Wage Inequality and Performance in Nonprofit and For-Profit Organizations

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This article examines the effects of several forms of wage inequality on service quality and employee effort. We suggest that two popular theories, tournament and fair wage/equity, are not necessarily competing. Each theory accurately describes aspects of employee behavior, but because of sectoral differences in organizational objectives and employee attitudes, tournament theory's predictions are relatively stronger in the for-profit sector, while fair wage/equity theory's predictions are relatively stronger in the nonprofit sector. Using an employer–employee matched data set of nursing homes linked to a federal regulatory database and a resident survey, we found that ownership moderates the relationship between wage inequality and service quality. Although wage inequality positively affects service quality in the for-profit sector, the reverse is true among nonprofit organizations. We also found that overall wage inequality in the workplace has a more pronounced influence on employee discretionary effort than does the employee's place in the distribution of wages.

Keywords: *wage inequality, organizational performance, nonprofit organizations, for-profit organizations, tournament theory, fair-wage theory*

Note: We are grateful for support from Avner Ben-Ner, and from his Aspen Institute Grant NSRF 2005–1, "A Comparative Study of Organizational Structure, Behavior and Performance in For-Profit Firms, Government Organizations, and Nonprofit Organizations."

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Published online in Wiley Online Library (wileyonlinelibrary.com) DOI: 10.1002/nml.21085

DOES WITHIN-FIRM WAGE INEQUALITY affect performance? The theoretical arguments for the relationship between within-firm wage inequality and performance, drawn primarily from tournament and fair-wage theories, have been conflicting, as have been the empirical studies. Whether wage inequality is positively or negatively associated with performance depends on how inequality affects employee motivation and discretionary effort, which may depend on ownership sector (Leete 2000). Although we suggest that there may be several factors influencing the effect of wage inequality on organizational performance, we focused primarily on comparing the predictions of tournament and fair-wage theories and discuss these theories as each explains employee behavior in part. We suggest that because employees in the nonprofit sector differ from their counterparts in the for-profit sector along several dimensions (for example, intrinsic motivation, mission commitment, public service motivation, and so on), the predications from fair-wage theory are more likely to dominate the predictions from tournament theory in this sector. We tested our hypotheses using data from the nursing home industry in a midwestern state in the United States, where for-profit, nonprofit, and local government organizations operate side by side. In addition, we were able to directly test the relationship between wage inequality and employee discretionary effort, which has been tested indirectly in the past.

Whether wage inequality is positively or negatively associated with performance depends on how inequality affects employee motivation and discretionary effort, which may depend on ownership sector.

Our contributions to this literature include (1) our exploration of the factors that affect the direction of the relationship between wage inequality and firm performance, most notably ownership, (2) our consideration of both vertical and horizontal measures of wage inequality, including a measure that controls occupation, and (3) our examination of how one's place in the wage distribution is associated with choice of effort.

Theoretical Background of the Wage Inequality–Performance Relationship

There are two competing theories that have implications for the organizational performance consequences of wage inequality. The first is *tournament theory,* advanced by Lazear and Rosen (1981), which is a theory of internal labor markets in which individuals compete for prizes, usually promotions or pay increases. In this theory, an increased wage spread between employees at different levels of the hierarchy, or between the highest- and lowest-paid employees at the same level of hierarchy, will motivate workers to provide extra effort in the hope of obtaining the raise or promotion. This theory suggests that wage inequality will be positively related to individual and organizational performance.

The second theory, based on the work in equity theory (Adams 1963, 1965) in psychology, social exchange theory (Blau 1955) in

sociology, and efficiency wage theory in economics (Solow 1979), was developed into the *fair-wage theory* by Akerlof and Yellen (1990). Fair-wage theory proposes that workers compare their wages to those of their coworkers to determine whether their wages are fair, and that workers believe that a fair wage distribution is more compressed than productivity differentials. Employees who perceive that they are underpaid tend to reduce their effort and/or sabotage their employer, be absent from work, go on strike, vandalize property, or act violently (Crosby 1984), undercutting overall employee productivity. Levine (1991) added that wage inequality undermines cooperation among employees and decreases cohesiveness in teams. These factors predict a negative relationship between wage inequality and performance, but it is important to note that not all employees view compressed wage distributions as fair, nor does the theory specify the optimal level of wage compression.

We first review the literature that offers some support for tournament theory. Winter-Ebmer and Zweimüller (1999), Bingley and Eriksson (2001), and Lallemand, Plasman, and Ryex (2004), using a measure called "conditional wage inequality"—wage inequality that remains after controlling for observable differences in human capital across workers—found some positive correlations and some insignificant results between wage inequality and performance measures in the private sector. Heyman (2005) and Hunnes (2009) found a positive relationship between white collar and managerial worker wage inequality and profits per employee using both conditional and standard (unadjusted for human capital) measures of wage inequality, although in the latter study, the effect disappeared when controlling for unobserved firm heterogeneity using fixed effects.

There is also some literature on pay dispersion in corporate top management teams that supports tournament theory, although that literature is mixed. For example, Main, O'Reilly, and Wade (1993) and Eriksson (1999) found that the coefficient of variation in executive pay increased firm financial performance in for-profit firms, but Leonard (1990) failed to find such a relationship using a similar method. Siegel and Hambrick (2005) and Fredrickson, Davis-Blake, and Sanders (2010), however, found a negative relationship between the coefficient of variation and stock prices and return on assets, respectively.

Like some of the top management team studies, some other studies have supported fair-wage theory. Several studies conducted on U.S. sports teams (for example, Harder 1992; Bloom 1999; Depken 2000) found a negative relationship among wage inequality and team winning records and individual team members' performance. Other sports team studies (for example, Frick, Prinz, and Winkelmann 2003; DeBrock, Hendricks, and Koenker 2004) had mixed results, finding a negative relationship between wage inequality and performance in only some situations, such as during play-off games or in particular sports, but no relationship in other situations. Cowherd

and Levine (1992) found that the wages of regular employees relative to those of the top three management employees were negatively related to product quality. Pfeffer and Langton (1993) found that when the coefficient of variation in departmental pay was higher, academic faculty members were less likely to collaborate on research and had lower research productivity. The fair-wage theory prediction that employees will sabotage others in reaction to fairness concerns also has found support in the experimental economics literature. Falk and Fischbacher (2006) reviewed a series of controlled experiments on reciprocity and showed that individuals frequently reward others who cooperate and punish those who act unfairly, even when such rewards and punishments hurt them financially.

Factors Affecting the Direction of the Wage Inequality–Performance Relationship

Under what conditions is wage inequality positively, and under what conditions is it negatively, correlated with performance? The studies reviewed earlier that found a positive relationship between wage inequality and firm performance were in the for-profit sector and used a measure of profitability or productivity as the performance variable (for example, Winter-Ebmer and Zweimüller 1999 ; Bingley and Eriksson 2001; Lallemand et al. 2004; Heyman 2005). The study of university faculty (Pfeffer and Langton 1993), which included nonprofit and government employees, found a negative relationship between wage inequality and performance. The studies that used quality-based performance measures (for example, Bloom 1999; Cowherd and Levine 1992; Harder 1992) also found a negative relationship between wage inequality and performance.

Quality-based measures of performance are more likely to be sensitive to employee effort changes or sabotage than are more quantifiable measures of performance.

Quality-based measures of performance are more likely to be sensitive to employee effort changes or sabotage than are more quantifiable measures of performance. Employees who sabotage employers or customers, or reduce effort in response to perceived inequity as fair wage theory suggests, also do not want to get caught and face the negative consequences of their actions, so they are more likely to do something less quantifiable and hence less observable. It is therefore more likely that they will subtly damage the quality of output (or pay less attention to quality control to reduce effort) rather than harm the quantity of output. Employees also directly work with the products or perform the services, and so have much control over their outcomes; many other factors affect profits, so measures of economic performance will not be as sensitive to changes in employee motivation.

Although quality changes eventually affect the bottom line, we expected effects of wage inequality to bottom-line changes to be less obvious than quality changes, and quantity or productivity changes, because they are more obvious, to occur less frequently. Conversely, when wage inequality induces effort because of competition for

rewards, we expected employees to attempt to display their additional effort in the most measurable way possible—most likely in quantity (or productivity) changes. We therefore believe that if the performance measure used by the study is quality based, rather than productivity (quantity) or profit based, it will be more likely to find a negative relationship between wage inequality and performance.

How, then, does this theory explain the mixed outcomes in corporate top management team studies, which are all in the for-profit sector and use measurable outcomes? We believe that the extent to which employees work together increases the likelihood that they compare themselves to each other, which ignites fair-wage theory consequences if their wages are very different. Working closely together also increases employees' opportunity to sabotage each other in a tournament situation to gain the coveted prize. Shaw, Gupta, and Delery (2002) found that the relationship between wage inequality and performance depended on the interdependence of job-related tasks. Fredrickson et al. (2010) argued that the work of top management teams is highly interdependent, and this is why they expected wage inequality to negatively affect performance there. In other studies, when a positive relationship between wage inequality and performance outcomes occurred, the effects of observable outcomes in the for-profit sector (and the striving to attain these outcomes on the part of managers) may have been stronger than the teamwork component in those samples. It is also possible that in some workplace cultures, enhanced equality is not viewed as fair, and some employees would prefer more inequality because they view their contributions as worthy of higher compensation relative to other employees.

Hypotheses

We used the factors we specified that affect the direction of the wage inequality–performance relationship, except for ownership, to determine whether wage inequality should be positively or negatively related to service quality in the health services sector. We then developed hypotheses regarding ownership as a moderator of the wage inequality–performance relationship.

Since the performance measure we used is quality based, we expect fair-wage theory to be stronger than tournament theory. Also, health service jobs, particularly in nursing homes, have interdependent tasks. It usually takes more than one staff member to transport a patient or resident, and nursing staff need to cover for one another to ensure that residents are promptly cared for. In addition, the health services are less likely to pay for performance, which Shaw et al. (2002) argued makes wage inequality better accepted by employees, at least when employees believe the raises or bonuses are based on merit. We therefore expected wage inequality to be negatively related to performance in health services.

Hypothesis 1a: Within-firm wage inequality is negatively related to service quality.

Hypothesis 1b: Within-firm wage inequality is negatively related to employee effort choices.

No previous studies have considered the effect of ownership on the relationship between wage inequality and employee effort or service quality, but nonprofit, government, and for-profit organizations have different strategic objectives that could affect these relationships (Ben-Ner 2006; Steinberg 2010). Nonprofit organizations usually prioritize their customers; they do not take advantage of information asymmetries for monetary gain, as sometimes occurs in for-profit firms (Arrow 1963; Hansmann 1980; Hirth 1999). In addition, nonprofit and government objectives, such as service quality, are more difficult to quantify than the bottom-line objectives of for-profit firms (Newman and Wallender 1978), leading to less reliance on conditioning pay on performance because performance is measured less precisely. When performance-based pay or bonuses are used in these organizations, they are less likely to be seen as fair by employees because the criteria for distributing rewards is less precisely measured. However, in relatively large nonprofits (Carroll, Hughes, and Luksetich 2005) and in sectors such as fundraising, where the link between compensation and performance is more evident, performance incentives can be more commonly used (Mesch and Rooney 2008), but not to the extent to which they are used in the for-profit sector (Ben-Ner, Ren, and Paulson 2011).

Employees at nonprofit and government organizations may also have different preferences and be motivated differently than for-profit employees. Schepers et al. (2005) conducted a thorough review on motivation in for-profit and nonprofit sectors and concluded that employees of the two sectors may be conducive to different motivating factors, including preferences for working with and for people, altruism, personal growth, social contacts, opportunities to learn versus more ambition, and intrinsic rewards versus extrinsic rewards like income (203). Nonprofit organizations tend to consist of members who are intrinsically motivated to share the mission, values, and passions of the organization (Moore 2000; Rothschild and Milofsky 2006). Nonprofit managers, then, may be more likely to rely on practices that nurture employees' intrinsic motivation, such as adherence to group norms, group cohesiveness, and pride in the organization, which may mean a reliance on wage equity (Leete 2000). Managers and workers who are intrinsically motivated are attracted to nonprofit organizations because they know that their extra work will not be used to enrich someone else but will be used to further the mission of the organization (Speckbacher 2003). Nonprofit employees also tend to prefer wage compression to a greater extent than their for-profit counterparts (Leete 2000).

There is some empirical evidence to support this contention. For example, Ben-Ner et al. (2011) found that for-profit employees were more responsive to extrinsic incentives than were their nonprofit and local government counterparts. Roomkin and Weisbrod (1999) found that nonprofit organizations were less likely to use performance-based bonuses, and the nonprofits that did use bonuses used nonfinancial performance criteria to determine their allocation. In addition, Mirvis and Hackett (1983) found that nonprofit employees were more likely than their for-profit counterparts to view their work as more important than the money that they earn.

Hypothesis 2a: The relationship between wage inequality and service quality is positive in for-profit firms, but negative in nonprofit organizations.

Hypothesis 2b: The relationship between wage inequality and employee effort is positive in for-profit firms, but negative in nonprofit organizations.

Fair-wage theory suggests although one could be angry because one believes that the wage distribution is unfair, being personally underpaid causes greater anger.

There is a second differential prediction between tournament and fair-wage theories. Fair-wage theory suggests although one could be angry because one believes that the wage distribution is unfair, being personally underpaid causes greater anger. The performance detriment at the organizational level is primarily due to relatively underpaid employees reducing their effort or in some other way harming their employers. This could be true even in nonprofit organizations, where employees' dissatisfaction with compensation may erode their commitment to organizational mission (Brown and Yoshioka 2003). People who are relatively overpaid, instead of supplying extra effort to make up for the discrepancy, as equity theory would suggest, are more likely to change their perceptions by overstating their contributions to the organization and rationalize that they are worth the extra pay. In fact, Lawler (1981) found that only 2 percent of people consider themselves to be overpaid, so the net effect of inequality remains performance detriment. Tournament theory, however, suggests that wage inequality causes all people to compete for prizes, so underpaid employees should be no more likely than other employees to change their efforts in response to differential wages if the employees believe that additional effort will yield higher pay.

Hypothesis 3: A person's position within the wage distribution influences his or her effort choices.

Methodology

Using a unique employer–employee matched data set of nursing homes linked to a federal regulatory database and a resident survey, we were able to examine the hypothesized relationships among

wage inequality, service quality, and employee work effort. We were also able to show the moderating effect of organizational ownership on these relationships.

Data

Our data came from four sources. The first source was wage percentile data by nursing home from the Minnesota Department of Employment and Economic Development (DEED), obtained from the official records of employee wages used by the agency to calculate unemployment insurance. For privacy reasons, the state agency omitted organizations with fewer than ten employees and gave us wage data for the 20th, 50th, and 80th percentiles only.

The second data source was resident survey data from the Minnesota Departments of Health and of Human Services, collected as a regulatory requirement at each nursing home in the state. It was collected by state agency employees during their surprise annual regulatory audit. We used the overall score, which measured residents' quality of life (for more information, see Minnesota Departments of Health and Human Services 2007).

The third data set, the Online Survey, Certification and Reporting (OSCAR) database, administered by federal Centers for Medicare and Medicaid Services, was used for ownership and organizational characteristics. These federal regulatory data were obtained for all nursing homes that accept funding from Medicare or Medicaid.

The fourth data source was an employer–employee matched survey of nursing homes we conducted in late 2005 to 2006. The employer survey was filled out by the nursing home's highest executive and contains information about the wages of three major types of nursing occupations in the nursing homes: registered nurses (RNs), licensed practical nurses (LPNs), and certified nursing assistants (CNAs). The survey was sent out to all 409 nursing homes in Minnesota, with 121 responses. The employee survey was conducted in 2006 in one-third of the nursing homes where the administrators had completed the survey. It was administered to all employees working on a random day.

Because the nursing homes at which employee-level data were collected were not selected at random, we used standard and nonparametric hypothesis testing to determine whether the subsample of organizations at which we obtained employee data were representative of the larger group of nursing homes. Using nonparametric Mann-Whitney (MW) tests, we found no statistically significant differences between the sample of nursing homes who conducted the employee surveys and those who were invited to complete the surveys on the following characteristics: number of residents ($z = 1.54$, $p = 0.12$), percentage of funding from Medicare ($z = -0.07$, $p = 0.95$) and Medicaid ($z = -1.57$, $p = 0.12$), chain status ($z = 1.17$, $p = 0.24$), case mix ($z = 0.39$, $p = 0.69$), government ownership ($z = -0.34$, $p = 0.74$), or for-profit ownership ($z = 0.55$, $p = 0.58$). Nursing homes that were part

of a hospital ($z = 1.76$, $p = 0.08$) were underrepresented in our employee survey sample. We also conducted MW tests comparing nursing homes that filled out our administrator surveys with the population of nursing homes in the state on the variables for which statewide data were available, and found that the sample represented the population in the following dimensions: number of residents ($z = 0.97$, $p = 0.33$), chain status ($z = 0.92$, $p = 0.36$), case mix ($z = 1.00$, $p = 0.32$), government ownership ($z = -0.34$, $p = 0.74$), and location within a hospital ($z = 0.14$, $p = 0.89$). For-profit nursing homes were underrepresented in this sample ($z = 2.38$, $p < 0.05$). Parametric t-tests yielded the same conclusions.

The focus on a single industry in a single state allowed for the isolation of the effects of inequality that are related to ownership status because industry and regulatory environment are controlled. Unfortunately, this choice may limit the generalizability of our findings to other contexts, but we believed that the ability to detect ownership differences among organizations that compete in the same markets for residents and employees was necessary to test our hypotheses.

Measures

To test our hypotheses, we used two dependent variables, one to measure service quality and one to measure employee effort. The first dependent variable was the residents' *quality of life* in each nursing home, measured by aggregating fifty-one questions regarding the respondent's comfort, environmental adaptations, privacy, dignity, meaningful activity, food enjoyment, autonomy, individuality, security, relationships, and satisfaction. Sample items are "Are you treated with respect here?," "Do you enjoy the activities here?," and "Are you ever in pain because you are left in the same position for too long?" The interviewer recorded the resident's response as "Generally yes," "Generally no," or "Don't know/Refused." Higher values indicate a higher quality of life. The second dependent variable, *employee discretionary effort*, was constructed by the employee survey question "Have you done more work than required?" with response categories ranging from 1 ("Never") to 5 ("Very often").

The first measure of wage inequality we used was the ratio of the 80th to the 20th percentile of wages in the nursing home (*the 80th/20th wage differential or global inequality*) as a measure of within-firm unconditional wage inequality. The second measure of wage inequality was the *RN/CNA wage differential,* which is the ratio of the wages of registered nurses to certified nursing assistants obtained from the employer survey. In regressions predicting employee effort, we also used horizontal measures of wage inequality. The third measure, *conditional wage inequality* (the standard error of a regression in each nursing home controlling for education,

tenure, and experience), considered the wage inequality in the nursing home remaining after observable human capital differences were controlled. The fourth measure, *residual of the wage regression* (the employee's specific residual in a fixed effects regression controlling for observable human capital and age), measured an employee's wage relative to the wages of others with the same measurable human capital characteristics in the same firm.

Control variables for the regressions predicting resident quality of life from the OSCAR data set were *nursing hours per resident (RNs and LPNs), CNA hours per resident*, and *case mix* (the intensity of care and services provided to residents in each nursing home). We also controlled for *market competition* (the number of nursing homes within a 60-mile radius of the focal home, which was constructed from zip code data) and *merit pay* (a weighted average of whether various nursing employees, who made up about half of the nursing home's employees, received pay raises on the basis of merit, taken from the employer survey).

Control variables for the regressions predicting employee effort were all from the employee survey and measured on five-point Likert scales. *Interdependence of work* was measured by the item "To what extent is the completion of your tasks dependent on the work of coworkers?" *Monitoring by supervisors* was a four-item scale (alpha = 0.71) considering the extent to which an employee's work was monitored by their supervisor. An example item is "To what extent are supervisors able to tell how well you carry out your tasks?" *Observe coworker performance* was a three-item scale (alpha = 0.86) that measured the extent to which an employee was able to tell how well coworkers carried out their tasks or whether coworkers avoided duties. *Supervisor* was a dummy variable that was equal to 1 when the employee supervised other employees.

Results

Table 1a and 1b present descriptive statistics of variables, Pearson correlations, means, and standard deviations at the organization and employee levels, respectively. At first glance, resident quality of life does not appear to be related to either organization-level measure of wage inequality (the ratio of the 80th to the 20th percentile of wages in nursing homes or the ratio of RN to CNA pay). Table 1b suggests that our individual measures of wage inequality (conditional wage inequality) and our organizational measures of wage inequality (80th to 20th percentile ratio, ratio of RN to CNA pay) are similarly not related to employee discretionary effort. The lack of the significant finding could signify that wage inequality did not affect service quality or individual effort, but it could also mean that the relationship is not simple—an important moderator variable may exist.

Table 1a. Pearson Correlations, Means, and Standard Deviations for Organizational Level of Analysis

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. Resident quality of life	10.759	0.241	1									
2. 80th/20th wage differential	1.793	0.558	0.024	1								
			(0.853)									
3. RN/CNA wage differential	2.012	0.266	−0.029	−0.136	1							
			(0.785)	(0.252)								
4. Nonprofit ownership	0.597	0.493	0.244	−0.265	−0.010	1						
			(0.016)	(0.017)	(0.915)							
5. Government ownership	0.176	0.383	−0.208	−0.159	0.061	−0.563	1					
			(0.040)	(0.157)	(0.529)	(0.000)						
6. Merit pay for nursing staff	0.280	0.435	0.139	0.090	0.202	−0.139	0.038	1				
			(0.173)	(0.423)	(0.036)	(0.132)	(0.683)					
7. Nurse hours per resident	1.308	0.574	0.004	0.268	−0.078	0.102	−0.096	−0.021	1			
			(0.967)	(0.024)	(0.448)	(0.300)	(0.332)	(0.833)				
8. CNA hours per resident	2.266	0.389	0.100	−0.048	0.169	−0.025	−0.008	0.004	−0.178	1		
			(0.340)	(0.692)	(0.099)	(0.800)	(0.933)	(0.967)	(0.069)			
9. Case mix Index	1.001	0.090	−0.071	0.430	−0.339	0.037	0.027	0.012	0.234	0.270	1	
			(0.487)	(0.000)	(0.001)	(0.716)	(0.795)	(0.903)	(0.023)	(0.009)		
10. Market competition	21.807	14.807	0.223	0.129	0.189	0.015	−0.152	−0.009	0.181	0.009	0.095	1
			(0.028)	(0.251)	(0.051)	(0.873)	(0.098)	(0.923)	(0.065)	(0.926)	(0.348)	

Note: *p*-values for statistical significance of Pearson correlations in parentheses.

Table 1b. Pearson Correlations, Means, and Standard Deviations for Employee Level of Analysis

	M	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
1. Discretionary effort	3.968	0.883	1										
2. Place in the wage distribution	2.563	0.262	0.156	1									
			(0.000)										
3. 80th/20th percentile of wages	1.643	0.219	0.032	0.040	1								
			(0.380)	(0.305)									
4. Conditional inequality	0.273	0.146	0.040	0.061	0.169	1							
			(0.196)	(0.054)	(0.000)								
5. RN average wages/ CNA average wages	2.016	0.248	0.003	−0.029	−0.123	−0.308	1						
			(0.920)	(0.362)	(0.004)	(0.000)							
6. Nonprofit ownership	0.693	0.461	0.046	0.024	0.087	0.384	−0.057	1					
			(0.115)	0.447	(0.011)	(0.000)	(0.048)						
7. Government ownership	0.152	0.359	−0.031	0.020	−0.147	−0.274	−0.045	−0.636	1				
			(0.295)	(0.512)	(0.000)	(0.000)	(0.118)	(0.000)					
8. Monitoring by supervisors	3.302	0.766	−0.011	0.004	0.054	−0.014	0.0135	−0.001	−0.040	1			
			(0.707)	(0.907)	(0.133)	(0.642)	(0.651)	(0.976)	(0.172)				
9. Observe coworkers' performance	3.786	0.791	0.180	0.0135	0.001	−0.021	−0.007	−0.007	−0.019	0.370	1		
			(0.000)	(0.666)	(0.970)	(0.494)	(0.814)	(0.815)	(0.510)	(0.000)			
10. Merit pay	0.236	0.413	−0.069	−0.048	−0.113	−0.015	0.234	−0.065	0.166	−0.003	0.021	1	
			(0.018)	(0.123)	(0.001)	(0.624)	(0.000)	(0.020)	(0.000)	(0.907)	(0.483)		
11. Interdependent work	3.541	1.047	0.146	0.120	−0.014	−0.040	−0.057	0.036	0.0325	0.212	0.299	0.004	1
			(0.000)	(0.001)	(0.704)	(0.206)	(0.060)	(0.224)	(0.269)	(0.000)	(0.000)	(0.893)	

Note: "Place in the wage distribution" is the residual on a fixed effects regression predicting the natural log of the employees wage, controlling for human capital (education, experience, occupation, and tenure). "Conditional inequality" is the residual of an organization-specific regression predicting the natural log of the employee's wage, controlling for human capital. *p*-values for the statistical significance of the Pearson correlations are in parentheses.

Table 2 contains the regression results predicting resident quality of life, using ordinary least squares (OLS). The 80th/20th wage differential was positively related to resident quality of life (Model 1, $p < 0.05$). We had anticipated in hypothesis 1a that this relationship would be negative because we used a quality-based rather than a quantity-based measure of performance. The RN/CNA wage differential was not a significant predictor of resident quality of life, though the sign was consistent with our hypotheses (Models 3 and 4). More interesting, the sign on the coefficient of the 80th/20th wage differential of the nonprofit subsample regression was negative and opposite to that of the full-sample regression (Model 2, $p < 0.05$), supporting hypothesis 2a. In addition, when an interaction term of wage inequality with nonprofit status was added to the full-sample regression, it was significant (Model 5, $p < 0.01$).

Table 3 reports the second set of regression results predicting employee discretionary effort, using random coefficient modeling, a statistical technique that controls for the nesting of individuals within organizations (Rabe-Hesketh and Skrondal 2005). Model 1 shows the impact of the individual's place within the wage distribution, controlling for his or her human capital, on his or her effort choices, but failed to reach significance. In Model 2, neither the coefficient of individual's place within the wage distribution nor 80th/20th wage differential was statistically significant. Hypothesis 1b, that wage inequality will be negatively related to employee effort, and hypothesis 3, that the individual's place within the wage distribution will affect their effort choices, did not find support in our data.

The positive relationship between wage inequality and resident quality of life in for-profit nursing homes (as shown in Table 2) might be due to wage inequality that causes for-profit employees to work harder. To the contrary, in Model 3 of Table 3 we saw a statistically significant moderation of ownership such that employees in for-profit organizations put less discretionary effort into their jobs when wage inequality is higher ($p < 0.10$ when comparing nonprofit and for-profit homes, and $p < 0.05$ when comparing government and for-profit homes). We must keep in mind that our measure was for discretionary effort, not in-role performance. We do not know how in-role performance is affected by wage inequality in the for-profit sector, which would be a good topic for future research.

We estimated conditional wage inequality, or inequality remaining after controlling for human capital, for thirty organizations (organizations with twelve or fewer employee surveys were excluded). Conditional inequality is quite different from the 80th/20th wage differential, in that we considered inequality among similar employees rather than among employees who do substantially different tasks and have different skills. However, Model 4 essentially showed no effect of this variable on employee discretionary effort, failing again to support hypothesis 1b.

Table 2. Effect of Wage Inequality on Resident Quality of Life (OLS)

	Resident Quality of Life				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Full Sample	*Nonprofit*	*Full Sample*	*Nonprofit*	*Full Sample*
Wage Inequality Variables					
80th/20th wage differential	0.139**	−0.529**			0.177***
	(0.061)	(0.236)			(0.061)
RN/CNA wage differential			−0.169	−0.143	
			(0.122)	(0.149)	
Ownership Variables					
Nonprofit ownership	0.173**		0.132*		0.114
	(0.077)		(0.069)		(0.075)
Government ownership	0.155		−0.032		−0.513
	(0.103)		(0.083)		(0.885)
Interaction of Wage Inequality and Ownership					
Nonprofit * 80th/20th wage differential					−0.649***
					(0.222)
Government * 80th/20th wage differential					0.454
					(0.566)
Control Variables					
Merit pay	0.038	0.037	0.114*	0.074	0.029
	(0.065)	(0.081)	(0.060)	(0.079)	(0.061)
RN and LPN hours per resident	−0.069	−0.076	0.003	0.025	0.002
	(0.107)	(0.125)	(0.100)	(0.117)	(0.104)
CNA hours per resident	0.216**	0.268**	0.150**	0.239**	0.227***
	(0.083)	(0.253)	(0.075)	(0.102)	(0.076)
Case mix	−0.930**	−0.972**	0.450	−0.445	−1.028***
	(0.378)	(0.439)	(0.335)	(0.440)	(0.362)
Market competition	0.004**	0.007***	0.005**	0.006**	0.007***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Constant	**10.827*** **	**11.817*** **	**11.013*** **	**10.839*** **	**10.696*** **
	(0.358)	(0.607)	(0.426)	(0.586)	(0.339)
N	63	42	86	53	63
Adjusted R^2	0.137	0.209	0.134	0.079	0.249
F	2.31**	2.91**	2.67**	1.74	3.06***
Prob(F)	(0.03)	(0.02)	(0.01)	(0.13)	(0.00)

Note: *, **, and *** indicate significance at the two-tailed 0.10, 0.05, and 0.01 levels, respectively. Standard errors are in parentheses.

Table 3. Effect of Wage Inequality on Employee Discretionary Effort (Random Intercepts)

	Employee Discretional Effort				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Full Sample	*Full Sample*	*Full Sample*	*Full Sample*	*Nursing Staff*
Wage Inequality Variables					
Place in wage distribution	0.319	0.369	0.344	0.278	0.155
	(0.305)	(0.322)	(0.320)	(0.302)	(0.350)
80th/20th percentile of wages		0.171	–1.597**		
		(0.333)	(0.617)		
Conditional inequality				0.048	
				(0.257)	
RN/CNA wage differential					0.311
					(0.177)
Ownership Variables					
Nonprofit ownership	0.0394	0.0809	−2.464*	0.12	0.0684
	(0.099)	(0.108)	(1.136)	(0.112)	(0.117)
Government ownership	(0.055)	(0.161)	−5.145**	0.039	(0.073)
	(0.127)	(0.164)	(1.599)	(0.136)	(0.149)
Interaction of Wage Inequality and Ownership					
Nonprofit * 80th/20th wage differential			1.598*		
			(0.707)		
Government * 80th/20th wage differential			3.179**		
			(1.017)		
Control Variables					
Monitoring by supervisors	−0.0997**	(0.076)	(0.079)	−0.120**	−0.178**
	(0.039)	(0.047)	(0.046)	(0.039)	(0.059)
Observe coworker performance	0.187***	0.217***	0.217***	0.191***	0.104
	(0.038)	(0.045)	(0.045)	(0.038)	(0.059)
Merit pay in organization	(0.138)	(0.141)	(0.081)	−0.217*	−0.230*
	(0.086)	(0.103)	(0.095)	(0.089)	(0.103)
Interdependent work	0.0741**	0.041	0.048	0.0718*	0.136**
	(0.028)	(0.034)	(0.033)	(0.029)	(0.044)
Supervisor	0.064	0.099	0.103	0.087	0.023

(*Continued*)

Table 3. (Continued)

	Employee Discretional Effort				
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
	Full Sample	*Full Sample*	*Full Sample*	*Full Sample*	*Nursing Staff*
	(0.074)	(0.092)	(0.091)	(0.074)	(0.161)
Constant	**2.470****	**2.492***	**4.791*****	**2.557*****	**2.514***
	(0.782)	(0.985)	(1.287)	(0.776)	(1.054)
N	1,001	642	642	947	497
Chi^2	106.21	84.98	97.67	110.13	37.66
Prob > Chi^2	0.000	0.000	0.000	0.000	0.002
Log Likelihood	−1238	−782	−778	−1154	−631
Interclass Correlation	0.975	0.978	0.991	0.977	0.995

Note: *, **, and *** indicate significance at the two-tailed 0.10, 0.05, and 0.01 levels, respectively. Standard errors are in parentheses. Education, occupation, and experience were controlled in all regressions. Stata's multilevel (xtmixed) function was used, with random intercepts and maximum likelihood estimation. Regressions were also run testing for ownership moderation with conditional inequality and the RN/CNA wage differential, but these results were not significant and are not reported.

In Model 5, we conducted one last test of vertical wage inequality, the wage differential between RNs, the highest-paid nurses, and CNAs, the lowest-paid nursing staff, constructed in the same manner as in Avent-Holt and Tomaskovic-Devey (2010). This test was limited to the nursing employees because the differential should affect them only, resulting in a reduced sample size. We again found no support for hypothesis 1b, which stated that wage inequality would be negatively related to employee effort. The moderation effect of ownership (not shown) failed to reach significance but showed the same pattern. We therefore found no support for hypothesis 2b, which suggested that wage inequality would be negatively related to employee effort in the nonprofit sector and positively related to employee effort in the for-profit sector.

Discussion

Our first set of results suggested that ownership moderates the relationship between the 80th/20th wage differential and service quality such that the relationship is negative in nonprofit organizations and positive in for-profit firms, supporting our hypothesis 2a. Our results also suggested that the performance outcome measure might not matter as much as ownership; patterns we identified in the results of previous studies led us to believe that we would find an overall negative relationship between wage inequality and quality of care in the nursing home industry. It is possible that wage compression is not seen as fair by most employees, and employees therefore did not increase effort or reduce sabotage in response to

wage compression. We suggest that future research consider directly employee attitudes toward the distribution of wages in their organizations to determine what a fair distribution looks like.

The second set of results raised several important issues. First, the result that employees in for-profit organizations put less discretionary effort into their jobs when wage inequality is higher was not expected; we hypothesized that for-profit employees compete for higher-level jobs by increasing their effort. This might occur in other industries, but perhaps educational barriers to promotion prevented this from occurring in this occupation. Alternatively, for-profit firms with high wage inequality were lowering the wages of their low-skilled employees relative to the market and attracting lower-quality employees who did not supply extra effort. However, this explanation is not consistent with the result that wage inequality makes the residents happier in for-profit firms. An alternative explanation is that organizations with more inequality are raising the wages of their high-skilled employees relative to the market, and these high-skilled employees have a greater relative impact on resident well-being.

Second, our results showed that the relationship between wage inequality and discretionary effort is null in the nonprofit sector, possibly because employees are relatively more intrinsically motivated and hence less likely to think about comparing wages (Leete 2000). However, wage inequality does decrease resident well-being in this sector. Perhaps reducing the pay of those higher-paid staff in nonprofit organizations increases resident well-being, because these dollars may be used to improve activities or food or some other items that affect resident well-being. This may not occur in for-profit organizations because the salary dollars saved could benefit owners instead of residents. Since nonprofit employees are more likely to be intrinsically motivated, they may provide the same level of effort regardless of salary. Alternatively, it could mean that in some organizations, high-level employees in nonprofits increase their own salaries to the detriment of residents, and resident quality of life is better when high-level employees have lower wages. This is because nonprofit managers have more decision-making discretion than their for-profit counterparts, which may be used to raise their own salaries at the expense of the residents (Pauly and Redisch 1973; Glaeser 2003). Managers who choose not to inflate their wages, or who are constrained to a greater extent by their boards of directors, spend the money saved on resident well-being initiatives. It is important to note that government workers, which theory suggests should be similar to nonprofit organizations (Francois 2000; Lipsky 1980; Prendergast 2007; Rainey and Steinbauer 1999), also have a significant moderator for employee effort, but not for resident quality of life.

Third, using conditional wage inequality variable for a subset of the data, we were able to test the impact of inequality among similar employees. In this setting, if tournaments are used, they are for within-position raises. Neither the main effects nor the moderating

effects are significant, so we have no evidence that tournaments affect discretionary effort. This increases the likelihood that in this industry, the dynamics underlying the results discussed are related to the impact of the compensation of different groups of employees and how that affects resident quality of life rather than the psychological impact of anger or sabotage because of wage inequality, which should be more apparent in regressions comparing one to similar others.

Fourth, the result of null effect of individual's place within the wage distribution on discretionary effort choices, controlling for human capital, was not supportive of fair-wage theory, which suggests that individuals who are paid less relative to their observable qualifications would be more likely to withhold effort than individuals who are paid more relative to their observable qualifications. We conducted a correlation test to see whether employees with wages above the 75th percentile or below the 25th percentile supplied more or less effort than other employees. We found that being above the 75th wage percentile did not affect effort decisions, but being below the 25th percentile did. It may be that the relationship exists only for those at the very bottom of the wage distribution, because they may be the only "angry" employees withholding effort, and the effect is too weak to pick up when all employees are included in the regression.

Tournament theory dominates fair-wage theory in the for-profit sector, but the reverse is true in the nonprofit sector, at least with respect to service quality.

Last, it surprised us that the correlation between one's place in the wage distribution and one's effort wasn't higher. It may be that most employees do not know each other's wages and thus cannot change their effort in response to their relative wages. On average, employees in this sample reported that they had a "rough guess" about the wages of their coworkers; possibly their "guesses" are not very accurate.

Conclusion

We believe that both fair-wage and tournament theories have merit, but because they drive behavior in opposite directions, observed results in empirical studies are often small. Whether fair-wage theory dominates tournament theory or vice versa depends on several factors, and the principal finding in this study was that organizational ownership is one of them. Our findings suggested that tournament theory dominates fair-wage theory in the for-profit sector, but the reverse is true in the nonprofit sector, at least with respect to service quality. This may be because for-profit and nonprofit employers have different management objectives and therefore select and reward employees differently (Ben-Ner et al. 2011).

Our findings with respect to employee effort choices were more complicated and cast doubt on the ability of either theory to adequately explain what happens in nonprofit organizations. It may be

that neither tournament nor fair-wage theory is responsible for the overall pattern of our results; it may be the result of recruiting patterns. Our results, when viewed together with Ben-Ner et al.'s (2011) result that nonprofit wages were relatively more compressed than for-profit wages, are consistent with the contention that nonprofit nurses (but not nursing assistants, who are paid more than their for-profit counterparts) effectively "donate" a portion of their salaries to the nonprofit, and these extra dollars enhance resident care (Preston 1989). Although this explanation is consistent with our results, other explanations may explain them as well. We therefore encourage more research on why compressed wages lead to better service quality in nonprofit organizations.

We also found that overall wage inequality seems to be a better predictor of employee effort than one's place within the wage distribution, which fails to support the contention in fair wage theory that employees who have below-average wages given their observable human capital withhold effort. This result could be specific to the nursing home industry, where withholding effort may result in outcomes that are unpalatable to employees (the poor treatment of vulnerable adults). Further research should therefore examine this contention in other industries. In addition, we suggest future research directly test employee attitudes toward wage inequality across sectors, and use larger samples to reexamine the moderation of ownership of the wage inequality–employee effort relationship.

References

Adams, J. S. 1963. "Toward an Understanding of Inequity." *Journal of Abnormal and Social Psychology* 67 (5): 422–36.

———. 1965. "Inequity in Social Exchange." In *Advances in Experimental Social Psychology,* edited by L. Berkowitz. New York: Academic Press.

Akerlof, G. A., and J. L. Yellen. 1990. "The Fair-Wage Hypothesis and Unemployment." *Quarterly Journal of Economics* 105 (2): 255–83.

Arrow, K. J. 1963. "Uncertainty and the Welfare Economics of Medical Care." *American Economic Review* 53 (5): 941–73.

Avent-Holt, D., and D. Tomaskovic-Devey. 2010. "The Relational Basis of Inequality: Generic and Contingent Wage Distribution Processes." *Work and Occupations* 37 (2): 162–93.

Ben-Ner, A. 2006. "For-Profit, State and Nonprofit: How to Cut the Pie Among the Three Sectors." In *Advancing Public Goods*, edited by J. Touffut. Cheltenham, UK, and Northampton, MA: Edward Elgar.

Ben-Ner, A., T. Ren, and D. F. Paulson. 2011. "A Sectoral Comparison of Wage Levels and Wage Inequality in Human Services Industries." *Nonprofit and Voluntary Sector Quarterly* 40 (4): 608–33.

Bingley, P., and T. Eriksson. 2001. "Pay Spread and Skewness, Employee Effort and Firm Productivity." Working Paper 01–2, Department of Economics, Aarhus School of Business, Aarhus.

Blau, P. M. 1955. *The Dynamics of Bureaucracy: A Study of Interpersonal Relations in Two Government Agencies.* Chicago: University of Chicago Press.

Bloom, M. 1999. "The Performance Effects of Pay Dispersion on Individuals and Organizations." *Academy of Management Journal* 42 (1): 24–40.

Brown, W. A., and C. F. Yoshioka. 2003. "Mission Attachment and Satisfaction as Factors in Employee Retention." *Nonprofit Management and Leadership* 14 (1): 5–18.

Carroll, T., P. Hughes, and W. Luksetich. 2005. "Managers of Nonprofit Organizations Are Rewarded for Performance." *Nonprofit Management and Leadership* 16 (1): 19–41.

Cowherd, D. M., and D. I. Levine. 1992. "Product Quality and Pay Equity between Lower-Level Employees and Top Management: An Investigation of Distributive Justice Theory." *Administrative Science Quarterly* 37 (2): 302–20.

Crosby, F. "Relative Deprivation in Organizational Settings." 1984. In *Research in Organizational Behavior,* edited by B. M. Staw and L. L. Cummings. No. 6. Greenwich, CT: JAI Press.

DeBrock, L., W. Hendricks, and R. Koenker. 2004. "Pay and Performance: The Impact of Salary Distribution on Firm-Level Outcomes in Baseball." *Journal of Sports Economics* 5 (3): 243–61.

Depken, C. A. 2000. "Wage Disparity and Team Productivity: Evidence from Major League Baseball." *Economic Letters* 67 (1): 87–92.

Eriksson, T. 1999. "Executive Compensation and Tournament Theory: Empirical Tests on Danish Data." *Journal of Labor Economics* 17 (2): 262–80.

Falk, A., and U. Fischbacher. 2006. "A Theory of Reciprocity." *Games and Economic Behavior* 54 (2): 293–315.

Francois, P. 2000. "'Public Service Motivation' as an Argument for Government Provision." *Journal of Public Economics* 78 (3): 275–99.

Hunnes, A. 2009. "Internal Wage Dispersion and Firm Performance: White-Collar Evidence." *International Journal of Manpower* 30 (8): 776–96.

Fredrickson, J. W., A. Davis-Blake, and G. Sanders. 2010. "Sharing the Wealth: Social Comparisons and Pay Dispersion in the CEO's Top Team." *Strategic Management Journal* 31 (10): 1031–53.

Frick, B., J. Prinz, and K. Winkelmann. 2003. "Pay Inequities and Team Performance: Empirical Evidence from the North American Major Leagues." *International Journal of Manpower* 24 (4): 472–88.

Glaeser, E. L. 2003. "Introduction." In *The Governance of Not-for-Profit Organizations,* edited by E. L. Glaeser. Chicago: University of Chicago Press.

Hansmann, H. B. 1980. "The Role of Nonprofit Enterprise." *Yale Law Journal* 89 (5): 835–91.

Harder, J. W. 1992. "Play for Pay: Effects of Inequality in a Pay-For-Performance Context." *Administrative Science Quarterly* 37 (2): 321–35.

Heyman, F. 2005. "Pay Inequality and Firm Performance: Evidence from Matched Employer-Employee Data." *Applied Economics* 37 (11): 1313–27.

Hirth, R. A. 1999. "Consumer Information and Competition between Nonprofit and For-Profit Nursing Homes." *Journal of Health Economics* 18 (2): 219–40.

Hunnes, A. 2009. "Internal Wage Dispersion and Firm Performance: White-Collar Evidence." *International Journal of Manpower* 30 (8): 776-96.

Lallemand, T., R. Plasman, and F. Ryex. 2004. "Intra-firm Wage Dispersion and Firm Performance: Evidence from Linked Employer-Employee Data." *Kyklos* 57 (4): 533–58.

Lawler, E. P. 1981. *Pay and Organizational Development*. Reading, MA: Addison-Wesley.

Lazear, E. P., and S. R. Rosen. 1981. "Rank-Order Tournaments as Optimum Labor Contracts." *Journal of Political Economy* 89 (5): 841–64.

Leonard, J. S. 1990. "Executive Pay and Firm Performance." Special issue, *Industrial and Labor Relations Review* 43: 135–295.

Leete, L. 2000. "Wage Equity and Employee Motivation in Nonprofit and For-Profit Organizations." *Journal of Economic Behavior and Organization* 43 (4): 423–66.

Levine, D. 1991. "Cohesiveness, Productivity, and Wage Dispersion." *Journal of Economic Behavior and Organization* 15 (2): 237–55.

Lipsky, M. 1980. *Street-Level Bureaucracy*. New York: Russell Sage Foundation.

Main, B. G., C. A. O'Reilly, and J. Wade. 1993. "Top Executive Pay: Tournament or Teamwork?" *Journal of Labor Economics* 11 (4): 606–28.

Mesch, D. J., and P. M. Rooney. 2008. "Determinants of Compensation a Study of Pay, Performance, and Gender Differences for Fundraising Professionals." *Nonprofit Management and Leadership* 18 (4): 435–63.

Minnesota Departments of Health and Human Services. 2007. "Technical User Guide: Minnesota Nursing Facility Report Card." http://www.health.state.mn.us/nhreportcard/technicaluserguide.pdf.

Mirvis, P. H., and E. J. Hackett. 1983. "Work and Work Force Characteristics in the Nonprofit Sector." *Monthly Labor Review* (April): 3–12.

Moore, M. H. 2000. "Managing for Value: Organizational Strategy in For-profit, Nonprofit, and Governmental Organizations," supplement 1. *Nonprofit and Voluntary Sector Quarterly* 29: 183–204.

Newman, W., and H. Wallender. 1978. "Managing Not-for-Profit Enterprises." *Academy of Management Review* 3 (1): 24–31.

Pauly, M. V., and M. Redisch. 1973. "The Not-for-Profit Hospital as a Physicians' Cooperative." *American Economic Review* 63 (1): 87–99.

Pfeffer, J., and N. Langton. 1993. "The Effect of Wage Dispersion on Satisfaction, Productivity, and Working Collaboratively: Evidence form College and University Faculty." *Administrative Science Quarterly* 38 (3): 382–407.

Prendergast, C. 2007. "The Motivation and Bias of Bureaucrats." *American Economic Review* 97 (1): 180–96.

Preston, A. E. 1989. "The Nonprofit Worker in a For-Profit World." *Journal of Labor Economics* 7 (4): 438–63.

Rabe-Hesketh, S., and A. Skrondal. 2005. *Multilevel and Longitudinal Modeling Using STATA.* College Station, TX: STATA Press.

Rainey, H. G., and P. Steinbauer. 1999. "Galloping Elephants: Developing Elements of a Theory of Effective Government Organizations." *Journal of Public Administration Research and Theory* 9 (1): 1–32.

Roomkin, M. J., and B. A. Weisbrod. 1999. "Managerial Compensation and Incentives in For-Profit and Nonprofit Hospitals." *Journal of Law, Economics and Organization* 15 (3): 750–81.

Rothschild, J., and C. Milofsky. 2006. "The Centrality of Values, Passions, and Ethics in the Nonprofit Sector." *Nonprofit Management and Leadership* 17 (2): 137–43.

Schepers, C., S. De Gieter, R. Pepermans, C. Du Bois, R. Caers, and M. Jegers. 2005. "How Are Employees of the Nonprofit Sector Motivated? A Research Need." *Nonprofit Management and Leadership* 16 (2): 191–208.

Shaw, J. D., N. Gupta, and J. E. Delery. 2002. "Pay Dispersion and Workforce Performance: Moderating Effects of Incentives and Interdependence." *Strategic Management Journal* 23 (6): 491–512.

Siegel, P. A., and D. C. Hambrick. 2005. "Pay Disparities within Top Management Groups: Evidence of Harmful Effects on Performance of High-Technology Firms." *Organization Science* 16 (3): 259–74.

Solow, R. M. 1979. "Another Possible Source of Wage Stickiness." *Journal of Macroeconomics* 1 (1): 79–82.

Speckbacher, G. 2003. "The Economics of Performance Management in Nonprofit Organizations." *Nonprofit Management and Leadership* 13 (3): 267–81.

Steinberg, R. 2010. "Principal–Agent Theory and Nonprofit Accountability." In *Comparative Corporate Governance of Non-Profit Organizations*, edited by K. J. Hopt and T. Von Hippel, 73–126. New York: Cambridge University Press.

Winter-Ebmer, R., and J. Zweimüller. 1999. "Intra-firm Wage Dispersion and Firm Performance." *Kyklos* 52 (4): 555–72.

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