

Orders of Merit and CEO Compensation: Evidence from a Natural Experiment

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Governments around the world bestow upon their citizens orders of merit to reward distinguished service. Can orders of merit substitute for the monetary compensation CEOs receive? This question is investigated through a natural experiment: the 1974 legal reform in which Sweden discontinued the conferral of state orders of merit. Compensation increases by 7.1% after the reform for the CEOs of listed firms who had *not* received an order of merit. Thus, shareholders needed to increase the CEOs' monetary compensation to make up for the loss of a non-monetary incentive provided by the government.

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1. Introduction

On July 15, 1815, Napoleon Bonaparte surrendered to Captain Frederick Maitland onboard the British ship HMS *Bellerophon* outside the French port of Ile d'Aix. During the subsequent crossing of the English Channel, the abdicated emperor of the French confided in Captain Maitland that “a soldier will fight long and hard for a bit of colored ribbon.”¹ The ribbon Napoleon had in mind was the red piece of silk from which the insignia of the Légion d’honneur hangs. This order of merit was and still is awarded to soldiers for bravery or to citizens for civic achievements. Can Napoleon’s assertion be applied to a modern age chief executive officer (CEO)? Will a CEO fight long, hard hours at the office for a bit of colored ribbon?

Most governments around the world bestow upon their citizens orders of merit to reward distinguished service. For example, France has three national and four ministerial orders of merit, Canada awards six different types of state orders, and the British honors system includes 10 orders of chivalry. Since orders carry no economic value, they fall into the category of positional goods, a term introduced by Hirsch (1976) to indicate non-monetary products and services whose value is a function of their desirability by others. This paper studies if positional goods in the form of orders of merit can substitute for monetary compensation in providing incentives for CEOs. A natural experiment is conducted based on the 1974 legal reform in which Sweden discontinued the conferral of orders of merit to citizens. The abolishment of order of merits eliminated the possibility of receiving an order but those who already had an order were allowed to keep their titular privileges and wearable insignia and were thus *de facto* not affected by the reform. The difference-in-difference methodology employed contrasts CEOs of listed firms who had already received the Order of Vasa at the time of the reform (control group) to those CEOs of listed firms who had not received the Order of Vasa (treatment

¹See Maitland (1826) for his own narrative on these events.

group). The Order of Vasa was instituted in 1772 as a reward for mercantile and industrial achievements and remained until 1974 the principal mechanism by which the state honored deserving CEOs.

This paper's main finding is that after the reform salaries increased for those CEOs who had not previously been awarded an order. The increase in CEO compensation after the reform is 7.1% for the treatment group relative to the control group. No other firm effects such as changes in key financials are discernible. Taken together, the unaffected firm performance and increased CEO compensation suggests that positional goods do affect incentives. The removal of the possibility of receiving an order of merit needs to be compensated for by monetary rewards. Furthermore, in difference-in-difference-in-difference regressions I show that older cohorts within the treatment group require larger monetary compensation relative to younger cohorts. Older cohorts may have perceived themselves as being very close to being honored and therefore saw the removal of orders of merit as a more tangible loss than younger cohorts, who may not have entertained the possibility of receiving an order of merit. I can also rule out the possibility that CEO compensation increases are held back by the fact that some CEOs who had received orders of merit other than the "business-oriented" Order of Vasa were content with having received at least one official award. Instead I find evidence that CEOs want to receive the specific order with which the Swedish state would reward their services as CEO and, upon its abolishment, they received compensation for this loss in incentive, regardless of other awards bestowed upon them. Neither a placebo event date test, nor quartile matching by size, nor cross-sectional regressions, explain away the results. The effects do weaken as the time period is extended, but this is expected, since longer time windows pick up differential trends.

Overall, the results give empirical evidence that positional goods in the form of orders of merit can act as important incentive devices for CEOs. The welfare implications of these findings are, however, not obvious. On one hand, the loss of an incentive device could reduce firm performance if the CEO

now exerted less effort unless compensated for by some other means. On the other hand, the removal of an incentive that seemingly caters more to the objective function of society as a whole rather than to that of shareholders could signal an increased focus on creating shareholder value without additional CEO compensation. The fact that governments or sovereigns are the official fountains of honor in a state gives prestige to awards, but this may also imply that the state may award honors primarily to those catering to the needs of the state. If the state views orders of merits as a means of aligning the behavior of publicly owned companies with their objective function, then the removal of such an incentive could lead to an increased focus on creating shareholder value for the CEO. The former of these explanations dominates the second. The observed combination of unchanged firm effects and increased salary for the treatment group relative to the control group indicates that, in essence, removing a non-monetary incentive provided by the state leaves a vacuum that the shareholders cover by incurring higher costs.

To the best of my knowledge, this is the first empirical study on how orders of merits can serve as an incentive device in a company. As such, this study contributes to several strands of the literature, but particularly the empirical literature on CEO compensation and incentives. The vast majority of these studies deal with various forms of monetary incentives (e.g., Murphy, 1985; Edmans and Gabaix, 2009; Garen, 1994; Yermack, 1995, Hall and Liebman, 1998; Ofek and Yermack, 2000; Bertrand and Mullainathan, 2001; Sundaram and Yermack, 2007; Yermack and Wei, 2011). In addition, CEOs may be incentivized through devices such as perks. Jensen and Meckling (1976) and Jensen (1986) argue that perquisites (perks) can lead to shirking and reduced firm value, whereas Fama (1980) argues that perks can act as efficient motivational devices that create shareholder value. Empirically, Yermack (2006) finds evidence of the former scenario, while the findings of Rajan and Wulf (2006) are more in line with the latter. Yermack (2006) explores the abuse of perhaps the most sumptuous perk available—corporate jets—and finds that disclosure of the personal use of corporate jets has a strong negative

announcement effect on the firm's stock price and leads to long-term underperformance. Rajan and Wulf (2006) explore the role of perks as status or positional goods. They note—as in the opening paragraph of this paper—that military commanders award orders and medals for achievements and thus ask why corporations cannot invent their own medals or ribbons. Their answer is that since the status from such medals will be very low perks may instead be a form of ribbon, since they cost little relative to managerial compensation but are still effective as motivational tools.

There are, however, several important differences between perks and positional goods. First, though neither a perk nor an order of merit is transferable, perks have some monetary value, which orders of merits do not. A Swedish order of merit is never among an individual's personal belongings: Though it is produced in either gilt or gold, it cannot be sold, melted down, or otherwise disposed of for money but must be returned to the state upon the recipient's death. Second, while perks are given by firms and paid for by shareholders, it is the state that bestows orders of merit and it is thus more prestigious to receive an award from the state than from a company due to its exclusive right to bestow official titles and awards. The importance of orders of merits as status awards also positions this paper among the literature that focuses on the implications of individuals' desire for status and the link between compensation and status as an incentive device (for theoretical studies, e.g., Fershtman and Weiss, 1993; Becker et al., 2005; Frey, 2005, 2007; Moldovanu et al., 2007; Auriol and Renault, 2008; Besley and Ghatak, 2008; for experimental studies e.g., Ball et al., 2001; Ellingsen and Johannesson, 2007; Kosfeld and Neckermann, 2011). Of particular relevance to this study are the findings of Besley and Ghatak (2008), who show that status awards, which have zero marginal cost, can act as an incentive device. In their setting, all firms gain from using status incentives.

Finally, a number of empirical studies focus on business-related awards or rankings by media companies. Graffin et al. (2008) find that winners of the "CEO of the year" contest, as well as members of their management teams, derive benefits in the form of higher compensation from these

awards. Wade et al. (2006) and Malmendier and Tate (2009) both analyze the impact of business-related awards to CEOs and their subsequent negative impact on stock and operating performance. These results contrast with this study's findings that orders of merit play a shareholder-friendly function in their role as incentive devices. This paper differs from the literature on business awards not only in that it examines orders of merit—a more prestigious award than those awarded by magazines—but also through its empirical methodology. While Malmendier and Tate (2009) use a nearest neighbor matching estimator as their main identification strategy and Wade et al. (2006) rely on fixed effects and generalized estimating equations regressions, this study relies on a natural experiment and difference-in-difference estimations. That status and income may be substitutes for a CEO is indicated by the theoretical work of Hayes and Schaefer (2009), who analyze the implications of the status of relative income concerns on CEO pay, and empirically by Maug et al. (2012), who document that CEOs care not only about their monetary compensation but also their social status and that firm prestige is a status symbol that directly benefits the CEO. There is also empirical evidence that nonmonetary benefits that are unrelated to status can substitute for executive compensation. Deng and Gao (2012) finds that CEOs working in unpleasant places are paid more than the ones working in more livable locations.

To some extent, this paper also relates to faleristics, the study of orders, medals, and decorations. Rather than review that vast literature, described extensively in Frey (2005), the paper proceeds in Section 2 by outlining the key features of the Swedish order of merit reform of 1974. Section 3 presents the hypothesis and methodology. Section 4 evaluates the effect of the abolishment of orders of merit on firm performance and CEO compensation in Sweden. Section 5 concludes.

2. The order of merit reform of 1974

Originally, orders denoted a group of people who conformed to certain rules and obligations for a spiritual purpose. Monarchical and honorific orders of chivalry became increasingly popular in Europe during the Middle Ages and memberships in these societies gradually developed into an honor that could be bestowed in recognition of service to the ruling body of state. As described in Sainty (2006), most governments around the world still bestow upon their citizens orders of merit to reward distinguished service.

In 1748, King Fredrik I of Sweden introduced an official system of orders of merit designed for both Swedish citizens and foreigners alike: The Orders of the Seraphim, the Sword, and the Polar Star were established to reward statesmanship, military, and civic achievements, respectively. The awarding of the later two orders was strictly connected with civil-service or military employment and they are commonly referred to as the “service orders”. In 1772, King Gustav III instituted the Order of Vasa, which was primarily intended for those not employed by the state, such as industrialists and merchants. This study focuses on the Order of Vasa, since for 203 years it was the order that a CEO of a public firm could receive. Although an order of merit was formally awarded by the king through his signature, it was, as described by Kleberg (1935), no more than rubber stamping suggestions made by ministers (members of the government), who in turn would pass on or deny suggestions they had received from bishops, county governors, director-generals, senior military commanders, and others with nomination rights. In essence, the government controlled to whom orders of merits should be awarded in the king’s name. The award criteria for the Order of Vasa were very general. The last version, from 1955, reproduced in Uggla (1975), stipulated that the Order of Vasa was above all intended for services and virtues in agriculture, mining, commerce, and industry but could also be used as a reward for persons not eligible for the “service orders” of the Sword and the Polar Star. Thus, not only a CEO of a public

listed firm could receive the Order of Vasa but also for example executives of privately owned corporations or major land owners.

Figure 1 is based upon data from Löfberg (1973) and Ugglå (1975) and depicts the order of merit system in Sweden upon its abolishment. The Order of Vasa was awarded, on average, 200 times per year from 1955 to 1971. A recipient would receive a title, the most prestigious being Commander Grand Cross, followed by Commander First Class, Commander, and finally Knight First Class (foreigners could also be awarded an even more junior class, Knight Second Class). An initial appointment to the Order would typically start with the Knight rank. If a person would be honored with the Order multiple times, a higher rank would be bestowed on each occasion. Together with the title, the new member of the Order of Vasa would also receive an enameled golden, or gilded, cross to be worn hanging from either a sash or neck or breast ribbon, depending on the class. An additional star in silver to be worn on the breast was awarded to the two highest classes. The manufacturing cost of the order was some 300–1,000 USD in 2012 monetary terms and all insignia had to be returned upon the death of the recipient. The award was never the personal belonging of the individual and could thus not be sold, melted down, or otherwise disposed of for money. Hence, an order of merit truly qualifies to be labeled as a positional good.

Already in 1869 the use of decorating citizens with orders of merit had been publicly criticized in the Swedish parliament. Parliamentary calls for an abolishment of the order of merit system were made in 1869, 1911, 1912, 1913, 1917, 1919, 1920, 1927, 1928, 1947, and finally 1969, when, in connection with a major overhaul of the Swedish constitution, the ruling social democrats initiated a process to abolish the order of merit system. The working hypothesis was that the honors system was outdated and undemocratic since only a very limited number of the population was eligible for an award. Figure 1 shows that only 0.3% of the population had received an order of merit in 1974. Progress on the reform was slow and involved gathering the standpoints of the 26 various bodies including ministries,

workers' unions, regional courts, and provincial chambers of commerce considering the proposed legislation. Greatly simplified, the governmental proposition (1973:91) to abolish orders of merits was supported by a majority of groups close to the governing social democrats—such as workers' unions, ministries, and representatives from the leftish provinces in the north—whereas more conservative groupings—such as the association of academics and representatives from the southern provinces—were against it. Proposition 1973:91 was approved in parliament by a majority of 243 votes against 51 on June 6, 1973. The vote did neither lay out the exact format of how the system should be modified nor a timeframe. The original proposition had asked for an implementation already in 1974, but the consequences of the parliamentary decision were not finalized until it was passed as a law (Svensk Författnings Samling 1974:768) on December 6, 1974. It was then stipulated that three weeks later, starting January 1, 1975, Swedish citizens could no longer receive a Swedish order of merit. Under the law, foreign citizens or stateless persons could still be conferred the Order of the Seraphim and the Order of the Polar Star. Sweden thereby became the only monarchy among the 56 monarchies in the world without a system of orders of merit available for nationals. This study uses this sudden discontinuation to empirically determine if orders of merit can substitute for monetary compensation in providing incentives for CEOs.

3. Hypothesis and methodology

This section outlines the main hypothesis and testable predictions on how the abolishment of orders of merit affects CEO compensation and firm performance, together with a description of the difference-in-difference method (e.g., Bertrand et al., 2004) that uses the fact that some CEOs had already received an award and were thus not *de facto* affected by the order of merit reform. The general research question of whether orders of merit can act as an incentive device for CEOs is examined through the reform's effect on firm performance and CEO compensation.

3.1 Difference-in-difference approach

The difference-in-difference methodology employed contrasts CEOs who had already received the Order of Vasa at least once at the time of the abolishment (control group) with those CEOs who had not (treatment group). The abolishment of orders of merit eliminated the possibility of receiving an order, but those who already had an order were allowed to keep their titular privileges and wearable insignia. A CEO who was already awarded an order for business merit (i.e., the Order of Vasa) is classified into the control group. The difference-in-difference method is appropriate only if the abolishment of orders of merits was an unexpected event. Though the reform had been debated 11 times in parliament in the preceding 100 years and a general parliamentary decision to reform the order of merit system had been taken in June 1973, the timing and actual implementation of the decision into law came unexpectedly. This is evidenced by several facts. First, the governmental proposition (1973:91) contained no fixed date for the abolishment of orders of merits but instead suggested that the reform should not be implemented under the reign of the incumbent monarch, which ended on September 15, 1973 with the death of Gustav VI Adolf. Second, the last Swedish conferment of orders of merit took place just three days before the law was passed. A CEO would not know until this first week of December that he would remain unawarded and would thus not have much possibility to impact either the performance or his salary in the final 14 working days remaining of the year.² Third, orders of merit were conferred twice per year and in this final batch 797 orders of merit were announced, which is substantially higher than the average semi-annual batch of 590 in the period 1970–1973. This may indicate a last push to include also those in the pipeline who might have been in the vicinity to receive an award. The sudden realization that it would now be the last opportunity to bestow

² The use of masculine pronouns for CEOs is appropriate here, since there was no female CEO of a listed firm in Sweden before 1987.

orders of merits may explain the large size of this final “shower of decorations” as these announcements were often colloquially referred to in the press. Fourth, the lack of any media reports anticipating the timing or details of the abolishment is further evidence that the December 6 announcement came unexpectedly.

3.2 Testable predictions

The implications of the abolishment of orders of merit from the perspective of shareholders are not obvious. Figure 2 depicts possible outcomes for the treatment group relative to the control group following the abolishment of orders of merit. The use of performance-based pay—including bonuses, options, stocks, and convertibles—by Swedish firms was very limited during the 1970s (Sköldebrand, 1988; Meyersson, 1993; Bång and Waldenström, 2009). Hence one can presume that CEOs were working and putting in effort to keep their jobs and salaries and perhaps the possibility of receiving the Order of Vasa. The theoretical literature on positional goods, reviewed earlier, deals exclusively with the case where a potential award recipient is in a direct principal–agent relation with the body awarding the good. Awarding an order of merit to a CEO is different, since the issuing body (the state) is not the principal (board of directors) of the potential award-winning CEO. However, the general findings of Besley and Ghatak (2008), in particular, carry through to the case of orders of merit: One can expect any incentivizing effect to be stronger, since the status of receiving an award from the state is higher than that of receiving it from a company, due to the state’s exclusive right to bestow official titles and awards. This point is also made in Rajan and Wulf (2006). Again, as described in Section 2, the government passed on its award recommendations to the king for ratification. Thus, the loss of an incentive device could reduce firm performance if its CEO then exerted less effort. The combinations in Figure 2 where firm performance is either unaffected while CEO salary increases (row 2, column 3) or where it decreases while CEO compensation remains constant (row 3, column 2), indicate that either

the loss of the incentive device leads to lower performance or it needs to be compensated for by a higher salary. As such, both outcomes support the hypothesis that the possibility of receiving an order of merit acts as an incentive device. This also holds for the potential outcomes where either the salary increase incentivizes the CEO over and beyond what the potential of receiving an order of merit does (row 1, column 3) or the monetary increase is not large enough to compensate for the loss of the potential future award (row 3, column 3).

The fact that the state is the official fountain of honor also means that the state may award honors primarily to those catering to its needs. The statutes of the Order of Vasa offer little guidance on the specific merits that should be fulfilled to be eligible for the award. The last version, from 1955, reproduced in Uggla (1975), stipulated that the Order of Vasa should be awarded primarily for services and virtues in agriculture, mining, commerce and industry. Thus, it is conceivable that the state sees the Order of Vasa as a means of rewarding good deeds within these areas for society as a whole rather than delivering good returns to the shareholders of a public firm. If so, then the removal of an incentive that caters more to the objective function of society rather than to that of shareholders could signal increased CEO focus on creating shareholder value. If CEOs, in their desire to receive an award, make sub-optimal decisions for shareholders in terms of, for example, the hiring and firing of workers or the localization of production units, then performance should improve in the post-reform period. A number of papers acknowledge that a government's objective function may consider the welfare of constituencies other than shareholders so that shareholder wealth maximization may not be of overriding concern. Brisley et al. (2011) find that expropriation by firm managers is possible because of corporate governance "slack" permitted by the government. This in turn induces managers to choose levels of output and costs that are higher than would otherwise be optimal, which in turn benefits consumers because the equilibrium price is lower. Pagano and Volpin (2005) analyze conflicts between shareholders, employees, and firm managers in the political context and show how legislator focus on

shareholder versus employee protection in the economy depends on the electoral system itself. Roe (2003) stresses the fact that when the government pays little attention to pressure from employees, the firm has more options than when the government pays a lot of attention. The combination of increasing firm performance and unchanged CEO compensation in Figure 2 (row 1, column 2) is indicative of the hypothesis that the removal of orders of merit was in essence the removal of a shareholder wealth efficiency-reducing incentive, since it catered not primarily to the interest of shareholders but to that of society as a whole. One can also think of the situation as one in which the CEO thinks that since there are no longer any orders of merit, he may just as well devote himself to serving the shareholders (increasing firm performance), although the shareholders do not have to pay him more (compensation is unchanged). A third possibility is that the CEO never viewed the possibility of receiving an order of merit as an incentive device. This is consistent with the outcomes in Figure 2, where firm performance increases while compensation decreases (row 1, column 1), where performance is unaffected while compensation decreases (row 2, column 1), and where both performance and compensation are unaffected or decrease (row 2, column 2; row 3, column 1), respectively. Any of these outcomes indicate that orders of merit do not play an incentivizing role.

3.3 Data

Since no database covers the stock market and financial performance for listed firms in Sweden during the 1970s, all data were hand-collected. Firm-level accounting data are obtained directly from annual reports covering the period 1970–1979.³ All 145 firms listed on the Stockholm Stock Exchange

³ These data were obtained directly from the firms' online archives, the library at the Stockholm School of Economics, the Swedish Corporate Library, and the National Library of Sweden.

in both 1974 and 1975 are included in the sample. The main tests use only data for three years before (1972–1974) and three years after (1975–1977) the abolishment of orders of merit became effective on January 1, 1975, but data were collected for the entire decade for robustness tests with longer windows. Stock market performance data were gathered from the yearly accounts of the Stockholm Stock Exchange. Dependent variables and control variables were collected from annual reports. The dependent variables for firm performance are the earnings before interest, tax, depreciation and amortization (EBITDA) margin, measured as the EBITDA divided by sales; return on assets (ROA), that is, EBITDA divided by total assets; sales, measured through the natural logarithm; and CEO compensation, also expressed through the natural logarithm. The control variables comprise assets, measured as the natural logarithm of the book value; equity, measured as the natural logarithm of market value; book leverage, defined as assets minus equity minus deferred taxes, over assets; market leverage, calculated as assets minus book equity minus deferred taxes, over assets minus book equity minus deferred taxes plus market equity; and the two-year stock return, that is, the two-year log change in stock price. All collected company data are matched to the incumbent CEO in 1974 and 1975; that is, firm data were collected only for those years when a CEO who served in both 1974 and 1975 was in office.

Biographic data for the CEOs, as well as information needed to classify them into either the treatment or control group, were gathered from a range of sources. Basic data such as age and tenure were obtained from the annual reports. The Swedish annual reports of the 1970s did not specify CEO compensation separately but only as part of the broader group “board of directors, CEO, and management team,” so information on CEO income was collected from the annual issues of the *Taxeringskalendern* (Taxation calendar), 1971–1980, for the counties of Gävleborg, Göteborg and Bohus, Jämtland, Jönköping, Kristianstad, Malmöhus, Skaraborg, Stockholm, Uppsala, Västernorrland, Älvsborg, and Örebro. The information recorded in the *Taxeringskalendern* is obtained from the Swedish

tax authorities' publicly accessible records and lists incomes for high earners by county using data from the previous year's tax filings. Individuals are listed according to their county of domicile, last name, full set of initials for all given names, occupational title, and their home street address. Using this information I match the CEO names with their reported income. The income recorded is the net lump sum of income from agricultural property, other property, salary, own business, and capital gains. The net refers to the deductions made from gross income for marital status, property-related costs, and capital losses. Two main entries are recorded in the *Taxeringskalendern*: one for taxable income on which a municipality tax should be levied and one for taxable income on which a state tax should be levied. The taxable income for state tax purposes is always chosen since it is net of income from property and net of capital gains and is thus a clean measure of work-related income. The use of performance-based pay, including bonuses, options, stocks, and convertibles, by Swedish firms was very limited until the 1980s (Sköldebrand, 1988; Meyersson, 1993; Bång and Waldenström, 2009). This absence of performance-based pay is a nice feature since monetary incentives are thus all channeled through salary, reducing the risk of omitting important incentivizing variables. It should however be mentioned that ownership data is not available for the firms in my sample.

To classify CEOs into the treatment and control groups, data are needed on whether they were already awarded the Order of Vasa. For this classification, data were gathered on the award history of the incumbent CEOs, whose identities were recorded in annual reports. Information on their awards is from the award scroll edited by Uggla (1975), which contains information on all Swedish citizens who received either a Swedish or a foreign state order of merit. A total of 69 CEOs were classified as the control group and 76 CEOs as the treatment group. Of the CEOs in the control group, 61 had received the "Knight" class while 8 had been awarded one of the "Commander" classes.

4. Results

This section evaluates the effect of the abolishment of orders of merit on firm performance and CEO compensation in Sweden. A difference-in-difference method is first employed, using the fact that some CEOs had already received such awards and were not *de facto* subject to a different legal environment after January 1975.

4.1 Summary statistics

Throughout the paper all monetary amounts are adjusted for inflation using yearly consumer price indices and expressed in January 1975 Swedish krona (SEK). Coincidentally, a January 1975 1.00 SEK correspond to 1.03 USD, expressed in September 2012 terms, which makes it easy to relate all amounts to a modern-day reference point. Table 1 depicts summary statistics for the outcome and control variables for the whole sample, as well as separately for the pre- and post-event periods (1972–1974 and 1975–1977, respectively). The table shows that the control and treatment groups are similar in most dimensions over the entire period, with some differences, notably that the control group firms are larger on average in terms of sales and assets. By controlling for size variables throughout, these differences should not drive the results. In addition, I later employ a robustness test in which I run matched quartile regressions by size to account for that different evolution in sales for the control and treatment groups may influence the effect on CEO compensation in the two periods.

The firm controls employed are the book value of assets; the market value of equity; book leverage; market leverage; and the two-year stock return. The measures for asset, equity, and stock returns are all through the natural logarithm. In addition, firm fixed effects are included to control for unmeasured heterogeneity between firms, thus reducing the potential for problems with omitted variables. In particular, firm fixed effects will pick up if some CEOs were more likely to receive orders because the

firms they worked for had a higher allocation of orders. Cohort fixed effects for the CEO year of birth are included in addition to CEO tenure and CEO age control variables. Thus CEOs can be compared within their own birth year cohort since age may be a factor in deciding whether they perceived an order of merit to be an incentive device or not. It is important to note that the inclusion of these two forms of fixed effects address both the concern that various CEOs would have different probabilities of receiving the Order of Vasa based on who they work for but also their own perception of receiving one due to their relative standing with CEO colleagues of the same age. To further control for firm-level variables, regressions with firm and year combinations defining the unit of observations are used, as well as heteroskedasticity-robust standard errors, clustered by firm. R-squared is estimated including group effects for regressions that include fixed effects.

A glance at the data reveals that the average listed firm during 1972–1977 had sales of 218 million SEK, on which they earned an EBITDA margin of 8.03% and a return on assets of 19.4%. On average, CEOs were 56.4 years old and had been in office for 11.6 years. CEOs in the control group are slightly older and have somewhat longer tenure than the CEOs in the treatment group but the differences are not statistically significant. They earned, on average, a total salary of 343 thousand SEK per year. Firms had average assets of 262 million SEK and an average market value of 184 million SEK. Book and market leverage amounted to 0.53 and 0.37, respectively.

For the period as a whole, only sales, CEO compensation, and assets differ significantly between the control and treatment groups. Whereas the control group has relatively larger sales on average, the reverse holds for CEO compensation. The only significant difference between the groups in the pre-treatment period, 1972–1974, is that asset values are higher for the control group. The firms listed on the stock exchange in 1974 and 1975 enter and exit the sample during the decade both before and after the reform. There are 411 firm–year observations for 1972–1974 and 412 firm–year observations for

1975–1977. Again, these observations include only firm–years in which the 1974/1975 incumbent CEO was in office.

One can obtain a first impression of the post-reform period by comparing the means of the dependent variables for the control and treatment groups. These univariate statistics indicate CEO compensation as the variable that stands out. The difference between the treatment and control groups is statistically significant, which gives a first suggestion that the reform had an effect on the salary level differential between the two groups. This is also reflected in Figure 3, which shows the time patterns (expressed in 1975 monetary terms) over the decade. While there seems to be little discrepancy in the control and treatment group trends after 1975 for the three profitability measures, the CEO treatment group line is hump shaped from 1975 onward. These graphs also indicate that it is unlikely that the parallel trend assumption for the two groups—which is required for the difference-in-difference results to be unbiased—is not fulfilled. Later robustness checks confirm this assumption directly.

4.2 Orders of merit as incentive devices

Table 2 shows the coefficients for the difference-in-difference regressions. The performance variables Sales, EBITDA margin, and ROA all have positive treatment group interaction coefficients, but none is statistically significant at conventional levels. The effect on CEO compensation is, however, both economically and statistically significant. The increase in CEO compensation after the abolishment of orders of merit is 6.9% for the treatment group, significant at the 1% level. When the independent variable is continuous, then the coefficient represents the increase in compensation for a one-percent increase in the independent variable. Since the treatment indicator variable is not continuous, the coefficient represents the increase in the log compensation for a change in the indicator variable from zero to one. An increase of 6.9% in the log compensation translates to an increase of

$\exp(0.069)$, or a 7.1% increase. Figure 2 outlines the various possible outcomes in terms of firm performance and CEO compensation. The result obtained—no effect on firm performance but a positive effect on CEO compensation—corresponds to the prediction in Figure 2 that orders of merit have an incentive effect on CEOs and that they play their main function as a shareholder-friendly device rather than as a society-friendly incentive device. In essence, removing a non-monetary incentive provided by the state leaves a vacuum that shareholders step in to cover by incurring higher costs. This finding contrasts with the literature on business magazine awards (Wade et al., 2006; Malmendier and Tate, 2009), which finds that CEO awards have non-shareholder-friendly features, at least after the CEO has actually won an award. The 7.1% increase in compensation can also be compared to the findings of Maug et al. (2012), who investigate the relation between CEO compensation and firm prestige and find that CEOs of firms ranked among the Fortune 100 most admired companies earn on average 9% less than CEOs of non-ranked companies.

The benefits of adding years to obtain more observations—thus gaining greater statistical power and allowing adjustments time to manifest in outcomes—should be considered against the higher risk of picking up differential trends in a longer time window. Though a narrower window limits the amount of data and sets a higher bar for how quickly behavioral changes affect observables, it also reduces concerns about differential trends of any kind. This is the key reason for using a three-year window as the baseline case. Table 3 shows the results of repeating the regressions using the entire decade, with the pre- and post-event periods now as 1970–1974 and 1975–1979, respectively. As is the case also in Table 2, the overall fit of the regressions in Table 3 is good, which is primarily reflecting the high explanatory power of firm fixed effects. The firm performance variables are again statistically insignificant, but CEO compensation now has lower economic and statistical significance and its coefficient of 2.3% is significant only at the 10% level.

The differences in coefficients and significance between Tables 2 and 3 could, as discussed in Bertrand et al. (2004), be due to the fact that longer time windows cause biases in difference-in-difference estimates because of time trends. The 1970s was a decade of societal reform for Sweden, including its transformation from a semi-constitutional monarchy to a constitutional one. This general trend, which partly devalued the previous social status of a person awarded an order of merit, coupled with that the business sector became increasingly global could well explain why the results are not robust to windows comprising the entire decade. The effect of the reform may also have gradually diminished as CEOs realized that such merit awards would not be brought back in the near future. This is evidenced by the fact that the first parliamentary proposals to reintroduce orders of merit were not made until 1999 (Parliament proposition 1999/2000:K241). Companies may also have introduced other ways of remunerating CEOs, such as through perks. Nevertheless, this result does not invalidate earlier findings; it just points to the fact that the consequences of the reform in terms of how CEOs are incentivized were abruptly changed. The short-term increase in CEO compensation after the reform is 7.1% for the treatment group relative to the control group. This implies that, apart from what is explained by firm controls and overall time series patterns captured by fixed effects, non-awarded CEOs experienced an increase in their compensation compared to awarded CEOs after the orders of merit reform. So, removal of the possibility of receiving a bit of monetarily worthless ribbon must be compensated for by an increase in annual salary of, in today's terms, 25,000 USD. While the monetary effect may appear modest, this is of course an effect of the modest levels of Swedish CEO salaries in the 1970's.⁴

⁴ Multiplying the average CEO compensation for the treatment group of 353,423 SEK by the economic effect of the treatment indicator 0.071 and the inflation and exchange rate adjusted multiplier 1.03 gives a value in September 2012 terms of 25,846 USD. For comparative purposes it may be interesting to note that the price in April 1974 of a Volvo 142 de Luxe 2-door sedan was, in 2012 monetary terms, 26,368 USD.

4.3 Cohort effects

Although the statutes for the Order of Vasas stipulated that it could be awarded regardless of the recipient's age, it was, as described by Kleberg (1935), very rare that the recipients were younger than 50 years old.⁵ CEOs may thus differ in their beliefs on whether they are eligible to receive an order for their corporate merits by their age cohort. I run a difference-in-difference-in-difference regression to account for this. First, I examine the average time changes in the four outcome variables after and before the reform for CEOs who had not been awarded the Order of Vasas at the time of the abolishment and who were born in 1925 or before, that is, CEOs who were turning at least 50 in 1975, the first year of the reform. This group now becomes the treatment group since it is within this group that we find CEOs in an age cohort that might expect to be awarded an order of merit in the near term. Second, the average time changes in the four outcome variables after and before the reform for CEOs who had not been awarded the Order of Vasas at the time of the abolishment and who were born in 1926 or later are examined. This group is a control group, in that these CEOs were not yet in a cohort in which they might expect to receive an order. Third, the average time changes in the four outcome variables after and before the reform for CEOs who had already been awarded the Order of Vasas at the time of the abolishment, irrespective of birth year are examined. As before, these CEOs constitute a control group, in that the reform should not affect them since they were already decorated with the Order of Vasas.

The differences between these three difference regressions are used to estimate a triple interaction term. My hope is that this approach controls for two kinds of potentially confounding trends: (1) that the probability of receiving an award due to age cohort concerns across CEOs affects one's perception

⁵ The statutes for the Order of the Sword and the Order of the Polar Star did however include detailed specifications of the minimum years of tenure needed in various positions within the civil service or armed forces to be eligible for an appointment.

of orders of merit as an incentive device, which would have nothing to do with the order of merit reform in the short run, and (2) any potential general change in the overall desirability of receiving positional goods in the form of orders of merit among CEOs. All regressions are run with firm and CEO control variables and standard errors are clustered by firm.

Table 4 displays the results. The first difference results (D: Non-awarded old CEO) give the average time changes in the four outcome variables post-reform (1972–1974) and pre-reform (1975–1977) for CEOs who had not been awarded the Order of Vasa at the time of the abolishment and who were born in 1925 or before. The second difference results (D: Non-awarded young CEO) are the average time changes in the four outcome variables post- and pre-reform for CEOs who had not been awarded the Order of Vasa at the time of the abolishment and who were born in 1926 or later. The third difference results (D: Awarded CEO) gives the average time changes in the four outcome variables post- and pre-reform for CEOs who were already awarded the Order of Vasa at the time of the abolishment, irrespective of birth year. The difference-in-difference-in-difference coefficients (DDD) give the difference between the treatment group (D: Non-awarded old CEO) and the two control groups. Hence, the difference-in-difference-in-difference estimate (DDD) measures the effect of the order of merit reform on sales, the EBITDA margin, the ROA, and CEO compensation for those CEOs born in 1925 or before. The only statistically significant DDD result is for CEO compensation. The order of merit reform resulted in an increase in CEO compensation for the old CEO cohort of 3.8% more than for CEOs who either had already received the Order of Vasa or who may not yet have entertained the possibility of receiving one due to their relative youth. This result again indicates that positional goods in the form of orders of merit can be used as incentive devices for CEOs, but it also indicates that the older cohorts were most affected by the order of merit reform. Little is known about the dynamics of CEO remuneration between CEOs and boards of directors in the 1970s, but these

results may indicate that CEOs who felt they may have been very close to receiving an order of merit asked for higher compensation from the board of directors than other non-awarded CEOs.

4.4 Differential treatment effects

A CEO not awarded the Order of Vasa may have seen a potential future award as less of an incentive device if at the time he had received another Swedish or foreign order of merit. If the key incentives surrounding the desirability of an order of merit were merely to have at least one title, with the corresponding award of displaying it on one's frock coat, then the abolishment of orders of merits may have been seen as less of an incentive-disruptive feature for CEOs who had received another order of merit compared to CEOs who had not been awarded any order of merit at all.

As described by Hieronymussen (1966), orders are often bestowed more generously to foreigners than to nationals and most countries that bestow orders of merit do so to both nationals and foreigners. For example, since 1853 more than 10,000 Americans have been decorated with the aforementioned Légion d'honneur. As mentioned before, Ugglå (1975) contains information on all the orders received by Swedish citizens, Swedish and foreign alike. This information enables separating the treatment effects for those CEOs who had received no order of merit at all from the effects of those CEOs who had received at least one order of merit, either foreign or Swedish. Besides the 69 CEOs who received the Order of Vasa, another five CEOs from the treatment group were awarded the Order of the Sword as recognition of a previous military career and three CEOs from the treatment group were awarded the Order of the Polar Star for diplomatic services. A further nine CEOs from the treatment group received a foreign order of merit. To discern whether the effects of the abolishment were different for the group of CEOs who had received an order, irrespective of whether it was Swedish or foreign, those 17 CEOs were removed from the sample. The control group comprises the

69 CEOs who were awarded the Order of Vasa. The remaining 59 CEOs, that is, those who received neither a Swedish nor a foreign order of merit, constitute the treatment group.

Table 5 displays the results. Again, only the CEO compensation difference-in-difference coefficient is statistically significant. Compared to the base case regressions in Table 2, the economic effect of the coefficient is only marginally lower, $\exp(0.067)$ or 6.9%, and still significant at the 1% level. This is evidence that the documented increase in compensation of 7.1% in Table 2 is not held back by the fact that some CEOs were “content” with having received at least one official recognition, either a foreign one or one of the other Swedish orders of merit. These CEOs wished to also receive the specific order with which the Swedish state would reward their services as CEO and they received compensation for the abolishment of this incentive.⁶

4.5 Robustness

Though the summary statistics in Table 1 and Figure 3 indicate that the parallel trend assumption for the two groups holds, a more formal sensitivity analysis of the difference-in-difference approach is merited and I address this by three different methods: (a) quartile matching of treatment firms with control firms by size, (b) a placebo test with a different event date, and (c) a test to address the concern that the panel data analyzed may overstate the statistical significance of the tests due to persistence in the variables and correlation over time.

It could be that the growth in CEO compensation is different for firms with relatively high levels of sales relative firms with low levels of sales and that controlling for these variables and including firm

⁶ Anecdotal evidence of similar reasoning among recipients of orders of merits is found in Key-Åberg (1949). He writes with great agitation about the, to his mind, severe incongruity in that military physicians and surgeons were not eligible to receive the Order of the Sword even though they held the rank of military officers. They had to instead be content with the civilian Order of the Polar Star.

fixed effects does not fully capture the actual growth dynamics over the sample period. With quartile matching, I follow an approach similar to Foucault et al. (2011) and compute the average sales of each firm over the sample period which I then use to group firms in quartiles by level of sales. The outcome variables of interest are EBITDA margin, ROA, and CEO compensation. Each of these variables are constructed by deducting from the value for each firm in the treatment group, the average value of all firms that belong to the control group who have been matched into the same quartile as the treatment firm. Table 6 reports the results. Coefficients for EBITDA margin and ROA are economically small and statistically significant. The treatment coefficient for CEO compensation is 3.9%, significant at the 5% level. Hence, the earlier reported difference-in-difference findings are not explained by the evolution of sales for control group and treatment group firms around the order of merits reform.

Table 7 depicts the result from a placebo test where treatment is assigned to January 1, 1974, instead of the true event date of January 1, 1975. The pre- and post-treatment periods are now 1971–1973 and 1974–1976, respectively, with unchanged control and treatment groups. To the best of my knowledge, there is no reason to believe that anything took place around the New Year of 1973/1974 that would have an impact upon either the treatment or the control groups. The difference-in-difference coefficients are now all statistically insignificant, which is a good indication that the trends of the two groups are indeed parallel prior to the abolishment of the order of merit system.

To address the potential concern that the panel data analyzed overstate the statistical significance of the tests due to persistence in variables and correlation over time, cross-sectional regressions of the main tests are performed. The dependent variables are now defined as the changes in sales, the EBITDA margin, the ROA, and CEO compensation around the time of the abolishment of orders of merit. The average value for the years 1975–1977 minus the average value for the years 1972–1974 is calculated for the dependent variables as well as for the control variables. Since changes are used, both observed and unobserved firm characteristics that are constant over time will be differenced out, ruling

out the use of fixed effects. As described by Becker and Strömberg (2012), this is a conservative approach in that it reduces the number of observations and the power of the tests considerably. The control variables are changes in assets, changes in equity, changes in book leverage, and changes in market leverage. The cross-sectional results, displayed in Table 8, are qualitatively similar to the baseline panel regressions: Only the change in CEO compensation is statistically significant at the 10% level, with a coefficient of 1.4%, while the performance measures are all insignificant. The fit of the regressions in Table 8 are considerably lower than in previous regressions which is an effect of not using fixed effects. Taken together, the three robustness tests overall support the previously documented effect of the abolishment of orders of merit on CEO compensation.

5. Conclusions

Napoleon's observation that awards can act as motivational tools extending far beyond the monetary value attached to them has been used as a starting point for many scholars theorizing of the importance of status in general and positional goods in particular. As the first empirical study on how orders of merit, a positional good in its purest form, can function as an incentive device for CEOs, this study tests Napoleon's assertion through a natural experiment based on a 1974 legal reform in which Sweden discontinued the conferral of orders of merit to nationals. The difference-in-difference methodology employed compares CEOs who had already received an order at the time of the abolishment of the order of merit system to CEOs who had not received such an order.

This paper's main finding is that in firms where the CEO had not previously been awarded the Order of Vasa, the salary of the CEO increased after the reform. No other firm effects, such as changes in key financials, are discernible. The increase in CEO compensation after the reform is 7.1% for the treatment group relative to the control group. So, the removal of the possibility of receiving a bit of

monetarily worthless ribbon must be compensated for by an increase in salary, in today's terms, of around 25,000 USD per year. Taken together, the unaffected firm performance and increasing CEO compensation suggest that positional goods affect incentives. The removal of the possibility of receiving positional goods needs to be compensated for by monetary rewards. The compensation needed was relatively higher for older CEO cohorts compared to CEOs who had already received an order of merit or who would not yet have entertained the possibility of receiving one due to their relative youth. This evidence suggests that older cohorts were most affected by the reform since they may have anticipated being awarded an order of merit in the very near term. Evidence is also found that the increases in CEO compensation are not held back by CEOs who had not received any order of merit at all or by some CEOs being content with having received at least one official recognition, either a foreign one or one of the other Swedish orders of merit. Therefore one can conclude that CEOs want to receive the specific order with which the Swedish state would reward their services as CEO and upon its abolishment they received compensation for this loss in incentives, regardless of their other awards.

The results also indicate that orders of merit function mainly as a shareholder-friendly device rather than as a society-friendly incentive device. In essence, removing a non-monetary incentive provided by the state leaves a vacuum that shareholders step in to cover by incurring higher costs. In a wider context, the results suggest that lawmakers may want to consider the possibility of using orders of merit to curtail executive monetary compensation in a country's economy if, as is the case in many countries today, executive compensation is seen as an area where state intervention may be needed. A fruitful exercise for future work could be to study how the incentives put in place by national honor systems interact not only with those incentives provided within firms but also with the country's general corporate governance framework.

To conclude, positional goods in the form of orders of merit do provide incentives for CEOs and, as such, the prospect of receiving an award serves as an additional feature of an executive compensation package. Coming full circle, this paper ends with a further quote by Napoleon on the benefits of orders and their motivational powers: “The ribbon of an order binds more strongly than gold chains.”⁷

⁷ See Dumaine (1863) for Napoleon’s own accounts of his thoughts on warfare which includes this quote.

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Figure 1

Overview of the main Order of merit reform of 1974 based upon information in Löfberg (1973) and Uggla (1975).


Order of merit:	Seraphim	Sword	Polar Star	Vasa
Introduced:	1748	1748	1748	1772
Eligibility:	For services to Sweden	For gallantry and for long distinguished service in the armed forces	For civic merits, science, literary, learned, and useful works	For services to agriculture and mining, technical progress, and commerce
Post-1974 reform impact on Swedish nationals:	Abolished	Abolished	Abolished	Abolished
Post-1974 reform impact on non-Swedish nationals:	Can be awarded to foreign heads of state	Abolished	Can be awarded to foreign nationals	Abolished
Average appointments per year to Swedish nationals 1955–1971:	1	150	730	200
Living Swedish recipients in 1974:				
Individuals	24,000			
% of population	0.3%			

Figure 2

Testable predictions

Possible outcomes for treatment relative to the control group following the abolishment of orders of merit. The control (treatment) group comprises CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system.

		CEO compensation		
		Decreased	Unchanged	Increased
Firm performance	Increased	No incentive device	Society friendly	Shareholder friendly
	Unchanged	No incentive device	No incentive device	Shareholder friendly
	Decreased	No incentive device	Shareholder friendly	Shareholder friendly

Figures 3

Average time patterns

The control (treatment) group c (t) comprises CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. Allocation into C and T groups is based upon Uggla (1975). All monetary amounts are in 1975 Swedish krona, which correspond to 2012 US dollars by a factor of 1.03.

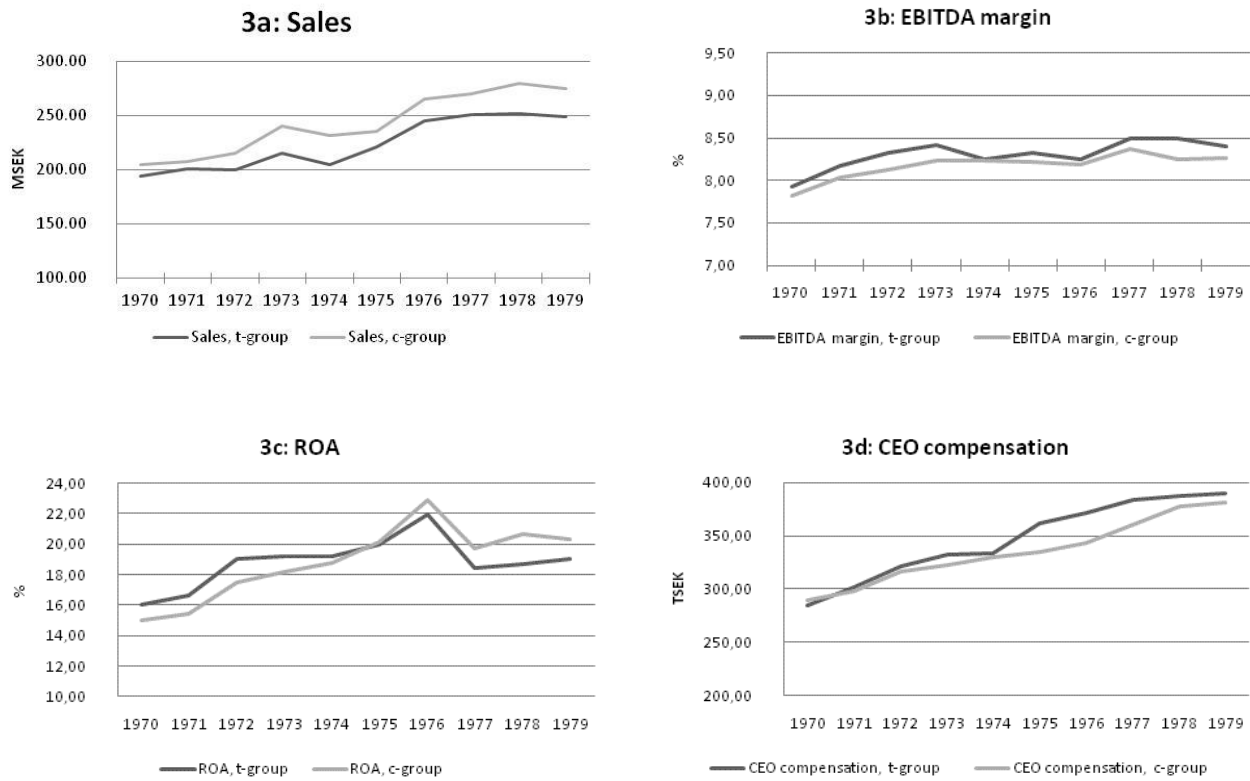


Table 1

Summary statistics

Descriptive statistics for a data set of 145 firms during the 1972–1977 period. The sample includes companies listed on the Stockholm Stock Exchange. Data is obtained from annual reports and public information on CEO's taxable income. EBITDA margin equals the EBITDA divided by sales. ROA equals EBITDA divided by total assets. Book leverage equals assets minus equity minus deferred taxes, over assets. Market leverage equals assets minus book equity minus deferred taxes, over assets minus book equity minus deferred taxes plus market equity. Data only includes those years when a CEO who served in both 1974 and 1975 was in office. The control (treatment) group C (T) comprises CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. Allocation into C and T groups is based upon Ugglå (1975). All monetary amounts are in 1975 Swedish krona, which correspond to 1.03 year 2012 US dollars. # denote firm-year observations. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Sales (mSEK)	EBITDA margin (%)	ROA (%)	CEO comp. (tSEK)	Assets (mSEK)	Market Value (mSEK)	Book leverage	Market leverage	CEO tenure	CEO age	
1972–1977	All	218	8.03	19.4	343	262	184	0.53	0.37	11.6	56.4
	C	232	8.01	18.9	334	267	188	0.55	0.39	11.8	57.4
	T	205	8.07	20.4	353	259	181	0.51	0.36	11.5	55.9
	t-stat	1.35**	0.65	1.18	1.70**	1.28*	1.19	0.92	0.74	0.67	1.24
	#	823	823	823	823	823	823	823	823	145	145
1972–1974	All	202	7.57	15.2	327	282	176	0.50	0.34	10.5	52.1
	C	215	7.46	16.1	324	284	180	0.54	0.35	10.8	53.3
	T	191	7.79	14.4	329	279	173	0.51	0.32	10.4	51.7
	t-stat	1.21	0.98	1.11	1.01	1.28*	1.21	0.88	0.72	0.70	1.18
	#	412	412	412	412	412	412	412	412	145	145
1975–1977	All	255	9.90	22.1	360	241	198	0.55	0.39	12.2	58.7
	C	265	9.49	23.1	345	243	203	0.56	0.40	11.3	55.2
	T	245	9.71	20.1	389	240	195	0.54	0.38	10.9	53.6
	t-stat	1.26	0.95	1.20	2.54***	1.18	1.20	0.90	0.73	0.71	1.20
	#	411	411	411	411	411	411	411	411	145	145

Table 2

Difference-in-difference estimates, 1972–1977

Each column presents the coefficient estimates from an ordinary least squares (OLS) regression for the period 1972–1977, with 1972–1974 and 1975–1977 being the pre- and post-reform periods, respectively. Data are only for the years under the tenure of the 1974/1975 incumbent CEO. The control (treatment) group comprises CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. The dependent variables are the EBITDA margin, the ROA, and the natural logs of Sales and CEO compensation. Firm and CEO controls are assets (natural log of the book value), equity (natural log of the market value), book leverage (assets minus equity minus deferred taxes, over assets), market leverage (assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), the two-year stock return (two-year log change in stock price), CEO tenure and age (natural logs). Heteroskedasticity-robust standard errors, clustered by firm, are given in parentheses. R-squared is obtained including estimated group fixed effects. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Sales	EBITDA margin	ROA	CEO compensation
Treatment group * post-1974	0.040 (0.066)	0.015 (0.012)	0.033 (0.037)	0.069*** (0.025)
Firm and CEO controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
CEO cohort fixed effects	Yes	Yes	Yes	Yes
# of firm-year observations	823	823	823	823
R-squared	0.29	0.34	0.31	0.30

Table 3

Difference-in-difference estimates, 1970–1979

Each column presents the coefficient estimates from an OLS regression for the period 1970–1979, with 1970–1974 and 1975–1979 as the pre- and post-reform periods, respectively. Data are only for the years under the tenure of the 1974/1975 incumbent CEO. The control (treatment) group comprises CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. The dependent variables are the EBITDA margin, the ROA, and the natural logs of Sales and CEO compensation. Firm controls are assets (natural log of book value), equity (natural log of market value), book leverage (assets minus equity minus deferred taxes, over assets), market leverage (assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), the two-year stock return (two-year log change in stock price), CEO tenure and age (natural logs). Heteroskedasticity-robust standard errors, clustered by firm, are given in parentheses. R-squared is obtained including estimated group fixed effects. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Sales	EBITDA margin	ROA	CEO compensation
Treatment group * post-1974	0.030 (0.060)	0.009 (0.010)	0.055 (0.057)	0.023* (0.014)
Firm and CEO controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
CEO cohort fixed effects	Yes	Yes	Yes	Yes
# of firm-year observations	1,283	1,283	1,283	1,283
R-squared	0.42	0.39	0.32	0.35

Table 4

Difference-in-difference-in-difference estimates, 1972–1977, cohorts

This table presents the results of a difference-in-difference-in-difference analysis. The first difference results (D: Non-awarded old CEO) gives the average time changes in the four outcome variables post-reform (1975–1977) and pre-reform (1972–1974) for CEOs who had not been awarded the Order of Vasa at the time of the abolishment and who were born in 1925 or before. The second difference results (D: Non-awarded young CEO) are the average time changes in the four outcome variables post- and pre-reform for CEOs who had not been awarded the Order of Vasa at the time of the abolishment and who were born in 1926 or later. The third difference results (D: Awarded CEO) gives the average time changes in the four outcome variables post- and pre-reform for CEOs who had already been awarded the Order of Vasa at the time of the abolishment, irrespective of birth year. The difference-in-difference-in-difference coefficients (DDD) give the difference between the treatment group (D: Non-awarded old CEO) and the two control groups. Heteroskedasticity-robust standard errors, clustered by firm, are shown in parentheses. Firm controls are assets (natural log of book value), equity (natural log of the market value), book leverage (assets minus equity minus deferred taxes, over assets), market leverage (assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), the two-year stock return (two-year log change in stock price), CEO tenure and age (natural logs). The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Sales	EBITDA margin	ROA	CEO compensation
D: Non-awarded old CEO * post-1974	0.038* (0.015)	0.030** (0.012)	0.035 (0.033)	0.085*** (0.012)
Firm and CEO controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
CEO cohort fixed effects	No	No	No	No
# of firm-year observations	238	238	238	238
R-squared	0.31	0.29	0.23	0.29
D: Non-awarded young CEO * post-1974	0.039* (0.023)	0.032** (0.013)	0.028 (0.032)	0.042*** (0.014)
Firm and CEO controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
CEO cohort fixed effects	No	No	No	No
# of firm-year observations	165	165	165	165
R-squared	0.30	0.28	0.23	0.26
D: Awarded CEO * post-1974	0.034* (0.021)	0.029** (0.011)	0.036 (0.032)	0.005 (0.005)
Firm and CEO controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
CEO cohort fixed effects	No	No	No	No
# of firm-year observations	420	420	420	420
R-squared	0.24	0.28	0.21	0.25
DDD	-0.035 (0.032)	-0.031 (0.039)	-0.029 (0.030)	0.038** (0.015)

Table 5

Difference-in-difference estimates, 1972–1977, differential treatment effects

Each column presents the coefficient estimates from quartile matching regressions for the period 1972–1977, with 1972–1974 and 1975–1977 as the pre- and post-reform periods. The control (treatment) group is defined as those CEOs who had (had not) already received any of the Swedish orders of merit or a foreign order of merit at the time of the abolishment of the order of merit system. Data are only for the years under the tenure of the 1974/1975 incumbent CEO. Dependent variables are the EBITDA margin, the ROA, and the natural logs of Sales and CEO compensation. Firm controls are assets (natural log of book value), equity (natural log of the market value), book leverage (assets minus equity minus deferred taxes, over assets), market leverage (assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), the two-year stock return (two-year log change in stock price), CEO tenure and age (natural logs). Heteroskedasticity-robust standard errors, clustered by firm, are shown in parentheses. R-squared is obtained including estimated group fixed effects. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Change in Sales	Change in EBITDA margin	Change in ROA	Change in CEO compensation
Treatment group * post-1974	0.038 (0.065)	0.019 (0.016)	0.034 (0.039)	0.067*** (0.024)
Firm and CEO controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
CEO cohort fixed effects	Yes	Yes	Yes	Yes
# of firm-year observations	757	757	757	757
R-squared	0.28	0.31	0.22	0.30

Table 6

Quartile matching estimates, 1972–1977

Each column presents the coefficient estimates from quartile matching regressions for the period 1972–1977, with 1972–1974 and 1975–1977 as the pre- and post-reform periods. Data are only for the years under the tenure of the 1974/1975 incumbent CEO. Quartile matching between treatment and control groups is done by level of sales. The control (treatment) group is defined as those CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. The dependent variables, EBITDA margin, ROA, and CEO compensation, are constructed by deducting from the value for each firm in the treatment group, the average value of all firms that belong to the control group who have been matched into the same quartile as the treatment firm. Heteroskedasticity-robust standard errors, clustered by firm, are given in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Matched EBITDA margin	Matched ROA	Matched CEO compensation
Post-1974	0.013 (0.021)	0.008 (0.010)	0.039** (0.017)
Firm controls	No	No	No
Year fixed effects	No	No	No
Firm fixed effects	No	No	No
CEO cohort fixed effects	No	No	No
# of firm-year observations	448	448	448
Adjusted R-squared	0.13	0.14	0.14

Table 7

Difference-in-difference estimates with a placebo event date, 1971–1976

Each column presents the coefficient estimates from an OLS regression for the period 1971–1976, with 1971–1973 and 1974–1976 as the pre- and post-reform periods, respectively. The control (treatment) group is defined as those CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. Data are only for the years under the tenure of the 1974/1975 incumbent CEO. The control (treatment) group is defined as those CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. The dependent variables are the EBITDA margin, the ROA, and the natural logs of Sales and CEO compensation. Firm controls are assets (natural log of the book value), equity (natural log of the market value), book leverage (assets minus equity minus deferred taxes, over assets), market leverage (assets minus book equity minus deferred taxes, over assets minus book equity plus market equity), the two-year stock return (two-year log change in stock price), CEO tenure and age (natural logs). Heteroskedasticity-robust standard errors, clustered by firm, are shown in parentheses. R-squared is obtained including estimated group fixed effects. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Sales	EBITDA margin	ROA	CEO compensation
Treatment group * post-1973	0.040 (0.043)	0.019 (0.030)	0.062 (0.088)	0.056 (0.066)
Firm and CEO controls	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
CEO cohort fixed effects	Yes	Yes	Yes	Yes
# of firm-year observations	806	806	806	806
R-squared	0.34	0.30	0.30	0.29

Table 8

Difference-in-difference estimates, 1972–1977, cross-sectional regression

Each column presents the coefficient estimates from cross-sectional OLS regressions for the period 1972–1977, with 1972–1974 and 1975–1977 as the pre- and post-reform periods. Data are only for the years under the tenure of the 1974/1975 incumbent CEO. The control (treatment) group is defined as those CEOs who had (had not) already received the Order of Vasa at the time of the abolishment of the order of merit system. The dependent variables are changes in the EBITDA margin, changes in the ROA, natural log changes in Sales, and natural log changes in CEO compensation. Firm controls are changes in assets (natural log of the book value), changes in equity (natural log of the market value), changes in book leverage (assets minus equity minus deferred taxes, over assets), and changes in market leverage (assets minus book equity minus deferred taxes, over assets minus book equity plus market equity). Heteroskedasticity-robust standard errors, clustered by firm, are given in parentheses. The superscripts ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable	Change in Sales	Change in EBITDA margin	Change in ROA	Change in CEO compensation
Treatment group	0.041 (0.049)	0.008 (0.009)	0.021 (0.022)	0.014* (0.008)
Firm controls	Yes	Yes	Yes	Yes
Year fixed effects	No	No	No	No
Firm fixed effects	No	No	No	No
CEO cohort fixed effects	No	No	No	No
# of firm-year observations	145	145	145	145
Adjusted R-squared	0.07	0.11	0.05	0.08