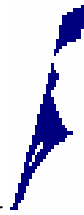


РАЗДЕЛ 2  
ЗАРАБОТНАЯ ПЛАТА  
РУКОВОДИТЕЛЕЙ КОРПОРАЦИЙ

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SECTION 2  
EXECUTIVE  
COMPENSATION

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THE MANAGERIAL POWER IMPACT ON COMPENSATION – SOME  
FURTHER EVIDENCE\*

*Tor Eriksson\*\**

**Abstract**

The aim of this paper is to test the managerial power hypothesis more rigorously than in previous studies by: testing it against the compensating wage differentials explanation, using both cross-sectional and longitudinal data, and adopting two alternative measures of managerial power; a frequently used indirect one, and a more direct power indicator. The results of analysis show that despite introducing individual characteristics, when using two or three alternative measures of managerial power and when estimating the managerial compensation model on cross-sectional as well as longitudinal data (the later allowing me to cater for unobserved heterogeneity), the power variables continue to obtain positive and statistically significant coefficient estimates.

**Keywords:** Managerial power, Managerial compensation

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**1. Introduction**

The principal idea of this paper is the following: there is some research, predominantly in the field of management research, suggesting that power (which has been defined in alternative ways) generates

higher income to managers. However, the tests performed in many of the previous studies (see e.g., Finkelstein and Hambrick (1989), (1996), Lambert, Larcker and Weigelt (1993), Hambrick and Finkel-

stein (1995) and Barkema and Pennings (1988)) are not very strong. This is partly because they make use of potentially questionable measures of power, partly due to the study designs adopted. Three types of power measures have been used. The first is the manager's own shareholdings, which is hypothesized to have an inverted U-shaped relation with the manager's pay (Finkelstein and Hambrick (1989), (1996), Lambert, Larcker and Weigelt (1993)). A second measure is the chief executive's ability to appoint outsiders on the board (Wade, O'Reilly and Chandradat (1990), Lambert, Larcker and Weigelt (1993), Core, Holthausen and Larcker (1999), Hallock (1997)) as proxied by the insiders' share of board members or by CEO duality (the CEO serves as chair of the board of directors).

Finally, a third measure used is the number of employees supervised by the manager (Schmidt and Fowler (1990), Lambert, Larcker and Weigelt (1993), Boyd (1994)). The power measure is typically entered as a right hand side variable into a cross-sectional compensation equation with rather few controls, in many cases none of which are individual characteristics.<sup>28</sup> And yet, you would expect that human capital measures like experience, tenure and education would constitute important explanatory variables in a more complete analysis of managerial pay.<sup>29</sup> It is, moreover, most likely that these same individual characteristics are instrumental in explaining differences in the amount of power the managerial employee possesses; see Leonard (1990). Consequently, an interesting question is whether the results according to which there is a positive relationship between power and individual earnings still holds if we also cater for human capital. Some of the factors conducive for managerial power are probably unobserved (to the econometrician), but can be conceived of as individual fixed effects. Hence, a longitudinal analysis accounting for time-invariant unobservables, is called for. As pointed out by Frey and Kucher (1999), there is an additional reason for why introducing human capital is potentially significant. An alternative hypothesis to the managerial power explanation is that there should be *no* relationship. This is because one can conceive of both monetary income and power as goods, and accordingly, both

are arguments in the manager's utility function. If this is the case then the compensating wage differentials hypothesis states that the manager is prepared to trade some additional income in exchange for gaining more power. In other words, more power does not necessarily imply higher income, but rather the opposite. In equilibrium the marginal value of a given amount of additional power equals the marginal value of a further increase in monetary compensation. This does not, however, imply that executives with more power are not observed to receive higher compensation as well, but it is then due to differences in managerial talent and the fact that more talent yields both more power and higher compensation. Hence, a possible reason for why earlier studies have found a positive relationship is that they have not properly controlled for the factors that are conducive for obtaining more power. This paper addresses this issue. The aim of this paper is to test the managerial power hypothesis more rigorously than in previous studies by:

- testing it against the compensating wage differentials explanation,
- using both cross-sectional and longitudinal data, and
- adopting two alternative measures of managerial power; a frequently used indirect one, and a more direct power indicator.

So, this is what I do. For a cross-section of 2,146 managerial employees in Danish medium-sized and large private sector firms in year 1995, I estimate a log total compensation equation for managers with age, tenure, gender, education of the manager, log turnover, regional and industry affiliation of the firm and two power measures as explanatory variables.<sup>30</sup> The latter are:

- the oft used log of the number of subordinates to the manager in question, and
- an index which is constructed to measure the authority each managerial employee in the firm has regarding the choice of actions to achieve certain goals.

I next estimate the same pay equation augmented with individual fixed effects on a panel data set covering the years 1992-95. This is a more powerful test in the sense that it estimates the power-pay relationship from changes in these variables and that it on top of the managers' human capital also accounts for unobserved but time-invariant managerial characteristics. The next section gives a brief description of the data used. In section 3 the main results of my econometric analysis are presented. The paper closes by summarising its key findings.

<sup>28</sup> As a matter of fact, most investigations of CEO or other top managers' pay do not typically control for individual characteristics, save CEO tenure, which is included in some of the studies. An important reason is simply that they are lacking from the data sources used; for a survey of the literature, see Murphy (1999). Some notable exceptions are Fisher and Govindarajan (1992), Harris and Helfat (1997) and Carpenter, Sanders and Gregersen (2001). See also the recent papers by Combs and Skill (2003) and Carpenter and Wade (2004). Note, however, that all these studies are based on single cross-sections.

<sup>29</sup> A summary of the few earlier studies, however, concluded that human capital "is unlikely to account for much variance in executive pay" (Finkelstein and Hambrick (1996), p. 274)

<sup>30</sup> Earlier studies estimation managerial pay equations utilising the same data source are Eriksson (2000) and Eriksson and Lausten (1999)

## 2. Data description

The data set used in this paper has been constructed from data obtained from the confidential files of a major Danish consulting firm (Dansk Management Forum). These provide detailed information about each manager's individual characteristics (age, gender, education and tenure), compensation<sup>31</sup>, currently held position (job title and functional area), and some characteristics of the companies in which he is employed (size, location, type and industry). In addition, the consulting firm collects information about each manager's authority. This will be discussed in more detail below. From this data set I extract three samples. The first one is a cross-section of managerial employees in 1995, and the other ones are unbalanced panels containing information about 2,164 (4,927) managers in 574 (107) Danish firms, making up 8,394 (8,724) individual-year observations taken during the four-year period 1992 to 1995. The two panels only differ with respect to the availability of information about the two power variables in the data set. Thus, they overlap to a large extent. I now turn to discuss how the key variable in the following analysis, managerial power, is measured. The first and more conventional measure of power is the number of subordinates to each managerial employee. This information is available in the current data set for all managers except for the chief executive officers, for whom the number of subordinates is set equal to the total number of employees in the firm.<sup>32</sup> The disadvantage of this measure is that the difference between the values it takes for the CEO and for other managerial employees is for obvious reasons relatively large. This is, of course, especially the case in large firms. We know moreover from the literature on CEO pay that chief executives in bigger firms receive higher compensation (Rosen (1992)).<sup>33</sup> This means that the estimates from studies employing the number of subordinates as the power variable may actually be capturing also other influences than managerial power. A prime candidate is managerial talent, which according to Rosen's (1982) talent allocation model increases as we move up in the corporate hierarchy and as the size and complexity of

the organisation increase.<sup>34</sup> In order to check the robustness of the results, I therefore also estimate the compensation equations with the subordinates measure on a smaller sample that excludes the CEO's. As a further check I also control for the formal position or rank of the managerial employee and his membership in board of directors (and/or of the concern, if the firm is part of one) and the top management team. CEO duality is forbidden by law in Danish stock companies with a capital requirement exceeding 0.5 million DKK (about 70.000 EUROS).<sup>35</sup> Hence, this is not a candidate for an additional power variable.

A recent theoretical literature – see Aghion and Tirole (1997) and Hart and Moore (1999) – emphasises the importance of distinguishing between formal and real authority. Formal authority refers to the power to choose goals and the responsibility for the outcomes of actions taken by the persons themselves as well as by agents at lower levels in the hierarchy. Real authority is the power to determine which actions to choose to achieve certain goals. The two types of authority differ also with respect to delegation; formal authority cannot be delegated, whereas real authority can be. In this paper I use an index measure of real authority as my second power variable.<sup>36</sup>

The authority index is constructed from an evaluation system for positions used by the consulting firm, and is based on four factors. The first factor is the complexity of the problems to be solved independently by the position holder; the second is the degree of freedom in decision making; the third is the intensity and complexity of the communication of the results of the tasks performed; and the fourth is the degree of responsibility in managing subordinates or solving specialist tasks. The index classifies jobs into 15 levels of authority, of which the seven highest are relevant for managerial employees. This detailed classification is, however, available for a part of the data set only, whereas an index, which aggregates the classification into six levels, is available for the whole data set. Consequently, this is the index I adopt as the second measure of each manager's power.

<sup>31</sup> Total compensation, which is the measure of managerial income I use, is the sum of base salary, paid bonuses and commissions, and the employers' contributions to pension funds (all three components are available as separate variables). Compensation does not include stock awards or stock options. The latter were virtually non-existent during the time period under study, so their absence should not affect the results obtained.

<sup>32</sup> As a matter of fact most of the earlier studies focus solely on CEO's for whom it is natural to think all the firm's employees as their subordinates. A notable exception is Lambert, Larcker and Weigelt (1990).

<sup>33</sup> Moreover, the labour economics literature has documented an employer size effect on wages for employees in general. See Troske (1999) for evidence and tests of alternative interpretations.

<sup>34</sup> For empirical tests of this hypothesis, see Angel and Fumas (1997).

<sup>35</sup> Banks, financial and insurance companies are excluded from this rule. In the data set there are only seven CEO's, who also serve as chairmen, and most of them are managing smaller firms.

<sup>36</sup> Eriksson (2000) adds both formal and real authority to the compensation equation. Both turn out to be statistically significant. Agarwal and Samwick (1999) examine the influence of managerial responsibility and focus more specifically on how the pay-performance elasticity varies with responsibility.

### 3. Estimation results

Beginning with *Table 1*, which contains the cross-section estimates, we may first note that the individual characteristics like age, education and gender attach significant coefficient estimates that are generally in line with what has been found for other categories of wage earners.<sup>37</sup> For executive pay differentials also some firm attributes matter. Thus, manufacturing firms pay their managers less than in services and trade (the omitted category) companies. Managerial employees in firms located in the capital area receive higher compensation than their colleagues in other parts of the country.

Finally, firm size, as measured by the turnover, increases the managers' pay. (This holds true also when the number of each manager's subordinates is entered as an additional explanatory variable.) More importantly, managerial compensation is found to be increasing in the number of the executive's subordinates, which is the first of the managerial power variables. Consequently, the estimation results support previous findings of a positive pay and power relationship, but the results of the current analysis differ in so far that I have also controlled for some individual characteristics that may be conducive for gaining managerial power. When I estimated the specification in columns 1 and 2 excluding all individual characteristics, the coefficients to the number of subordinates-variable increased from 0.105 and 0.063 to 0.122 and 0.074, respectively. At the same time the explanatory power of the equation drops by about a third. Thus, omitting human capital and other individual traits tends to inflate the estimated impact of managerial power. This is noteworthy since the majority of previous studies do not enter other than firm level explanatory variables into the compensation equation. As was noted in the introduction, a potential limitation of analyses using the subordinates-variable is that this may be picking up the firm size effect via the chief executives for whom the total workforce in the company constitute their subordinates. In order to check the robustness of the results, I have, therefore, re-estimated the earnings equation on a smaller sample that excludes the CEO's. As can be seen from the second column of *Table 1*, the magnitude of the coefficient estimate shrinks somewhat but remains significantly different from zero. Turning next to the second measure of power, the real authority index, it can be seen that managers' compensation is increasing in authority, also after controlling for individual traits as well as the size, industry affiliation and location of firms;

see columns (3) and (4) of *Table 1*.<sup>38</sup> The relationship turns out to be quite robust with respect to different sample restrictions. For example, as can be seen from columns (5) and (6), restricting the sample to those firms for which each managerial employee's number of subordinates can be observed, generates only marginal changes in the estimates. Likewise, entering hierarchical rank (formal authority) in the form of two dummies for the manager's formal position in the firm (CEO's and higher level managers, respectively) as in the seventh column of the table only decreases the real authority coefficients somewhat, while leaving their relative magnitudes and statistical significances intact. Finally, in the first column of *Table 2* I include the executives' membership in different boards as additional explanatory variables. Moreover, in the second column firm fixed effects intended to capture idiosyncratic firm level effects on the level of managerial pay, are added to the model. In both cases, the number of subordinates as well as the board membership indicators turns out to be statistically significant. The main point, which emerges from *Tables 1* and *2*, is therefore that more managerial power is associated with higher compensation. Next I repeat the empirical analysis on an unbalanced panel data set, which originates from the same data source and employs the same variable definitions as above, but covers the years 1992 to 1995. The main purpose of the longitudinal analysis is to put the power hypothesis to a harder test by accounting for unobserved differences in individual traits that are important for gaining (both) managerial power and higher earnings. I have implemented two ways of handling unobserved heterogeneity; the first is assuming time-invariant individual fixed effects, and the second is allowing for random effects. In both cases only time-varying independent variables are included in the analysis.<sup>39</sup>

The estimation results in *Table 3* show in the main the same pattern as the cross-sectional analysis. Both the number of subordinates and the real authority index carry positive coefficients that differ significantly from zero. But their magnitudes are reduced considerably compared to the cross-section results, which implies that part of the larger effects traced out in *Table 1* was indeed due to unobserved individual fixed effects such as managerial talent. Finally, it is worth remarking that the random effects specification of unobserved heterogeneity, yields substantially larger coefficient estimates to the power variables. However, according to the Hausman (1978) test this is clearly outperformed by the fixed effects model.

<sup>37</sup> The only insignificant variable is tenure in current job. It should be noted that this, of course, is not the conventional tenure variable used in earnings equations, which refers to tenure in the firm. The latter information is not available in the current data set.

<sup>38</sup> Excluding the chief executives from the sample leads again to a drop in the magnitude of the power coefficients. However, they continue to differ significantly from zero.

<sup>39</sup> Both of the variables of interest, number of subordinates and the authority index display sufficient time series variation for me to be able to estimate their effects in a longitudinal framework.

#### 4. Concluding remarks

All in all, the results of my analysis show that despite introducing individual characteristics, when using two or three alternative measures of managerial power and when estimating the managerial compensation model on cross-sectional as well as longitudinal data (the later allowing me to cater for unobserved heterogeneity), the power variables continue to obtain positive and statistically significant coefficient estimates. Thus, prior work with its potential methodological pitfalls has not been wrong in concluding that power is a factor in executive pay. However, it should be noted that the strength and importance have been considerably overstated in cross-sectional analyses and in studies where human capital is not controlled for. In fact, differences in human capital which have received attention in more recent research (Combs and Skill (2003), Carpenter and Wade (2004)), turns out to play a non-negligible role in explaining differences in executive cash compensation. Power being a factor in executive pay is not straightforwardly consistent with the contracting view of executive compensation according to which the compensation contract is a remedy to the moral hazard problem emanating from the separation of ownership and control in modern companies. Whether it is more congruent with alternative views, such as the rent extraction view is an open question. At any rate, in view of the results of this paper, abstracting from the influence of managerial power on executive compensation seems to be unwarranted. At the same time, they also indicate that the importance attributed to managerial power in especially the management literature, is exaggerated.

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**Appendices**

**Table 1.** Cross-section estimates of compensation equations for managerial employees<sup>a</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	0.044*** (0.007)	0.040*** (0.007)	0.024*** (0.005)	0.0274*** (0.005)	0.042*** (0.007)	0.027*** (0.005)	0.024*** (0.005)
Age squared	-0.037*** (0.008)	-0.034*** (0.007)	-0.021*** (0.005)	-0.024*** (0.005)	-0.036*** (0.008)	-0.023*** (0.005)	-0.021*** (0.005)
Tenure	0.0001 (0.0029)	-0.00001 (0.003)	-0.0002 (0.0002)	0.0004 (0.002)	-0.0002 (0.003)	0.0004 (0.002)	0.0009 (0.002)
Tenure squared	-0.002 (0.012)	-0.010 (0.011)	-0.006 (0.007)	-0.009 (0.008)	-0.009 (0.011)	-0.010 (0.008)	-0.007 (0.007)
Female	-0.062*** (0.023)	-0.064*** (0.020)	-0.065*** (0.015)	-0.064*** (0.015)	-0.062*** (0.021)	-0.064*** (0.015)	-0.060*** (0.014)
Manufacturing Services	-0.080*** (0.015)	-0.062*** (0.014)	-0.017* (0.010)	-0.013 (0.010)	-0.060*** (0.014)	-0.011 (0.010)	-0.017* (0.009)
Copenhagen area	-0.046** (0.021)	-0.019 (0.020)	-0.007 (0.014)	0.002 (0.014)	-0.015 (0.020)	0.002 (0.014)	-0.003 (0.013)
Medium level educ.	0.056*** (0.014)	0.059*** (0.013)	0.050*** (0.009)	0.048*** (0.009)	0.058*** (0.013)	0.049*** (0.009)	0.060*** (0.009)
Higher level education	0.101*** (0.018)	0.091*** (0.016)	0.016 (0.012)	0.035*** (0.013)	0.095*** (0.017)	0.036*** (0.013)	0.026** (0.011)
Log turnover	0.246*** (0.020)	0.214*** (0.018)	0.071*** (0.013)	0.094*** (0.014)	0.217*** (0.019)	0.095*** (0.014)	0.079*** (0.013)
Log subordinates	0.021*** (0.004)	0.043*** (0.018)	0.037*** (0.003)	0.032*** (0.003)	0.040*** (0.004)	0.032*** (0.003)	0.036*** (0.003)
Authority level:							
1			Reference	Reference		Reference	Reference
2			0.190*** (0.010)	0.189*** (0.010)		0.189*** (0.010)	0.160*** (0.010)
3			0.489*** (0.011)	0.476*** (0.011)		0.473*** (0.011)	0.354*** (0.015)
4			0.859*** (0.017)	0.774*** (0.026)		0.780*** (0.026)	0.612*** (0.025)
5			1.196*** (0.029)	1.573*** (0.175)		1.571*** (0.174)	0.909*** (0.038)
6 (highest)			1.218*** (0.129)	1.218*** (0.129)			0.921*** (0.126)
Formal pst.: CEO							0.294*** (0.027)
Higher level manager							0.170*** (0.013)
R <sup>2</sup> (adjusted)	0.458	0.369	0.760	0.678	0.381	0.678	0.782
N of obs.	2,062	1,898	2,164	1,874	1,863	1,863	2,146
Sample	incl. CEO's	excl. CEO's	incl. CEO's	excl. CEO's	incl. CEO's	incl. CEO's	incl. CEO's

a. Absolute standard errors in parenthesis. The 10, 5 and 1 per cent significance levels are denoted by \*, \*\*, and \*\*\*, respectively.

**Table 2.** Some additional estimates controlling for membership of boards

	(1)	(2)
Age	0.034*** (0.006)	0.038*** (0.006)
Age squared	-0.028*** (0.006)	-.032*** (0.007)
Tenure	-0.002 (0.002)	-0.0002 (0.003)
Tenure squared	-0.005 (0.009)	-0.010 (0.010)
Female	-0.071*** (0.017)	-0.061*** (0.019)
Copenhagen area	0.047*** (0.003)	0.051*** (0.004)
Medium level education	0.060*** (0.015)	0.070*** (0.015)
Higher level education	0.143*** (0.017)	0.184*** (0.017)
Log turnover	0.031 (0.029)	0.050*** (0.004)
Log subordinates	0.045*** (0.003)	0.051*** (0.004)
Member of board of: Concern	0.589*** (0.035)	0.491*** (0.033)
Directors	0.506*** (0.043)	0.456*** (0.048)
And with extra compensation	0.441*** (0.093)	0.373*** (0.093)
Top management team	0.121*** (0.012)	0.086*** (0.011)
Firm fixed effects	yes	no
R <sup>2</sup> (adj.)	0.607	0.461
N of obs.	1,898	1,898

**Table 3.** Panel estimation estimates

	Fixed effects	Random effects GLS	Fixed effects	Random effects GLS
Age	0.066*** (0,006)	0.054*** (0.005)	0.064*** (0.007)	0.040*** (0.005)
Age squared	-0.047*** (0.006)	-0.041*** (0.005)	-0.044*** (0.007)	-0.031*** (0.005)
Tenure in current job	-0.003 (0.002)	0.005*** (0.002)	-0.001 (0.002)	0.004*** (0.002)
Tenure squared	0.001 (0.008)	-0.020*** (0.007)	0.006 (0.008)	-0.018*** (0.007)
Log turnover	0.001 (0.001)	0.003** (0.001)	0.0001 (0.0012)	0.007*** (0.001)
Log subordinates	0.003* (0.001)	0.027*** (0.002)		
Authority 2			0.017*** (0.005)	0.090*** (0.005)
Authority 3			0.053*** (0.007)	0.251*** (0.008)
Authority 4			0.073*** (0.012)	0.483*** (0.011)
Authority 5			0.164*** (0.016)	0.674*** (0.016)
Authority 6 (highest)			0.214*** (0.042)	0.762*** (0.051)
R <sup>2</sup> Within	0.218	0.138	0.240	0.111
Between	0.142	0.343	0.254	0.733
Overall	0.126	0.330	0.246	0.734
N of obs.	4,640	4,640	4,927	4,927