}_r + \varphi^k \cdot hwage_i + \varepsilon, \end{aligned} \quad (5)$$

where con_m^k is total expenditure on risk commodity k in household m where employee i belongs, $hwage_i$ is the hourly wage rate that employee i earns, and the rest of the covariates are as described before. By including the hourly wage rate, this equation controls for income effects on consumption and effectively compares public and private sector employees at similar income levels.

The variable of interest is ρ_j^k which represents the difference in risk-taking behaviour between public and private sector employees in occupation group j . Table 12 presents the public-private differentials in risk-taking in terms of tobacco consumption (column 1) and alcoholic beverage consumption (column 2). It shows that there is no statistically significant difference in tobacco consumption between public and private workers across all occupation groups. If risk aversion is measured in terms of consumption of a health-risk commodity such as tobacco, then there is no observed difference in risk aversion levels between the two sectors. On the other hand, if risk aversion is measured in terms of spending on alcoholic beverages, then some differentials turn up in some occupation groups. These are the same occupation groups for which the highest levels of public-private wage gaps were observed. Leaders and professionals employed in the government report lower consumption levels of alcoholic beverages compared with their private sector counterparts who earn the same wage rates. This can indicate that government executives, managers, supervisors and professionals may be more risk averse than their equivalents in the private sector. In a way, part of the public wage premium these employees are receiving may be interpreted as compensation for their risk aversion.

On the contrary, government workers in the services sector as well as publicly-employed unskilled workers, who likewise enjoy substantial wage premia, tend to consume more alcoholic beverages than their private sector counterparts. Public sector employees in these occupation categories may be construed as being less

risk averse. Thus, the wage premium they are receiving cannot be expressed as compensation for risk aversion.

Figure 4 summarizes the comparison of public-private wage gaps and risk aversion differentials in these four occupation groups. The public wage premium for leaders and professionals corresponds with higher degrees of risk aversion. For service workers and unskilled workers, the public wage premium corresponds with lower levels of risk aversion relative to their counterparts in the private sector.

5 Alternative estimation strategies

In this section, I describe alternative approaches in estimating the public-private wage differentials and show that the estimates in Section 3 are robust to an alternative matching strategy. These approaches sub-divide the sample into occupation groups and estimate the wage gap within each sub-sample. One strategy is standard in the empirical literature and applies OLS in estimating the public-private wage differentials. Another approach is to match individuals based on propensity scores and measure the wage difference between public employees and their resulting matches in the private sector. These alternative approaches have advantages and disadvantages compared with the main empirical strategy I have employed in this paper. By splitting the sample into occupation groups, each estimation makes use of fewer observations and thus carries lower statistical power. On the other hand, propensity score matching (PSM) has the intuitive appeal of identifying reasonable matches with which to compare public sector employees. In this section, I show that the OLS estimates within sub-samples suffer from poorer fit compared with the full sample estimates as a consequence of the smaller size. As a result, its estimates of the wage differentials are lower in magnitude although they display the same direction and levels of significance. On the other hand, estimates based on PSM are close to the full sample estimates described earlier, in terms of magnitude, direction and statistical significance. This matching approach provides further

support to the estimates of public-private wage differentials measured through this paper’s main empirical strategy described in Section 2.

5.1 OLS within each occupation group

With this approach, the public-private wage differential in each occupation group j is estimated by OLS from the following equation:

$$\ln(hwage_{i \in j}) = c + \widetilde{\beta}_j \cdot pub_{i \in j} + \widetilde{\delta}_j \cdot \mathbf{dem}_{i \in j} + \widetilde{\gamma}_j \cdot slevel_{i \in j} + \widetilde{\theta} \cdot \mathbf{stype}_{i \in j} + \widetilde{\sigma}_r \cdot \boldsymbol{\mu}_r + \varepsilon, \quad (6)$$

where $pub_{i \in j}$ is an indicator which takes the value 1 if employee i in occupation j belongs to the public sector and 0 if private sector, and the rest of the covariates for each individual i belonging to occupation group j are as explained previously for eq. (2). The variable of interest is $\widetilde{\beta}_j$ which measures the difference in wages between public and private sector employees in the sub-sample of each occupation group. Table 13 presents the results of this estimation approach vis-a-vis the full sample estimates described earlier (from Table 4 column 2). It shows positive and significant public wage premia in the same occupation groups where the full sample regressions revealed significant wage differentials. However, the sizes of these differentials are mostly smaller in the sub-sample regressions. For leaders, the public wage premium is estimated at 17.8% (p-value: 0.001), lower than the 33.6% public wage premium (p-value: 0) estimated in the full sample. For professionals, it is 15.6% (p-value: 0) compared with the 27.5% (p-value: 0) in the full sample. For service workers, the public wage gap is estimated at 21.3% (p-value: 0) in the sub-sample regression, lower than the 25.4% (p-value: 0) found in the full sample. For unskilled workers, the estimated public wage premium within the sub-sample is 14.9% (p-value: 0), slightly higher than the 11.3% wage premium (p-value: 0) estimated from the full sample.

Each sub-sample regression in Table 13 displays lower levels of adjusted R-squared compared with the full sample regression so it cannot be considered a

better fit. The resulting estimates of the public-private wage differentials cannot be considered more precise than the full sample estimates described in Section 3. At best, they confirm that public sector employees are receiving a wage premium over their private sector counterparts. For more precise estimates of the size of this wage premium, I turn to another alternative approach that involves matching employees in the public and private sectors within each occupation group.

5.2 PSM within each occupation group

With propensity score matching, employees in the public sector are matched with their counterparts in the private sector based on the conditional probability of working in the public sector given a set of observed covariates. This conditional probability is summarized in propensity scores. Private sector employees within the neighborhood of each public sector employee's propensity score are considered good matches with which to compare wages. The wage differential due to sector of employment is measured as the difference in observed wages between public sector employees and their resulting matches from the private sector in the same occupation group.

To generate propensity scores, I use the same set of covariates in eq. (6) :

$$X \in \{\mathbf{dem}_{i \in j}, \mathbf{slevel}_{i \in j}, \mathbf{stype}_{i \in j}, \boldsymbol{\mu}_r\} \quad (7)$$

for each employee i in occupation j . Based on these propensity scores, public sector employees are matched with their private sector equivalents (I use the matching algorithm which takes the nearest 5 neighbors, with replacement).

Table 14 presents the results of propensity score matching within each occupation group. In occupation groups where matching was properly achieved, the wage differentials, represented by the average treatment effects on the treated (ATT), resemble the OLS estimates of wage differentials from the full sample. (Estimates of ATT represent the difference between public sector employees' actual wage rates and their counterfactual wage rates if they had been employed in the private sector instead). For instance, the public wage premium on

professionals is estimated as 28.5% by PSM, statistically significant at the 1% level, just like the 27.5% wage premium estimated by OLS from the full sample. For service workers, PSM found a public wage premium of 30.3% (statistically significant at the 1% level) compared with 25.4% premium (also statistically significant at the 1% level) estimated from the full sample. For unskilled workers the public wage premium is estimated by PSM at 15.4% whereas it is measured at 11.3% by OLS from the full sample (in both cases, statistically significant at the 1% level).

While the concept of propensity score matching identifies an objective procedure in matching public and private sector employees, one drawback in estimating the wage differential by PSM is that proper matching cannot be achieved in some cases. In particular, the group of leaders in the public sector cannot be properly matched with their private sector counterparts based on propensity scores. The standardized bias in covariate matching within this occupation group is 7.44%, higher than the maximum acceptable standardized bias (5%) in most studies that use PSM (Caliendo and Kopeinig, 2008). In addition, the Pseudo R-squared is not low (0.373) which is a further indication that the match quality is not satisfactory. For this reason, estimates of ATT and thus the wage differential between public and private sector leaders cannot be reported as valid. The same is true for the case of agriculture workers and unclassified workers, for which I do not report estimates of the wage differentials.

Nonetheless, matching by propensity scores validates the estimates of public-private wage differentials generated through the main empirical strategy in this paper. It confirms that public sector employees in the Philippines are receiving a wage premium over their counterparts in the private sector. Moreover, the size of this wage premium estimated by OLS from the full sample is virtually precise if we take results from the matching procedure as a point of comparison.

6 Summary and conclusion

This paper finds that public sector workers in the Philippines are receiving higher hourly wage rates compared with their counterparts in the private sector. This situation is different from other developing countries where government employees appear to be receiving lower wage rates than private sector employees.

This study also demonstrates that the public wage premium in the Philippines is being paid on employees whose skills are less specialized, who exert less effort but altogether are more pro-social than their private sector counterparts. While this paper does not attempt to explain the reasons behind these wage differentials nor the process involved in setting wages, it describes the relationship between the public wage premium and the quality of public workforce in the Philippines.

This study finds that employees in occupation groups subject to a higher public wage premium are characterized with more pro-social behaviour. Among the traits examined in this paper, pro-social behaviour is the quality that is most consistent and clearly associated with the public wage premium. This observation establishes that higher wages in the public sector corresponds with more pro-social motivation among government workers.

Differentials in effort level also reveal systematic results. While government employees are found to receive higher wages relative to their private sector counterparts, they are also found to be working fewer hours.

This paper finds that college graduates are more likely to work for the public sector than are non-college graduates. However, among college graduates, those who obtained more specialized degrees tend to be employed in private establishments rather than in government agencies. As a result, government employees are characterized with skills that are less specialized than those of private sector employees. Thus, the public wage premium cannot be interpreted as a premium for skill specialization in the government's workforce.

The findings of this paper signify that the existing set of public sector workers consists of employees who would have been receiving lower wages if they

had been employed in the private sector. In other words, their private market value is lower than what they are presently earning because their counterparts employed in the private sector are receiving lower wages. If the private sector wage rate reflects the quality of its own employees, then the lower wages that private employers pay the counterparts of existing public sector workers serve as an indication of the actual quality of these government employees. Their counterparts are those who are receiving lower wage rates and are therefore of lower quality by market standards.

Appendix

Table 1. Average hourly wages, 2009 (in current Philippine pesos)

	Public (1)	Private (2)	Difference (Public-Private) (3)
All occupations	63.632 (43.564) 5,034	35.889 (59.305) 24,099	27.744 *** (0.882)
Leaders	112.553 (60.978) 211	103.546 (187.498) 840	9.007 (13.082)
Professionals	81.345 (34.753) 1,781	80.845 (60.077)	0.500 (1.761)
Associates	63.050 (38.506) 430	57.079 (47.469) 796	5.971 ** (2.665)
Clerks	47.662 (27.173) 814	49.537 (67.920)	-1.876 (2.453)
Service workers	49.199 (32.535) 648	28.898 (85.561) 3,557	20.301 *** (3.405)
Agriculture workers	32.042 (15.821) 4	23.220 (13.766) 216	8.822 (6.962)
Craft workers	39.137 (25.641) 102	35.007 (18.062) 3,862	4.13 ** (1.835)
Operators	37.397 (17.460) 149	37.844 (29.996) 1,719	-0.446 (2.494)
Unskilled workers	29.943 (14.291) 555	23.174 (14.751) 9,823	6.77 *** (0.643)
Unclassified workers	38.413 (33.011) 10	31.347 (23.124) 46	7.066 (8.738)

Notes:

1. Standard errors are in parentheses.

2. No. of observations are indicated below the standard errors.

3. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).

Source: Merged LFS and FIES 2009. Author's estimates.

Table 2. Demographics by sector

	Public (1)	Private (2)	Difference (Public-Private) (3)
Age	42.465 6,211	35.010 27,787	7.455 ***
% Male	48.559 (49.983)	71.537 (48.036)	-22.978 *** (0.646)
% Female	51.441 (49.983)	28.463 (45.125)	22.978 *** (0.646)
% Single	18.628 (38.937)	36.121 (48.036)	-17.493 *** (0.653)
% Married	74.561 (43.555)	58.984 (49.187)	15.577 *** (0.677)
% Widowed	4.878 (21.543)	2.717 (16.258)	2.161 *** (0.243)
% Separated	1.932 (13.766)	2.134 (14.452)	-0.202 (0.201)
Family size	5.267 (2.153)	5.517 (2.271)	-0.250 *** (3.158)
% College graduates	55.080 (49.745)	14.903 (35.612)	40.177 *** (0.542)
No. of observations	6,211	27,787	

Notes:

1. Standard errors are in parentheses.

2. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).

Source: Merged LFS and FIES 2009. Author's estimates.

Table 3. Cross-correlations between hourly wages and demographic factors

	Hourly wage
Age	0.1143
Male	-0.0602
Female	0.0602
Single	-0.0673
Married	0.0643
Widowed	-0.0008
Separated	0.0053
Family size	-0.0198
College graduate	0.3253

Source: Merged LFS and FIES 2009. Author's estimates.

Table 4. OLS estimates of public-private wage differential by occupation group

<i>Dependent variable</i> ln(hourly wage)	Without region FE (1)	With region FE (2)
Leaders	0.209 *** (0.042)	0.336 *** (0.040)
Professionals	0.000 0.148 *** (0.022)	0.000 0.275 *** (0.022)
Associates	0.000 -0.039 (0.038)	0.000 0.058 (0.036)
Clerks	0.304 -0.143 *** (0.023)	0.113 -0.018 (0.021)
Service workers	0.000 0.224 *** (0.030)	0.411 0.254 *** (0.030)
Agriculture workers	0.000 0.182 (0.117)	0.000 0.139 (0.159)
Craft workers	0.121 -0.039 (0.058)	0.382 0.058 (0.053)
Unskilled workers	0.494 0.159 *** (0.024)	0.271 0.113 *** (0.024)
Unclassified workers	0.000 -0.023 (0.237)	0.000 -0.010 (0.236)
	0.922	0.967
Demographics	Yes	Yes
Skill level	Yes	Yes
Skill types	Yes	Yes
Occupation fixed effects	Yes	Yes
Region fixed effects	No	Yes
Constant	Yes	Yes
No. of observations	29,133	29,133
Adj. R-squared	0.431	0.504

Notes:

1. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
2. Heteroskedasticity-robust standard errors are in parentheses.
3. P-values are reported below the standard errors.
4. Reference occupation group: Operators

Table 5. Consumption per capita in 2009, by region

Region	Regional Average / National Average
National Capital Region	186%
Cordillera Administrative Region	96%
Ilocos	91%
Cagayan	83%
Central Luzon	107%
CALABARZON	118%
MIMAROPA	74%
Bicol	75%
Western Visayas	83%
Central Visayas	84%
Eastern Visayas	77%
Zamboanga	64%
Northern Mindanao	75%
Davao	80%
SOCCSKSARGEN	76%
CARAGA	65%
ARMM	46%

Source: National Statistical Coordination Board

**Table 6. Geographic distribution of associates, clerks and craft workers
(% distribution by region)**

Region	Associates		Clerks		Craft Workers	
	Public	Private	Public	Private	Public	Private
National Capital Region	8.69	28.31	13.57	31.52	12.15	17.60
CAR	5.11	3.84	5.21	2.22	3.74	3.60
Ilocos	4.77	4.55	3.91	3.60	5.61	5.19
Cagayan	3.92	2.83	4.45	2.05	4.67	3.04
Central Luzon	6.13	6.47	6.84	10.84	4.67	12.39
CALABARZON	7.33	15.27	5.97	13.73	3.74	14.34
MIMAROPA	4.77	1.92	5.86	1.80	2.80	2.79
Bicol	6.64	2.63	5.75	3.06	4.67	5.14
Western Visayas	6.64	4.65	6.19	5.36	11.21	4.99
Central Visayas	7.33	8.29	5.86	7.58	8.41	10.23
Eastern Visayas	5.96	2.83	5.54	2.60	8.41	2.63
Zamboanga	4.26	2.02	4.89	2.09	4.67	3.17
Northern Mindanao	4.60	3.13	7.06	3.64	8.41	4.00
Davao	8.69	5.97	3.69	4.81	5.61	4.15
SOCCSKSARGEN	7.50	3.34	4.78	2.60	1.87	3.17
CARAGA	7.33	2.33	6.73	2.01	8.41	3.27
ARMM	0.34	1.62	3.69	0.50	0.93	0.30

Source: LFS and FIES, National Statistics Office

Table 7. OLS estimates of public-private wage differential, richer regions and poorer regions

<i>Dependent variable</i> ln(hourly wage)	Richer regions (1)	Poorer regions (2)
Leaders	0.253 *** (0.051)	0.239 *** (0.076)
Professionals	0.000 0.091 *** (0.026)	0.002 0.444 *** (0.044)
Associates	0.000 -0.087 ** (0.043)	0.000 0.302 *** (0.077)
Clerks	0.045 -0.106 *** (0.028)	0.000 0.070 * (0.038)
Service workers	0.000 0.149 *** (0.036)	0.071 0.530 *** (0.052)
Agriculture workers	0.000 0.004 (0.114)	0.000 0.534 *** (0.095)
Craft workers	0.972 0.015 (0.064)	0.000 -0.045 (0.106)
Unskilled workers	0.810 0.152 *** (0.030)	0.672 0.154 *** (0.040)
Unclassified workers	0.000 -0.159 (0.348)	0.000 0.512 (0.316)
Demographics	0.647	0.106
Skill level	Yes	Yes
Skill types	Yes	Yes
Occupation fixed effects	Yes	Yes
Constant	Yes	Yes
No. of observations	20,273	8,860
Adj. R-squared	0.429	0.466

Notes:

1. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
2. Heteroskedasticity-robust standard errors are in parentheses.
3. P-values are reported below the standard errors.
4. Reference occupation group: Operators

Table 8. OLS estimates of public-private wage gap by gender

<i>Dependent variable</i> ln(hourly wage)	Male (1)	Female (2)
Leaders	0.206 *** (0.059)	0.461 *** (0.050)
Professionals	0.001 0.132 *** (0.038)	0.000 0.346 *** (0.027)
Associates	0.001 0.064 (0.048)	0.000 0.070 (0.053)
Clerks	0.184 -0.077 ** (0.032)	0.188 0.035 (0.028)
Service workers	0.017 0.254 *** (0.032)	0.216 0.157 ** (0.073)
Agriculture workers	0.000 0.130 (0.146)	0.033 --
Craft workers	0.373 0.042 (0.052)	-0.512 *** (0.088)
Unskilled workers	0.417 0.134 *** (0.024)	0.000 0.030 (0.062)
Unclassified workers	0.000 -0.057 (0.259)	0.633 -0.019 (0.617)
	0.826	0.976
Demographics	Yes	Yes
Skill level	Yes	Yes
Skill types	Yes	Yes
Occupation fixed effects	Yes	Yes
Constant	Yes	Yes
No. of observations	19,371	9,762
Adj. R-squared	0.468	0.563

Notes:

1. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
2. Heteroskedasticity-robust standard errors are in parentheses.
3. P-values are reported below the standard errors.
4. Reference occupation group: Operators
5. The sub-group of female agriculture workers is omitted due to insufficient sample size.

Table 9. Employee's probability of being in the public sector, marginal effects of skill level and skill types

Dependent Variable Pr(employee=public)	College graduates (1)	Education degree (2)	Arts degree (3)	Social science degree (4)	Physical science degree (5)	Engineering degree (6)	Agriculture degree (7)	Health science degree (8)	Services degree (9)
Leaders	0.345 *** (0.038) 0.000	-0.072 * (0.039) 0.065	--	-0.191 *** (0.035) 0.000	-0.186 *** (0.060) 0.002	-0.228 *** (0.037) 0.000	-0.183 *** (0.060) 0.002	-0.021 (0.099) 0.832	-0.195 *** (0.050) 0.000
Professionals	0.042 (0.071) 0.549	0.225 *** (0.044) 0.000	-0.245 *** (0.085) 0.004	-0.041 (0.048) 0.391	-0.053 (0.059) 0.361	-0.027 (0.046) 0.560	0.045 (0.064) 0.482	--	0.037 (0.059) 0.531
Associates	0.098 (0.107) 0.357	0.000 (0.118) 0.997	-0.086 (0.147) 0.559	-0.072 (0.108) 0.505	-0.113 (0.128) 0.377	-0.024 (0.110) 0.830	0.164 (0.120) 0.172	-0.224 (0.197) 0.257	0.071 (0.125) 0.569
Clerks	0.158 * (0.083) 0.059	-0.073 (0.087) 0.402	-0.143 (0.162) 0.378	-0.073 (0.084) 0.384	-0.095 (0.088) 0.283	-0.100 (0.087) 0.248	0.042 (0.099) 0.673	-0.052 (0.121) 0.665	-0.087 (0.090) 0.332
Service workers	0.198 *** (0.075) 0.009	-0.030 (0.081) 0.706	0.027 (0.111) 0.810	-0.102 (0.078) 0.191	-0.082 (0.086) 0.336	-0.060 (0.081) 0.457	-0.206 ** (0.085) 0.016	--	0.089 (0.078) 0.255
Craft workers	0.093 ** (0.042) 0.025	--	--	-0.050 (0.045) 0.273	-0.037 (0.047) 0.434	-0.058 (0.043) 0.178	--	--	-0.063 (0.049) 0.203
Operators	0.054 (0.033) 0.101	-0.029 (0.056) 0.609	--	-0.014 (0.039) 0.723	-0.008 (0.059) 0.893	-0.026 (0.043) 0.546	0.012 (0.066) 0.849	--	--
Unskilled workers	0.244 *** (0.069) 0.000	-0.163 ** (0.075) 0.029	--	-0.128 (0.072) 0.073	-0.192 ** (0.078) 0.014	-0.151 ** (0.074) 0.041	-0.158 ** (0.079) 0.047	--	-0.194 *** (0.073) 0.008
No. of observations	Leaders 1,076	Professionals 2,979	Associates 1,576	Clerks 3,310	Service w. 4,866	Craft w. 3,936	Operators 2,830	Unskilled w. 11,929	
Pseudo R-squared	0.346	0.280	0.216	0.165	0.258	0.091	0.107	0.088	

Notes:

1. Reference group: General college degree for skill types, Non-college degree for skill level
2. Agriculture workers and unclassified workers are omitted due to insufficient sub-sample sizes.
3. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
4. Unconditional standard errors are in parentheses.
5. P-values are reported below the standard errors.

**Table 10. OLS estimates of difference in
no. of hours worked between
public and private employees**

<i>Dependent variable</i> No. of hours	Hours worked diff. (1)
Leaders	-2.341 *** (0.696) 0.001
Professionals	-0.696 * (0.386) 0.072
Associates	-4.652 *** (0.709) 0.000
Clerks	-4.534 *** (0.370) 0.000
Service workers	-10.46 *** (0.680) 0.000
Agriculture workers	5.925 (10.143) 0.559
Craft workers	-1.895 ** (0.772) 0.014
Unskilled workers	-0.162 (0.497) 0.745
Unclassified workers	0.422 (3.189) 0.895
Demographics	Yes
Skill level	Yes
Skill types	Yes
Occupation fixed effects	Yes
Region fixed effects	Yes
Constant	Yes
No. of observations	33,998
Adj. R-squared	0.102

Notes:

1. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
2. Heteroskedasticity-robust standard errors are in parentheses.
3. P-values are reported below the standard errors.
4. Reference occupation group: Operators

Table 11. OLS estimates of differentials in giving behaviour between public and private employees

<i>Dependent variable</i> ln(gifts)	Gifts given (1)	Gifts received (2)	Net gifts given (3)
Leaders	0.465 *** (0.119)	0.048 (0.144)	0.248 (0.162)
Professionals	0.000 (0.063)	0.738 (0.079)	0.126 (0.087)
Associates	0.256 *** (0.094)	-0.031 (0.110)	0.070 (0.143) *
Clerks	0.000 (0.001)	0.698 (0.521)	0.419 (0.096)
Service workers	0.303 *** (0.067)	-0.070 (0.076)	0.238 * (0.106)
Agriculture workers	0.147 ** (0.027)	0.106 (0.163)	0.266 ** (0.012)
Craft workers	0.250 *** (0.074)	-0.132 * (0.077)	0.024 (0.120)
Unskilled workers	0.001 (0.001)	0.086 (0.086)	0.845 (0.845)
Unclassified workers	0.482 (0.568)	-1.008 * (0.606)	-0.945 (0.854)
Hourly wage rate	0.396 (0.138)	0.096 (0.155)	0.268 (0.368)
Demographics	0.299 ** (0.030)	0.181 (0.242)	-0.267 (0.468)
Skill level	0.406 *** (0.069)	0.137 ** (0.068)	0.218 * (0.127)
Skill types	0.000 (0.000)	0.044 (0.044)	0.085 (0.085)
Occupation fixed effects	1.581 *** (0.559)	-1.013 * (0.520)	1.481 (0.940)
Region fixed effects	0.005 (0.005)	0.051 (0.051)	0.115 (0.115)
Constant	Yes	Yes	Yes
No. of observations	24,479	25,079	9,849
Adj. R-squared	0.321	0.046	0.210

Notes:

1. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
2. Heteroskedasticity-robust standard errors are in parentheses.
3. P-values are reported below the standard errors.
4. Reference occupation group: Operators

Table 12. OLS estimates of differentials in risk-taking behaviour between public and private employees

<i>Dependent variable</i> ln(consumption)	Tobacco (1)	Alcoholic beverages (2)
Leaders	-0.047 (0.185)	-0.312 ** (0.159)
Professionals	0.799 -0.094 (0.099)	0.050 -0.149 * (0.078)
Associates	0.345 0.130 (0.131)	0.058 -0.002 (0.116)
Clerks	0.322 -0.051 (0.083)	0.986 0.037 (0.072)
Service workers	0.539 0.074 (0.083)	0.606 0.136 ** (0.067)
Agriculture workers	0.372 0.292 (0.195)	0.040 0.126 (0.557)
Craft workers	0.135 0.068 (0.124)	0.821 0.161 (0.135)
Unskilled workers	0.581 0.004 (0.070)	0.234 0.120 * (0.066)
Unclassified workers	0.958 -0.086 (0.539)	0.071 0.137 (0.417)
Hourly wage rate	0.873 Yes	0.742 Yes
Demographics	Yes	Yes
Skill level	Yes	Yes
Skill types	Yes	Yes
Occupation fixed effects	Yes	Yes
Region fixed effects	Yes	Yes
Constant	Yes	Yes
No. of observations	20,066	21,248
Adj. R-squared	0.098	0.086

Notes:

1. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
2. Heteroskedasticity-robust standard errors are in parentheses.
3. P-values are reported below the standard errors.
4. Reference occupation group: Operators

Table 13. OLS estimates of public-private wage differential by occupation group, full sample vs. occupation group sub-samples

<i>Dependent variable</i> ln(hourly wage)	Full sample	Occupation group sub-samples		
		Estimates	No. of observations	Adj. R-squared
	(1)	(2)	(3)	(4)
Leaders	0.336 *** (0.040)	0.178 *** (0.053)	1,051	0.289
Professionals	0.275 *** (0.022)	0.156 *** (0.024)	2,904	0.211
Associates	0.058 (0.036)	-0.011 (0.041)	1,226	0.268
Clerks	-0.018 (0.021)	0.009 (0.023)	2,917	0.297
Service workers	0.254 *** (0.030)	0.213 *** (0.033)	4,205	0.362
Agriculture workers	0.139 (0.159)	-0.123 (0.123)	220	0.263
Craft workers	0.058 (0.053)	0.025 (0.051)	3,964	0.254
Operators	reference group	0.008 (0.046)	1,868	0.179
Unskilled workers	0.113 *** (0.024)	0.149 *** (0.024)	10,378	0.193
Unclassified workers	-0.010 (0.236)	0.314 (0.449)	56	0.257
Demographics	Yes	Yes		
Skill level	Yes	Yes		
Skill types	Yes	Yes		
Occupation fixed effects	Yes	Yes		
Region fixed effects	Yes	Yes		
Constant	Yes	Yes		
No. of observations	29,133			
Adj. R-squared	0.504			

Notes:

1. Column (1) reproduces full-sample estimates from Table A4 column (2).
2. Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
3. Heteroskedasticity-robust standard errors are in parentheses.
4. P-values are reported below the standard errors.

**Table 14. PSM estimates of public-private wage differential,
by occupation group sub-samples**

Outcome variable ln(hourly wage)	Propensity score matching				Estimates
	Standardized bias, means	Pseudo R-sq.	No. of observations on common support		Average treatment effect on the treated (ATT)
			Treated	Untreated	
	(1)	(2)	(3)	(4)	(5)
Leaders	7.440 (5.85)	0.373	201	834	N.A.
Professionals	3.371 (3.736)	0.286	1,760	1,123	0.285 *** (0.045)
Associates	4.411 (4.155)	0.238	424	796	0.053 (0.060)
Clerks	2.293 (2.091)	0.199	789	2,103	0.082 *** (0.031)
Service workers	3.668 (3.230)	0.300	637	3,550	0.303 *** (0.044)
Agriculture workers	8.336 (24.047)	0.251	3	41	N.A.
Craft workers	3.862 (3.613)	0.090	102	3,747	0.004 (0.063)
Operators	3.739 (2.620)	0.125	149	1,681	(0.030) (0.051)
Unskilled workers	2.266 (1.659)	0.084	554	9,820	0.154 *** (0.026)
Unclassified workers	N.A.				N.A.

Notes:

- Column (1) indicates match quality of propensity scores based on standardized bias.
As a rule of thumb, I did not report ATT estimates when the standardized bias is above 5% (Caliendo and Kopeinig, 2008) because ATT estimates cannot be considered valid when propensity score matching was not sufficiently achieved.
- Column (2) indicates match quality based on the Pseudo R-squared. Low values indicate good match quality.
- I used the nearest 5 neighbors with replacement for the matching algorithm.
- Treated group refers to public employees; Untreated group refers to private employees
- Statistical significance is indicated by *** ($\alpha=1\%$), ** ($\alpha=5\%$), * ($\alpha=10\%$).
- Standard errors are in parentheses.

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