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The influence of privatization on occupational wages

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Abstract

This paper uses individual worker and municipal information to examine privatization's influence on the wages of thirteen occupations. Findings reveal that the group of relatively low-skill content occupations comprising bus drivers and construction laborers receive a wage premium in the absence of privatization, and privatization is associated with an erosion of this premium. In contrast, the group of relatively high-skill content occupations comprising physicians and lawyers receive a non-trivial public sector discount in the absence of privatization and only the wage differential of physicians erodes with increased privatization. However, physician's public sector discount does not erode when estimating privatization's influence on this occupation's weekly earnings.

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1. Introduction

Contracting-out is a common privatization approach used by municipal governments to reduce the cost of providing public services. This type of privatization relies on competitive bidding by private contractors to lower the costs of providing municipal services. The source of cost-savings is derived primarily from contractors' ability to pay their workers relatively low wages (Savas, 1982). Past research that empirically examines privatization's wage effect focuses on savings associated with declining union rent for highly organized workers employed in relatively low-skill content occupations such as refuse removal and public transit transportation operatives (Hoover and Peoples, 2003; Peoples, Talley and Wang, 2008). Their findings detect lower wage levels for this group of public sector workers employed in privatized municipalities. However, wage findings on highly organized low-skill content occupations may not present a complete assessment of privatization's wage effect for the entire set of public sector occupations.

The possibility that public-private sector wage differentials vary by occupation has significant implications for privatization's potential to generate labor cost savings. However, to our knowledge empirical analysis of privatization's wage effect across a wide range of occupations does not exist. This study's contribution to the empirical analysis of privatization's ability to lower labor costs is two-fold. Public-private sector wage differentials are estimated for thirteen occupations for individuals residing in localities where municipalities do not contract-out public services. These wage estimates for non-privatized municipalities are significant because they allow examination of the type of public sector occupations that depict a potential source of labor cost savings. This study also estimates privatization's effect on the public-private sector wage differential for these same occupations. Information from the wage differential estimates is significant because it allows for observing whether privatization's wage effect is more prominent for occupations that traditionally pay higher public sector wages compared to wages paid in the private sector.

2. Public and Private Sector Wage Differentials

Past research suggests that public sector labor earnings might depict a source of cost savings because public sector wages have a tendency to surpass wages paid in the private sector (Bender, 1998). However, not all public sector occupations receive a wage premium over workers in the private sector. For instance, occupational level analysis indicates that public-private sector wage differentials vary across occupations. The pattern that emerges is a double pay imbalance where public sector employees at the low end of the wage distribution are paid more than their low end private counterparts. In contrast, public-sector employees at the high end of the wage distribution are paid less than their high end counterparts in the private sector (Bender, 2003).

Public pressure to lower taxes and increasing tax revenue demands from providing public services have contributed to policy-makers seeking to eliminate unjustifiably high operating costs. Privatization is a common policy choice for addressing public sector budget pressures. On one hand, cost savings may arise due to the enhanced competition between public and private service providers and this competition has the potential to mitigate the double pay imbalance wage pattern. On the other hand, public-private wage differentials may still persist even when municipalities privatize. Highly organized public sector workers can impose restrictions that force contract workers to adhere to public sector pay scales as a requirement for receiving a

contract award (Talley, 1998). Such action would contribute to highly organized public sector workers in low-skill content occupations maintaining wage levels above levels set in the private sector and reducing the cost advantage of contracting to private sector contractors. Private sector wage advantages for high-skill content occupations can persist even if municipalities use public sector pay scales as a benchmark to negotiate lower local labor market wages. Private sector employers may not have the latitude to lower wages of workers in high-skill content occupations if such wages are set competitively in the private market. In sum, privatization's wage effect is not obvious *a priori*, and requires empirical analysis to test whether contracting-out creates a business environment that lowers public-private sector wage differentials.

3. Data and Empirical Approach

Two data sources reporting municipality and individual worker information are used to examine privatization's influence on occupational wages. Municipality information is taken from the Bureau of Economic Analysis (BEA) 1999 Census of Government. This source includes contracting-out privatization information on public services at the township level. Township municipalities contracting-out to workers in the private sector are identified by assigning a value of one for the privatized service. Municipalities employing their own in-house employees are assigned a value of zero. This township information is used to construct an aggregate measure of privatization, such that it is identified as a weighted percentage of privatized townships within a metropolitan area.[1]

Individual worker information is taken from 1997-2002 Current Population Survey-Outgoing Rotation Group files (CPS-ORG).[2] Individual worker information is merged with the BEA file by using local residency identifiers. The CPS uses 4-digit metropolitan statistical area (msa) codes, while the BEA uses its own coding system for townships. Codes are matched using the Census Bureau's *Government Integrated Directory* to convert township BEA codes to census msa codes. Occupations with relatively large sample sizes of individuals reporting the public sector as their employing industry are selected for wage analysis. Imposing this sample selection criteria results in the compilation of information for 13 occupations.

This study estimates separate wage equations for the 13 occupational groups to examine public-private sector wage patterns. The wage equation is specified as follows:

$$\text{Ln(wage)}_j = \beta_0 + \beta_1 \mathbf{Z}_j + \beta_2 \textit{public}_j + \beta_3 \textit{privatization}_j + \beta_4 (\textit{public} \times \textit{privatization})_j + \beta_5 \textbf{\textit{time}} + \varepsilon_j \quad (1)$$

where 'j' indexes individual workers. The dependent variable is log of hourly wage imputed from an individual's weekly earnings and weekly hours worked. While using hourly wages as a dependent variable is appropriate for measuring labor earnings for most occupations examined in this study, for high-skill salaried occupations such as lawyers and physicians, the imputed hourly wage may be inaccurate due to the likely measurement error for weekly hours worked for these jobs. Hence, an additional set of labor earnings equations are estimated using the log of weekly earnings as the dependent variable for the sample of high-skilled salaried occupations. The

[1] Township population sizes are used as weights when computing this measure of privatization.

[2] 1997 and 2002 CPS information is pooled to construct a sample population that is large enough to examine wage patterns for a broad range of occupations.

variables of interest for this study are *public, privatization*, and their interaction term. The variable *public* is an individual worker's public or private employee status dummy. It takes on the value one if the individual works for the local governments, and has a value of zero if the individual works in the private sector. The variable *privatization* is a continuous variable measuring the share of townships that provide privatized municipal services. The matrix Z consists of a set of control variables identifying individual workers' profile and residency status. These explanatory variables include residency dummies for US geographic quadrants, and urban residency status. The worker profile measures are dummies depicting individual workers' marital, sex, fulltime, union, ethnicity and educational attainment status, as well as age and age squared. Last, since the data covers six years, five time dummies identifying the sample observation period are included in the matrix *time*. Its inclusion addresses the possibility of a fixed-effect for wages over time.

4. Wage Findings

Public-private sector wage differentials derived from estimating this study's wage equation are presented in Table 1.[3] The first column of this table reports the public-private sector wage differential for workers residing in non-privatized locations. This wage differential is calculated using the estimated coefficient β_2.[4] Column (2) presents the estimated coefficient β_3, which measures the change in private sector wages attributable to a one percentage point change in privatization. Last, Column (3) presents the estimated coefficient β_4, which measures privatization's additional effect on the wages of workers in the public sector.

The first set of results listed in Table 1 is those for workers providing health care services. These wage findings present evidence suggesting a double pay imbalance wage pattern for workers employed in non-privatized locations. For instance, the findings in column (1) reveal that for non-privatized localities, public sector workers employed in the high-wage high-skilled occupation of physicians receive a non-trivial hourly wage discount of 23.33 percent. In contrast, workers employed in the comparatively less high-skilled content occupation of health care technicians receive a non-trivial premium of 14.75 percent if they reside in non-privatized localities. The other non-physician occupations listed in Table 1 are also able to avoid receiving a pubic sector wage discount as their wages closely resemble wages paid in the private sector. Physicians in the private sector receive smaller premiums due to privatization as the results presented in column (3) indicate that their wage advantage declines by 0.39 percentage points for each percentage point increased in privatization. Health care technician is the only other health care occupation listed in Table 1 to experience a substantial marginal privatization effect on public sector wages. The findings in column (3) indicate that a one percentage point increase in privatization is associated with a 0.19 percentage point reduction of the public-private sector wage differential for health care technicians.

Wage results for workers providing construction services are listed as the second set of occupations in Table 1. These findings suggest that other than plumbers there is a lack of a public-private sector wage differential for construction workers. Apparently, privatization does not impose an appreciably large effect on the wages of non-laborers in construction as the wage results in columns (2) and (3) are not statistically significant for this group of workers. In

[3] Complete results including control variables are available from the authors upon request.

[4] The estimated coefficient β_2 is converted to a percentage wage differential by using the formula $(e^{\beta 2}-1)\times 100$.

contrast, findings in column (2) indicate that laborers employed in the private sector experience a 0.09 percentage point increase in wages with a one percentage point increase in privatization. Findings in column (3) reveal that privation is associated with a statistically significant erosion of laborers small public sector premium.

Wage results for workers employed in law enforcement or clerical occupations are listed as the third set of occupations. The findings for these occupations provide some evidence suggesting a double pay imbalance wage pattern for workers employed in non-privatized locations. The contents of column (1) indicate a large and statistically significant public sector wage discount of 16.34 percent for lawyers, which is a high educational requirement occupation. In contrast, the findings for the comparatively low-skill content secretary and receptionist occupations indicate a non-significant public-private employee wage differential. Findings in column (2) show that of the three occupations in this group privatization is associated with a statistically significant wage reduction for lawyers employed in the private sector. Column (3) shows that privatization reduces the public sector wage discount for lawyers and receptionist. However, the wage reduction is only significant for receptionists.

Wage results for workers providing transportation services are listed as the last set of occupations in Table 1. These findings reveal evidence that does not contradict the notion of double pay imbalance. The two occupations examined in this group are bus and truck drivers. The job responsibilities do not require substantial schooling and are hence considered low-skill content occupations. Findings in column (1) indicate a large and statistically significant public sector wage premium of 15.48 percent for bus drivers residing in non-privatized metropolitan locations. Truck drivers' wages match that of their counterparts in the private sector. The contents of column (3) show that privatization is associated with a declining public-private wage differential for bus drivers. However, this decline is not statistically significant.

Additional earnings estimates for the sample of high-skilled salaried occupations are presented in Table 2. These results report the estimated public-private sector weekly earnings differentials for workers employed as physicians or lawyers. The overall earnings differential pattern mirrors the hourly wage findings reported in Table 1. However, there are some notable differences when comparing hourly and weekly earnings results for these two occupations. For instance, findings in column 1 of Table 2 reveal a measurably larger public sector weekly earnings discount for both occupations compared to their hourly wage results. In addition, the weekly earnings results for lawyers in column (3) also differ appreciably from their hourly wage results. The weekly earnings findings in column (3) indicate that privatization's earnings effect is not statistically significant, whereas privatization's effect is significant when estimating hourly wages for lawyers.

Table 1: Public-Private Sector Wage Differentials Derived from Estimating Equation (1)

Occupation	(1)	(2)	(3)	(4).
Health Care Professions				
Physicians	-23.33%**	-0.11%***	0.39%**	89/2154
Registered nurses	1.91	0.04***	0.005	425/8347
Licensed practical nurses	-0.32	-0.28	-0.01	62/1264
Health care technicians	14.75**	0.02	-0.19**	105/2336
Construction Occupations				

Construction supervisor	2.16	0.02	-0.14	137/1727
Electricians	-0.72	0.03	0.16	72/2208
Plumbers	-15.72*	0.04	-0.05	74/1550
Construction laborer	4.35	0.09**	-0.21**	193/3455
Law and Clerical Occupations				
Lawyers	-16.34***	-0.17*	0.15	338/2856
Secretaries	-1.07	0.04**	0.04	163/2185
Receptionists	-8.99	-0.01	0.23**	57/2101
Transportation Occupations				
Bus driver	15.48*	-0.02	-0.05	307/996
Truck driver	-1.85	0.07**	-0.08	256/1821

Table 2: Public-Private Sector Earnings Differentials for High Skill Occupations

Occupation	(1)	(2)	(3)	(4).
Physicians	-28.46%***	-0.09%**	0.17%	89/2154
Lawyers	-23.85%***	-0.19%**	0.14%	338/2856

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
***Statistically significant at the 1 percent level.
Column (1) reports public-private sector wage differentials in non-privatized locations (β_2).
Column (2) reports the change in private sector wage due to a one percentage point change in privatization (β_3).
Column (3) reports privatization's additional effect on public sector wages (β_4).
Column (4) reports public/private sector sample population sizes for each occupation.

5. Conclusion

Findings from this study are interpreted as suggesting that privatization can generate direct labor cost savings when municipalities contract out services provided by low-skill content occupations comprising construction laborers and bus drivers. Large savings from lower wages for low-skill content workers, though, aren't guaranteed as public sector bus drivers are able to avoid a significant wage reduction when faced with privatization. Wage findings for high-skill content occupations comprising physicians and lawyers are interpreted as suggesting that municipalities are able to avoid high labor costs associated with a private sector wage premium when contracting-out work for services provided by highly trained workers. Last, excluding wage findings on health care technicians and plumbers, findings on the remaining occupations are interpreted as suggesting that for the majority of occupations municipalities generally pay economically justifiable wages that closely resemble wages charged in the private sector. Even the wage findings for health care technicians and plumbers suggest municipalities engaging in cost saving measures as public sector health care wage premiums decline with privatization and public sector plumber wage discounts do not change with privatization.

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