Jurisdiction Size and Director Compensation in Connecticut Local Health Departments

Nicole Lorenzo
University of Connecticut - Storrs, nicole.lorenzo@uconn.edu

Rexford E. Santerre
University of Connecticut, rsanterre@business.uconn.edu

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Abstract

Objective: To examine if the compensation of local public health directors responds to organizational size in the same manner found for other types of for-profit, not-for-profit, and public managers.

Design: Panel data ordinary least squares with fixed effects for the local health department and time period. Control variables include median household income, the unemployment rate, and the part-time versus full-time and independent versus district status of the local public health department.

Setting: Sample of Connecticut local health departments over the period from 2001 to 2011.

Main Outcome Measures: Annual wage of the local public health director and population in the jurisdiction of the local public health department.

Results: The size elasticity of local public health director equals 0.2. Full-time directors are paid more than part-time directors and directors managing district health departments are compensated more than those directing independent health departments. Directors are paid more if they manage health departments in jurisdictions with higher levels of income.

Conclusions: The findings for the size elasticity of compensation for local public health directors compares very closely to the size elasticity estimates found for other types of for-profit, not-for-profit, and public managers, perhaps suggesting that local public health directors are similarly motivated.

Cover Page Footnote

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INTRODUCTION

No study to date has examined whether the compensation of local public health (LHD) directors varies systematically with respect to organizational size, yet numerous studies have investigated the effect of organizational size on the compensation of other types of for-profit (FP), not-for-profit (NFP), and public managers. The strong relationship between firm size and managerial pay is what some economists refer to as the "best-established empirical regularity concerning executive compensation."[1] In fact, one meta-analysis evaluates the effect of firm performance and organizational size on executive compensation, and concludes that more than 40% of the variance in executive pay can be attributed to size, while less than 5% is due to performance.[2]

The key statistic for this research is the elasticity of pay with respect to organizational size, which reflects the percentage change in compensation resulting from a percentage change in organizational size. Theoretically, this statistic is greater than zero because managers are expected to be paid more when they operate larger organizations. Among the many reasons, managers face a greater scope and breadth of responsibilities in larger organizations. For example, larger organizations may produce more diverse products or cater to heterogeneous consumers. In addition, larger companies may be organized in a hierarchical fashion, which adds to the complexity of running the firm. Finally, directing large organizations may concern risk-averse managers and require a greater investment of their human capital.

Previous studies suggest that the size elasticity of compensation for chief executive officers (CEOs) in industrial firms falls within the 0.2 to 0.3 range, whereas the comparable statistic for CEOs of firms with more liquid assets, such those in the insurance, banking, or finance industry, lie within the 0.1 to 0.2 range. For managers in the public sector such as superintendents of schools, tax assessors, city managers, and tax collectors, the estimated size elasticities of managerial compensation fall within a narrower range between 0.11 and 0.18. The comparable estimates for NFP managers vary to a greater degree within a 0.1 to 0.7 range with those for hospital CEOs at the higher end.

METHODS

Based on the previous literature, the relationship between jurisdiction size and the pay of the LHD director is specified as:

$$\log(PAY)_{i,t} = \beta_0 + \beta_1\log(SIZE)_{i,t} + \beta_2 PT_{i,t} + \beta_3 DIST_{i,t} + \beta_4\log(\text{MHI})_{i,t} + \beta_5\log(U)_{i,t} \text{ (1)}$$

where PAY equals the annual compensation of the LHD directors, SIZE is measured by the population serviced by the various LHDs, PT and DIST are dummy variables reflecting whether the LHDs are organized on a part-time basis or possess district status, MHI and U stand for the median household income and unemployment rate in the area serviced by the LHDs, and the subscripts *i* and *t* represent the specific LHD and year, respectively. Note that variables capturing the personal attributes of the LHD directors would normally be specified if the data were available. Because both PAY and SIZE are expressed as logarithms, the coefficient β_1, reveals the size elasticity of compensation for LHD director compensation.

The sample includes 796 LHD observations in Connecticut over the 2001 to 2011 period for which the necessary data are available. Included in those observations are 279 part-time, 310 full-time municipal, and 207 full-time district LHD-year observations. Given the two dummy variables specified in Equation 1, it follows that the full-time municipal LHD serves as the default specification. Part-time directors obviously work less and their compensation should reflect the lower work load. Compared to full-time, independent LHDs, district LHDs work and cooperate with representatives from many different towns and cities on their board of directors, leading to additional implied responsibilities that may contribute to a higher level of compensation, ceteris paribus.

Median household income and the unemployment rate control for two important economic factors that may affect pay differentials across the various public health departments in Connecticut and over time. For example, cities with higher levels of MHI may pay their directors more because of the higher cost of living or because they value public health services more greatly. Population figures are added and data for MHI and U are averaged across towns participating in a regional district. Descriptive statistics and data sources are shown in Table 1 for all of the variables used in our analysis.

Table 1. Descriptive statistics and data sources

Variable	Mean	Standard Deviation	Minimum	Maximum	Data Source
Annual Salary ($)	61,760	40,334	600	180,139	1
Population in the Jurisdiction	46,009	39,992	1,597	166,429	1
Part-time Status	0.35	NA	0	1	1
District Status	0.6	NA	0	1	1
Median Household Income ($)	76,655	27,955	26,055	187,581	2
Unemployment Rate (%)	5.1	2.3	1	16.2	2

(1) Unpublished data, Connecticut Public Health Department
(2) Connecticut Economic Resource Center's (CERC) Town Profiles, https://www.cerc.com/TownProfiles/

RESULTS

When estimating Equation 1, standard errors are made fully robust against arbitrary heteroscedasticity and serial correlation by clustering them at the LHD level.[3] LHD- and time-fixed effects are also specified in the regression equation. The LHD-fixed effects help to control for any unmeasurable time-invariant factors affecting the compensation of the directors across the various LHDs such as housing values and citizen preferences and thereby help to reduce the bias normally associated with unobservable heterogeneity. The time-fixed effects capture changes common to all jurisdictions over time, such as general price inflation and technological change.

The equations are estimated by the ordinary least squares technique for panel data. The second column of Table 2 reports the multiple regression results. First note that over 95% of the variation in the compensation of the directors can be explained by the various right-hand side variables and the two fixed effects.

Table 2. Multiple regression results

Dependent variable: log of pay	
Independent variable	Estimated Coefficient (absolute value of t-statistic)
Constant	3.84 (1.75)
Log of population	0.21* (2.11)
Part-time LHD	-1.22** (9.73)
District LHD	0.63* (2.07)
Log of median household income	0.49** (2.88)
Log of unemployment rate	0.22** (2.65)
Adjusted R2	0.954
Observations	796

**Statistically significant at the 1 percent level
 *Statistically significant at the 5 percent level

As expected, the estimated coefficient on the part-time status variable is negative and highly significant. Its coefficient means that part-time directors are paid about 70% less than otherwise comparable full-time directors. Also as anticipated, the estimated coefficient on the full-time district director dummy variable is positive and statistically different from zero. The relatively large computed pay differential of 88% probably reflects that, in addition to workload and responsibility level, the attributes of full-time independent and district directors also typically differ. In addition, the empirical results suggest that directors are paid more in wealthier areas and where the unemployment rate is higher.

More important for the research at hand, the estimated coefficient on the log of population equals 0.21. This means that a 10% increase in jurisdiction size increases director pay by about 2%. Using sample averages, as shown in Table 1, simulations show that an increase in jurisdiction size of approximately 4600 people raises the typical director's pay by about $1200. This estimated size elasticity for LHD directors is slightly higher than the size elasticity estimates for other types of public administrators and near to the estimates found for industrial corporate CEOs.

IMPLICATIONS

The empirical analysis reveals that the pay of LHD directors responds directly to greater jurisdiction size with an elasticity of approximately 0.2. This elasticity of director pay with respect to jurisdiction size generally agrees with previous research analyzing the pay of other administrators such as superintendents of schools, tax collectors and assessors, and hospital and private industry CEOs, suggesting that local public health directors may be similarly motivated. Taken as a whole, the literature on managerial compensation may suggest that the market for managerial talent "works" at least in one respect.

Of course, the results of this paper reflect the relationship between director pay and organizational size for LHDs in one relatively affluent state. Thus, other researchers, perhaps those with data for the attributes of the LHD director and measures of director performance, are encouraged to further explore this topic.

SUMMARY BOX

What is already known about this topic? While numerous studies have investigated the effect of organizational size on the compensation of other types of for-profit, not-for-profit, and public managers, no study to date has examined if the compensation of local public health (LHD) directors varies systematically with respect to organizational size.

What is added by this report? This study finds empirically that the pay of LHD directors responds directly to greater jurisdiction size with an elasticity of approximately 0.2, meaning that a 10% larger jurisdiction pays its director about 2% more pay.

What are the implications for public health practice, policy, and research? This estimated elasticity of director pay with respect to organizations size agrees with previous research analyzing the pay of other types of managers which may suggest that local public health directors are similarly motivated and that the market for managerial talent works at least in one respect.

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