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THREE ESSAYS ON THE MARKET FOR CEOs

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Dedicated to my parents
Venované mojim rodičom

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Abstract

This dissertation consists of three essays.

In the first essay, we study the influence of CEO experience and education on firm performance, on variability of firm performance, on investment and financing policies, and on organizational strategy. We also include measures of CEO power to study differences in influence between powerful and non-powerful CEOs. Our results suggest that older and more experienced CEOs are associated with more conservative strategies. The younger and less experienced the CEO, the more volatile the firm performance. MBA degree holders seem to be more stability-oriented. We associate CEOs with technical education with more volatility of firm performance. Firms with powerful CEOs also have more volatile performance (stock returns). The status of a founder seems to be the most influential dimension of CEO power. By borrowing from personality and social psychology as well as from generational theory, we employ the 2SLS estimator in an attempt to shed more light on the direction of causality from CEO characteristics to firm policies. We find that it is not only firms selecting CEOs to match the company's needs but, provided there is a sufficient period for a CEO to leave an imprint, the causality runs from CEOs to firm outcomes as well. Firm outcomes and policies, especially firm performance, variability of firm performance and investment policy, reflect the CEOs' industry and CEO experience.

In the second essay, we study and assess the role of company, industry and CEO experience in determining CEO pay. CEO compensation is viewed as the return to post-schooling investment in human capital. We find that the effect of our three work experience measures on various measures of CEO compensation is rather modest, so is the contribution of these experience measures quantified as a percentage of R^2. The effects of a one-standard-deviation increase in company, industry and CEO experience on cash-based compensation do not exceed 8%. CEO experience matters more than the other measures for total compensation: we observe as much as 25% higher total compensation for a one-standard-deviation increase in CEO experience. None of the three experience measures seems to factor significantly in awarding stock grants as a component of total compensation. As long as the results do not

reflect pay for omitted CEO characteristics correlated with our measures of CEO power, we also find that powerful CEOs (chairman CEOs, founders) have room for rent extraction through compensation. The contribution to the models' R^2 of any experience measure as a single factor does not exceed 1%. Even though other (unobservable) personal characteristics of CEOs may come ahead as more significant factors of CEO pay, we establish awareness of the role of work experience as a determinant of CEO compensation.

The third essay complements the literature on CEO compensation by studying the effects of job market conditions at the start of future CEOs' careers. We also contribute to research on cohort effects in compensation by taking a closer look at the niche job market for executives. Evidence from other labor market research points to procyclical cohort effects, positing that favorable initial conditions positively affect careers in the long run. We find, however, no evidence of persistent rewards for CEOs for starting their career in more successful firms, or for the luck of entering the job market in a good economy. In a setting with future public-firm CEOs and taking account of macroeconomic conditions at the start of their careers, our findings rather suggest that long-term effects are countercyclical: those individuals who start their careers in a recession, earn a higher CEO pay. We also find that initial job conditions may yield a higher first CEO compensation but the positive effect dissipates over time. The findings support the notion that the market for CEOs is efficient.

Keywords: *(observable) CEO characteristics, CEO experience, CEO compensation, labor market for CEOs, cohort effects*

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Chapter 1

The Influence of CEO Experience and Education on Firm Policies

1.1 Introduction

Do (observable) CEO characteristics influence firm outcomes? If so, are some characteristics more relevant than others? Do some characteristics matter for certain firm policies more than for other firm policies? Does CEO power, i.e. the CEO's ability to put through his/her decisions, reinforce the influence of the characteristics themselves? In this paper, we present evidence on the influence of CEO experience and education on firm policies. Our empirical study explores in an extensive manner the influence of observable managerial characteristics (CEO experience and education) on firm outcomes in a number of categories: firm performance, variability of firm performance, investment and financing policies, and organizational strategy.

We test hypotheses along the lines of those presented in Hambrick and Mason (1984), Bertrand and Schoar (2003) and Adams et al. (2005). We hypothesize that younger CEOs take more risks. Firms with younger CEO have higher growth, higher variability of performance and higher financial leverage. There is more product innovation in these firms. More experienced CEOs opt for more conservative strategies. More conservative strategies imply less risk taking which reflects in less growth strategies, lower variability of firm performance, more automation. While Bertrand and Schoar (2003) hypothesize that MBA degree hold-

ers seem to follow more aggressive strategies, Hambrick and Mason (1984) associate CEOs holding MBA degrees with "moderation" - less risky strategies, less innovation, focus on short-term goals. CEOs with technical education support innovation and these firms tend to have higher administrative complexity. Firms with CEOs with economic education tend to have less administrative complexity. For powerful CEOs, we expect these effects to be more significant. An overview of the expected signs of the relationships between firm policy measures and selected CEO characteristics is in Table 1.A2 in Appendix 1.2.

In the organizational and managerial science literature, the most studied managerial characteristics are demographic characteristics, and observable characteristics in general. There are theories which advocate both the "managers matter" view and "managers do not matter" view. The former category is represented by the upper echelon theory of Hambrick and Mason (1984). They argue that the characteristics of strategic decision makers in a company serve as partial predictors of organizational outcomes. The emphasis is on observable managerial characteristics since they are more easily accessible and less noisy than psychological measures and can be used as proxies for unobservable personality traits. The paper contains a number of testable propositions for each "upper echelon" characteristic considered. The opponents of the "managers matter" view in the managerial science literature argue that there is a number of organizational and environmental factors that make it difficult for one executive, or a team of strategic decision makers, to influence firm outcomes (e.g., Lieberson and O'Connor, 1972).

Although the managerial science literature provides valuable insight into the influence of managers on corporate policies, the level of generality is often lower than what would be sufficient for a well-established empirical finance study (Bertrand and Schoar, 2003). Our paper studies the influence of selected CEO characteristics on a number of measures for firm policies and firm performance. In the corporate finance literature, we find similar tests of the influence of observable managerial characteristics on firm outcomes but often as complements to the main research question, as in, e.g., Bertrand and Schoar (2003), Malmendier and Tate

(2005), and Malmendier and Tate (2008). But there might be a need for further, more systematic examination.

Bertrand and Schoar (2003) is one of the first empirical studies that takes a "managers matter" (instead of firm, industry or market factors) view to explain large differences in corporate practices across firms. They study managerial fixed effects on a manager-firm matched panel data set which allows them to follow managers (CEOs, CFOs and others) across firms over time. Their results show that individual differences between managers matter for company outcomes but they are not specific about which characteristics or which "managerial styles" matter in which situation. From observable managerial characteristics, they examine year of birth and MBA degree. They find that older managers tend to be more conservative and MBA degree holders more aggressive.

Using data on hiring top managers in buyout and venture capital firms, Kaplan et al. (2007) conclude that interpersonal ("soft") skills are overvalued in hiring, and executive ("hard") skills matter more for company success (particularly in buyout firms). When controlling for observable abilities, there is no difference in the probability of success between firm incumbents and outside candidates, in contrast to the fact that outside CEO candidates are usually expected to be of higher ability. We find that "hard" skills indeed matter. A more experienced CEO is expected to have more and better executive skills, and we find that experience-related characteristics influence a wide range of firm policies.

Although Malmendier and Tate (2005) and Malmendier and Tate (2008) primarily focus on managerial overconfidence - a non-observable managerial characteristic - they also perform tests with observable characteristics. Malmendier and Tate (2005) consider educational and employment background, birth cohort, and accumulation of titles within the company. They conclude that observable characteristics that reflect the CEO's background may be important for determining investment policy. In Malmendier and Tate (2008), financial education and tenure seem to have the strongest positive influence on acquisitiveness. For accumulation of titles (president and chairman of the board) by the CEO, they do not obtain significant

results.

Adams and Mueller (2002) show that companies with higher R&D expenses have younger CEOs, CEOs who have greater wealth invested in firm stock, CEOs who have strong career experience in marketing and/or engineering, and CEOs with advanced science-related degrees. Nelson (2005) finds no influence of CEO characteristics (considered are age, tenure in total, tenure with the firm, CEO compensation) on initiating changes in corporate governance practices.

Adams et al. (2005) argue that examining managerial characteristics and the structure of decision-making within firms is an important step towards understanding firm-level volatility. They highlight the importance of managerial power for a manager to "matter". As powerful CEOs have the "ability to overcome resistance" in a consistent manner (p.1405), they manage to persuade top management teams and/or the board to take a particular course of action. Powerful CEOs may take good or bad decisions which will not be modified in the company decision-making process. Adams et al. (2005) show that firms with powerful CEOs display more variability of performance. They also find that the three measures of CEO power they use (dummies for "founder", "only insider on the board", and "concentration of titles") are positively related with the variability of stock returns in industries with high managerial discretion. Findings of Cheng (2008) are in line with those of Adams et al. (2005). The larger the board, the more difficult it is to reach consensus. Firms with larger boards tend to have less variability in performance since their boards will take less extreme decisions.

In this paper, we provide evidence on the influence of six observable CEO characteristics (related to CEO experience and education) on fourteen firm policies divided into five groups. We perform more systematic and more comprehensive tests also in combination with CEO power and discretion. For data on CEOs and boards, we use the *BoardEx* database. The results from the regression analysis confirm the hypotheses. Older and more experienced CEOs are associated with more conservative strategies and might be less growth oriented. The younger and less experienced the CEO, the more volatile the firm performance. We also

find evidence for more investment associated with younger CEOs. MBA degree holders seem more growth oriented but linked to less volatile firm performance as well. Also, CEOs with economic education are associated with less firm performance volatility; the opposite holds for CEOs with technical education.[1] We also find that industry experience and SG&A expenses are negatively associated. Additional results show that power and discretion variables may contribute to the influence of certain characteristics. The strongest results come from the regressions where we pair the power measures with industry or CEO experience, thus pointing out industry and CEO experience as the more interesting observable CEO characteristics from among the six managerial variables we study in the paper. The most statistically and economically significant results are obtained when including the power measure *Founder*.

Robustness checks include replacing the industry dummies with firm dummies, and more importantly, an attempt to examine the direction of firm-CEO causality (from firm to CEO or from CEO to firm) by employing the pooled two-stage least squares (2SLS) estimator where we use the CEOs' generational membership as instruments. Conditional on the validity and relevance of our instruments, the 2SLS estimates confirm our hypothesis that CEOs' industry and CEO experience have considerable influence on firm performance as well as on its variability, on investment and dividend policy, and on SG&A expenses.

When justifying the CEOs' generational membership as instruments in our 2SLS estimation, we draw from personality psychology and generational theory. Some personality and social psychology theorists suggest that generational membership plays a role in forming one's personality.[2] The main historical events we are exposed to while growing up and reaching young adulthood may be as important in shaping our personality as the family environment (e.g., Twenge, 2000). Papenhausen (2006) notes that generational membership is a group - rather than an individual - concept and it can be seen as a managerial characteristic that is

[1] After controlling for industry unobserved effects, the association between CEOs with technical education and higher R&D expenses disappears.

[2] What we mean by generation here is not the family cohort in terms of descendant lines, but birth cohort, i.e. people born into the same historical period, growing up in the same sociocultural environment, thus forming a generational "peer personality" (Howe and Strauss, 1991).

somewhere between observable and unobservable (psychological) characteristics.

We use generational membership as a "proxy for the larger sociocultural environment" (Twenge, 2000). We hypothesize that membership in a generation is one of the factors to influence a CEO's personality; personality influences experience through choices that CEOs' make along their career paths, and experience is reflected in the firm outcomes through CEOs' strategic decision-making processes. Examining a possible mechanism behind experience influencing firm outcomes, we exclude the generation dummies from the second-stage equation. We assert that large socioeconomic changes from more than a decade ago do not have direct influence on current firm policies and performance.[3]

The paper is organized as follows: In Section 1.2, we present the data and the variables. Our methodology is explained in Section 1.3. Section 1.4 discusses our findings from the associational analysis, followed by the robustness tests in Section 1.5, including the results from the pooled 2SLS estimation. Section 1.6 concludes.

1.2 Data description and variable definitions

1.2.1 The sample

Our panel data set contains observations on 1,930 different firms and 2,426 different CEOs. The sample period is January 1996 - December 2006. Table 1.1 provides the number of firm/CEO observations per year. Financial firms (two-digit SIC codes 60-69) are excluded from the sample. Both firms and CEOs are assigned a unique identification number that avoids duplicates (or omissions) when there are differences in how CEO or company names are written, or when changes of company names occur.

CEOs, firms and years are indexed as m, i, and t, respectively. We assign CEO m to a firm i in year t if the CEO works for that company at least six months in year t. We

[3]Howe and Strauss (1991) determine the length of one life phase as approximately 22 years and this is roughly the duration of forming a generational "peer personality". Our average CEO is 55 years old, which gives us the average time period that elapsed between the "last peer personality formation" and the beginning of our sample equal to approximately $55 - 22 = 33$ years.

assert that outcomes of strategic decisions show with a time lag and these lags may as well differ throughout companies and industries. Thus we choose to include only firm-manager observations where the CEO is present in the firm for at least three years, time enough for the CEO to leave an "imprint" (Bertrand and Schoar, 2003).[4] Cases where there is more than one CEO per firm in a given year (i.e. cases of co-CEOs, joint-CEOs, group CEOs) are not included in the sample.

1.2.2 Dependent variables and firm-level controls

Data on company characteristics, on measures for firm policies and on firm-level controls come from Compustat North America Industrial Annual and CRSP Monthly Stocks (obtained through WRDS).

We use fourteen different measures for firm policies, divided into five groups. Measures of firm performance include return on assets, Tobin's Q, and stock returns.[5] Measures of the variability of firm performance are computed as standard deviations of the firm performance variables over 5-year rolling windows.[6] Investment policy is measured by the variable *Investment* (capital expenditures over fixed assets) and financing policy by the variables *Leverage*, *Cash holdings*, *Interest coverage*, and *Dividends over earnings*. We use three measures for organizational strategy: *Advertising*, *Research & development* (R&D), and *Selling, general & administrative expenses* (SG&A - overhead expenses).

All firm policy variables, with the exception of stock returns, are computed as a percentage of total assets, sales, earnings or other measures. To mitigate the impact of outliers, all variables that take a ratio form and all variables computed as standard deviations (of ratio-form variables) are winsorized at the bottom and the top first percentile. Stock returns (including dividends) are calculated as holding period returns. We include only those years

[4] Although we do not demand the CEO to be present for three *consecutive* years.

[5] When running the regressions with variables operating return on assets, or free cash flow over total assets, in place of the variable return on assets, the results are both quantitatively and qualitatively similar, so we do not include these results in the tables.

[6] Results for standard deviations of operating return on assets and free cash flow over total assets are, again, similar to those for return on assets, and they are not tabulated.

where all 12 monthly returns are available. Table 1.A1 in Appendix 1.1 contains detailed information on how the firm policy measures are constructed.

Which firm-level controls are included in the regression depends on the firm policy measure. The only firm-level control present in all regressions is the indicator variable *Complex firm*. The *Complex firm* dummy equals one if the number of the firm's business segments is higher than one, and equals zero otherwise. For measures of firm performance and of variability of firm performance, we include natural logarithm of total assets (firm size) as control. For investment, we include lagged (*t-1*) Tobin's Q, lagged (*t-1*) logarithm of total assets, and cash flow. For measures of financing policies, return on assets, cash flow, and lagged (*t-1*) natural logarithm of total assets are included as controls. Controls for measures of organizational strategy are: return on assets, cash flow, and natural logarithm of total assets.

1.2.3 Main independent variables, measures of managerial power and discretion

The main independent variables are represented by six observable CEO characteristics: three experience-related variables and three education-related variables. Data on CEO characteristics are drawn from the *BoardEx* database.

The experience-related variables capture different aspects of acquiring knowledge, skills and practice during a CEO's life. The most general variable from the experience-related variables is *Age*. The other two variables are more specific from the professional experience point of view. *Industry experience* refers to the total number of years up to time t that the CEO spent in companies of the particular industry that the current firm belongs to at time t. We hypothesize that knowledge of the industry may facilitate the choice of strategies at the top executive level. Industries are identified using the Fama-French 49 industry classification. We use the Fama-French industry classification rather than identifying industries according their two-digit Standard Industrial Classification (SIC) code because it provides us with a

more sensible, more organic grouping of industries. *CEO experience* is the total number of years in various chief executive officer positions held by the company's CEO in various firms, not necessarily in the same industry, throughout his/her career up to time t. It proxies for the CEO's knowledge on the code of conduct of different companies which may improve the strategic decision making when the individual is in charge of managing the entire company.

The education-related variables are all indicator variables. *MBA* is a dummy variable that equals one if the CEO holds an MBA degree. *Economic education* is a dummy variable that equals one if the CEO graduated from economics, finance or related courses. Here we consider undergraduate or graduate courses with "Economics", "Management", "Marketing", "Accounting", "Finance", "Banking", "Business" and related, in the course name. Economic education does not include MBA degrees. *Technical education* is a dummy variable that equals one if the CEO graduated from engineering courses (in areas such as computer science, chemistry, physics, various technology areas). Again, both undergraduate and graduate courses are considered. The same CEO may have both economic and technical education.

We use three different measures of CEO power, and an alternative to managerial power - managerial discretion. These variables represent different aspects of the manager's ability to promote his ideas and put them into practice, thus overcoming "resistance" from the environment (e.g., the board, other top managers)(Adams et al., 2005). The power and discretion measures are the same as in Adams et al. (2005). *Accumulation of titles* is a dummy variable that equals one if the CEO is also the chairman of the board. *Founder* is a dummy variable that equals one if the CEO is also the (co-)founder of the firm. *Only insider* is a dummy variable that equals one if the CEO is the only insider on the board, i.e. if the remainder of the board is constituted by independent directors. The construction of the latter variable is slightly different from that in Adams et al. (2005). While they look at the executive compensation tables of firms to identify whether a CEO is the only member of the board receiving executive compensation for the given year, we inspect entire boards for firm i in year t in *BoardEx*, and identify the CEO as the only insider on the board if all the other

members of the board are indicated as independent directors.

The power variables are chosen to cover different sources of managerial power. A manager powerful in terms of accumulation of titles has his/her CEO position reinforced by being the chairman of the board. Then he/she may exert more influence upon strategic decisions than a "regular" CEO. A founder may have more say (or even the last word) in strategic decisions about the firm than any other member of the board or any other member of the firm's management. If the manager is the only insider on the board of directors, he/she may have superior information about the firm and may use this information to affect board decisions according to his/her strategic goals. We consider managers powerful also if their firm's industry is a high-discretion industry, as in Adams et al. (2005).[7] *Managerial discretion* (i.e. high-discretion industry) is a dummy variable and indicates an industry (two-digit SIC code) in which there are less external constraints on managerial decision-making (high level of discretion for managers) according to experts' opinion.

Table 1.2 presents descriptive statistics of the variables. The total number of firm-year observations varies between 4,389 observations (on advertising) and 14,751 observations (on stock returns, standard deviation of stock returns, complex firm dummy, accumulation of titles, only insider, and generation). Firm variables in all firm policy categories exhibit large variability (when looking at means, medians, standard deviations, minima and maxima). CEOs' age varies between 26 and 90 years. The average CEO is 54.5 years old, has 9.79 years of experience in the industry of his/her current employer, and 10.41 years of experience as CEO. The median values indicate that more than fifty percent of the CEOs in the sample do not have neither economic, or MBA, nor technical education. More than half the CEOs in the sample are powerful CEOs in terms of accumulation of titles, and work for a company in a high-discretion industry.

[7]Hambrick and Abrahamson (1995) obtain ratings on 70 (four -digit SIC) industries' discretion based on subjective assessments by a panel of academic experts. Adams et al. (2005) average these ratings for two-digit SIC industries. Industries in the top 40% of the rating distribution are categorized as high-discretion industries (for the respective industries, the discretion dummy equals one) and industries in the bottom 40% of the distribution as low-discretion industries (for the respective industries, the discretion dummy equals zero).

Table 1.3 contains the correlation coefficients of the explanatory variables. Most of the coefficients are statistically significant at the 1% level. As expected, the experience-related measures are all moderately positively correlated, with correlation coefficients around 0.3-0.4. MBA degree is negatively correlated with experience; it is an indication that MBA degree holders in this sample tend to be younger. MBA degree and economic education are positively correlated (0.31). The correlation coefficient between MBA and technical education is close to zero. Economic education and technical education are negatively correlated (-0.12). The correlation coefficients for any pair of power measures are very low, an indication that power variables may indeed be capturing different aspects of managerial power. Complex firms tend to have larger total assets and smaller (lagged) Tobin's Qs, as indicated by the correlation coefficients 0.28 and -0.17, respectively. No pair of explanatory variables that appear in the same regression is highly correlated. In fact, the majority of correlation coefficients of variable pairs that appear in the same regression do not exceed 0.2 in absolute value.

1.3 Methodology

First, as a basis for comparison, we run least squares dummy variable regressions of firm policy measures on each main independent variable, firm-level controls, and year and industry dummies. The industry dummies use the Fama-French 49 industry classification. The baseline linear unobserved effects model is:

$$Y_{it} = \alpha + \beta X_{(i)m(t)} + Z'_{it(-1)}\gamma + \tau'_t\delta_1 + \iota'_i\delta_2 + \varepsilon_{it} \tag{1.1}$$

where firms are indexed as i, managers as m, and time periods (years) as t. Y_{it} represents the dependent variables, $X_{(i)m(t)}$ represents the main independent variables. $Z_{it(-1)}$ is a vector of firm-level controls. τ_t stands for year dummies and ι_i for industry dummies. α and ε_{it} represent the intercept and the error term, respectively. Indices in brackets mean that the

indexing is not applicable for all combinations of dependent and independent variables. In all regressions (the baseline model as well as all models henceforward), standard errors are corrected for clustering of observations at the firm level.

Then, we successively add the power measures as well as their interaction terms with the main independent variables in each of the regressions:

$$Y_{it} = \alpha + \beta_1 X_{(i)m(t)} + \beta_2 Pwr_{(i)m(t)} + \beta_3 (X_{(i)m(t)} Pwr_{(i)m(t)}) + Z'_{it(-1)}\gamma + \tau'_t\delta_1 + \iota'_i\delta_2 + \varepsilon_{it} \tag{1.2}$$

where $Pwr_{(i)m(t)}$ represents power measures.

Year and industry dummies, which control for average differences throughout years and industries, are included in order to separate these differences between entities (firms) from other influences. By including industry dummies, we isolate the unobserved industry effects that do not vary over time (e.g., long-term industry standards). Similarly, by including year dummies, we isolate the effects of factors that change over time but not over firms (e.g., macroeconomic developments, industry-specific shocks, changes in legislation).

Since industry dummies and the discretion dummy are collinear, industry dummies are excluded from the regressions containing the managerial discretion dummy ($Discr_{(i)m(t)}$):

$$Y_{it} = \alpha + \beta_1 X_{(i)m(t)} + \beta_2 Discr_i + \beta_3 (X_{(i)m(t)} Discr_i) + Z'_{it(-1)}\gamma + \tau'_t\delta_1 + \varepsilon_{it} \tag{1.3}$$

As a robustness test, we rerun the basic regressions (Eq. 1.1), and the regressions on industry experience ($IndExp_{imt}$), power variables and interaction terms, but with firm fixed effects as the alternative to industry dummies. Recall that we impose the condition that only firms with at least three years of data are considered. The conclusions from previous regression results should withstand this change since our aim with fixed effects regressions is

to control for all potential firm or industry factors in order to best isolate the effects of CEO characteristics on firm policies. Unlike industry dummies, firm fixed effects φ_i are included in the regressions containing the managerial discretion dummy:

$$Y_{it} = \alpha + \beta_1 IndExp_{imt} + \beta_2 Discr_i + \beta_3 (IndExp_{imt} Discr_i) + Z'_{it(-1)}\gamma + \tau'_t \delta_1 + \varphi_i + \varepsilon_{it} \tag{1.4}$$

1.4 Main results

This section comprises the results from our associational analysis. We deal with robustness and causality issues in Section 1.5.

1.4.1 Results from the baseline regressions

Table 1.4 contains results from regressions of the form presented in Eq. (1.1). The internal validity of these results does not allow us to take conclusions about the direction of causality, thus we do not take conclusions about to what extent is CEO influence endogenous. Associational analysis, however, is useful in indicating which CEO characteristics and which firm outcomes exhibit stronger association.

The majority of the strongly statistically significant (at the 1% level) coefficients in Table 1.4 come from the regressions on the experience-related CEO characteristics (age, industry experience and CEO experience). All regressions of the standard deviation of stock returns on CEO characteristics have significant coefficients on the main independent variable. The coefficients can be interpreted as percentage changes since the dependent variables can be either already directly expressed as percentages (the variable stock returns and the standard deviation variables), or they take a ratio form (see Table 1.A1 in Appendix 1.1). In all the analysis of results that follows, as we interpret the regression coefficients, we always maintain the assumption that the other control variables are held constant.

The signs of the experience-related variables' coefficients are as expected: firms with older and more experienced (both industry experience and CEO experience) CEOs have, on average, higher returns on assets, lower Tobin's Q and lower stock returns. This may reflect older, more experienced CEOs opting for less growth-oriented, more conservative strategies. Older CEOs may choose less risky, thus on average less profitable strategies.

A one-standard-deviation change in experience-related variables yields a change in performance variables return on assets and stock returns of approximately 1.2 to 1.62%. For Tobin's Q, a one-standard-deviation increase in age decreases this measure of firm performance by 10.29%. A one-standard-deviation increase in industry experience and CEO experience decreases Tobin's Q by 8.75% and 7.21%, respectively. Firms with older and more experienced CEOs have also smaller stock returns. With respect to a one-standard-deviation increase in age, industry experience and CEO experience, the decrease in stock returns is 2.9%, 1.36% and 1.08%, respectively.

Firms with older and more experienced CEOs have, on average, lower variability of firm performance, as measured by the standard deviations of the firm performance variables. An increase in age and experience by one standard deviation is associated with a decrease in the standard deviation of return of assets between 1.36 and 1.53%. The associated decrease in the volatility of stock returns is 0.5% for more CEO experience, 1.04% for more industry experience, and 1.4% for higher age. In case of volatility measured by the standard deviation of Tobin's Q, a one-standard-deviation increase in age (8.50 years), in industry experience (8.02 years), and in CEO experience (8.29 years), decreases the volatility by 14.46%, 13.25% and 7.71%, respectively.

Results in Table 1.4 also show that firms with older and more experienced CEOs tend to invest less. A one-standard-deviation increase in experience-related variables decreases investment on average very moderately, by 0.66 to 1.45%. As for financing policies, we obtain statistically significant (at the 1%) results for the firm policy measures cash holdings and dividends over earnings. Firms with older CEOs and CEOs with more experience in the

industry hold less cash and pay out more dividends. The marginal effect of industry experience estimated at its one-standard-deviation increase is -22.8% for cash holdings and +1.44% for dividend over earnings. The latter may stem from higher dividend payout and/or lower earnings but both are consistent with older CEOs following more conservative strategies.

Firms with older CEOs seem to have lower advertising expenses and lower SG&A expenses on average. Similarly, we obtain a negative, economically less significant association between a CEO's industry experience and overhead expenses as well as between a CEO's previous experience as CEO and R&D expenses.

Education-related managerial characteristics yield considerably less significant results than experience-related characteristics. Firms with CEOs with technical education have by 4.69% higher stock returns and by 0.84% higher variability of stock returns than firms whose CEOs do not have technical education, results significant at the 5% and 1% level, respectively. Technical education is also negatively associated with leverage: 2.05% lower debt ratio for firms whose CEOs have technical education compared to those whose CEOs do not have technical education. Compared to firms whose CEOs do not have MBA degrees or economic education, firms with CEOs with MBA degrees and with CEOs with economic education, have, on average, by approximately 0.5% lower volatility of stock returns, a result significant at the 5% level of significance. CEOs with MBA degrees seem to be employed by firms with higher Tobin's Qs. This difference of 18.15% between firm with MBA-CEOs and CEOs without MBA is statistically significant at the 5% level.

The results above suggest that CEOs with economic education or an MBA degree may have more expertise to make decisions which lower stock return volatility. These CEOs may take more informed strategic decisions that result in "smoother" outcomes. It supports the hypothesis of Hambrick and Mason (1984) that MBA degree holders opt for less risky strategies, contrary to the supposition of Bertrand and Schoar (2003) that MBA degree holders are more aggressive. We will explore the causality from CEOs to firm volatility further in Section 1.5.

1.4.2 The effect of power measures

Tables 1.5 to 1.10 present results from regressions where we add the managerial power measures and their interactions with the main regressors: *Age*, *Industry experience*, *CEO experience*, *MBA*, *Economic education* and *Technical education*. We test whether there is a significant difference in firm outcomes depending on CEO power, i.e. whether there is a difference between firms with powerful and non-powerful CEOs with the same (level of) observable CEO characteristic. Tables 1.5 to 1.10 contain results from regressions on the main regressors and power measures as in Eq. (1.2) (the results are reported in three leftmost sections of each table) and Eq. (1.3) (the results are reported in the fourth, rightmost section of each table). The regressions with managerial discretion do not include industry dummies, since industry dummies are collinear with the managerial discretion dummy.

The pattern of sign, magnitude and significance of coefficients on the variable *Age* is similar to the one in Table 1.4. There are, however, few results with significant coefficients on power or interaction with power. Including *Accumulation of titles*, *Only insider*, and *Managerial discretion* in regressions that use *Age* as a measure of experience does not produce any strongly statistically significant results. One of the reasons behind power measures remaining insignificant may be the inclusion of the interaction variables in the regression. Power and interaction with power are, naturally, highly correlated which results in standard errors of power being inflated and yielding statistically insignificant (though in a number of cases economically significant) coefficients on power. We can think of this from the point of view of significance of a result when age equals zero. There is no observation where age equals zero (it is not a very reasonable assumption) so the power coefficients for managers with age zero are also not expected to be significant.

For measures of firm performance and of the variability of firm performance, all coefficients on the variable *Age* are statistically significant at the 1% or the 5% level. Strongly statistically significant coefficients in regressions on power and the respective interaction terms appear in the regression of standard deviation of stock returns, and of investment on, among other

variables, *Founder* and the interaction term of *Founder* and *Age*. Consistent with Adams et al. (2005), firms with founder CEOs have a higher variability of stock returns than firms with non-powerful CEOs. The standard deviation of stock returns for firms with a founder CEO is, on average, 6.94% higher than for firms with a non-powerful CEO of the same age. The difference slightly decreases the older the CEOs are. With a one-standard-deviation (8.50 years) increase in age, the standard deviation of stock returns for powerful (founder) CEOs is, on average, 5.32% higher than for non-powerful CEOs, holding the other variables constant. If the CEO is the founder of the company, there is 21.74% more investment in these firms compared to firms with non-founders of the same age. Again, with younger CEOs this difference between founders and non-founders slightly decreases. If age increases by one standard deviation, investment in firms with founder CEOs is 17.91% higher than for firms with non-founder CEOs. In companies where the CEO is the founder of the company, dividends over earnings are, on average, 8.07% lower than in companies with non-founder CEOs. At older ages, the difference between powerful and non-powerful CEOs decreases. For an increase of one standard deviation in age, dividends over earnings of firms with founder CEOs are 6.88% lower than for firms with non-powerful CEOs. For all other cases in Table 1.5, we fail to reject the hypothesis that powerful and non-powerful CEOs have the same effect on firm policies. We have to keep in mind that coefficients on power may be inflated due to their correlation with the interaction variable. This is important for conclusions about the economic significance of the results.

Another experience-related variable is *Industry experience*. Table 1.6 contains significant results for nearly all measures of firm policies. Overall, the pattern of sign, magnitude and significance of coefficients on industry experience follows that of Table 1.4. Also, there are considerably more significant coefficients on power measures than in Table 1.5. Power seems to matter for firm performance, variability of firm performance, investment but also for some financing and organizational policies. Firms with powerful CEOs (chairman CEOs and only insiders) have higher returns on assets than firms with non-powerful CEOS. Compared to

firms where the CEO is not the founder, firms with founder CEOs of the same industry experience have 39.52% higher Tobin's Q. Companies with powerful - in terms of accumulation of titles - CEOs have 1.99% lower standard deviation of return on assets than firms with non-powerful CEOs. The difference decreases when the CEO is more experienced. With a one-standard-deviation increase in industry experience (8.03 years), the difference between firms with chairman CEOs (accumulation of titles) and non-powerful CEOs is, on average, 2.95%, at the 1% level of statistical significance. We fail to reject the hypothesis that the standard deviation of Tobin's Q as well as the standard deviation of stock returns of firms with founder CEOs and non-founder CEOs are equal. Standard deviations of Tobin's Q and of stock returns are, on average, higher for firms with founder CEOs than for firms with non-founder CEOs. The former difference is 37.97%, the latter 3.02%, and both decrease at higher levels of experience. The results are economically significant. A one-standard-deviation increase in industry experience increases the standard deviation of Tobin's Q of firms with founder CEOs by 12.12% compared to firms with non-founder CEOs with the same industry experience. Similarly, the standard deviation of stock returns increases by 1.09% for founders compared to non-founders with the same experience. Firms with founder CEOs invest 6.21% more than companies with non-founder CEOs with the same industry experience. Again, the difference decreases at higher levels of experience. An increase in industry experience by one standard deviations means, on average, an increase of 2.28% in investment in firms with founder CEOs compared to firms with non-founder CEOs. Companies with founder CEOs and with CEOs with more discretion hold, on average, more cash than companies with non-powerful CEOs. In case of companies with founder CEOs, the difference of -2.86% in dividends over earnings compared to companies with non-powerful CEOs is statistically significant at the 1% level.

Results in Table 1.7 also follow the pattern outlined in Table 1.4. Regressions on CEO experience yield a slightly lower number of significant results (both on experience and power variables) than regressions on industry experience. From among the power measures, *Founder*

yields again the most of the strongly statistically significant results. Firms with founder CEOs have, on average, 4.13% lower returns to assets and by 12.01% higher stock returns than firms with non-founder CEOs with the same CEO experience. Firms with founder CEOs have 3.51% higher standard deviation of returns on assets, which is economically significant and statistically significant at the 5% level. Standard deviations of Tobin's Q and of stock returns for companies with founder CEOs is 41.03% and 4.18%,respectively, higher than for non-powerful CEOs. The results are statistically significant at the 1% level. A one-standard-deviation increase in CEO experience (8.29 years) increases standard deviation of stock returns in firms with founder CEOs by 2.77% compared to firms with non-founder CEOs of the same experience. The difference decreases with more CEO experience. Similarly, firms with founder CEOs have, on average, by 7.88% higher investment than firms with non-founder CEOs with the same CEO experience. A one-standard-deviation increase in CEO experience increases investment by 5.14% for firms with founder CEOs compared to firms with non-founder CEOs. The difference decreases with more CEO experience. Firms in industries with higher managerial discretion have 0.91% lower dividends over earnings compared to firms with lower managerial discretion, but the difference decreases as the CEO experience increases. The overall effect of a one-standard-deviation increase in CEO experience is a decrease in the difference between firms with powerful and non-powerful CEOs of 1.16%.

Results for the experience-related variables suggest that more conservatism by more experienced CEOs may prevent higher earnings from riskier projects, but the corresponding companies tend to have more stable performance as well.

The three education-related variables that we use are all dummy variables. All coefficients in Tables 1.8 to 1.10 are coefficients on dummy variables, or on interactions of two dummy variables. The results, thus, are interpreted with reference to a base group of managers that do not have a certain type of education (MBA, economic or technical), and do not have a powerful status in the company or are employed by a firm in a low discretion industry. Regression results in Tables 1.8 to 1.10 show that adding power and discretion variables does

not yield more statistically significant outcomes compared to the baseline results in Table 1.4.

In Table 1.8, where the MBA dummy is the main regressor, the standard deviation of the return on assets is lower for CEOs with an MBA degree; 1.61% lower when we regress on *Accumulation of titles* and 1.54% lower when we regress on *Managerial discretion*. Chairman CEOs and CEOs with high discretion decrease the standard deviation of return on assets by 1.48% and 0.86%, respectively. All differences are in comparison with the base group of CEOs, i.e. CEOs with no MBA degree and no power or low discretion. The respective interaction terms are not statistically significant at conventional levels. From the power measures, the founder dummy yields many strongly significant results. Firms with founder CEOs appear to have more volatile performance (1.79% more volatility in stock returns), more investment (a difference of 3.32%), higher cash holdings and lower dividends over earnings. Firms with chairman CEOs have lower return on assets (by 1.48%) and lower R&D expenses (by 1.82%) than firms whose CEOs do not hold both titles.

In Table 1.9, economic education produces very few significant results in any of the regressions of firm policy measures. Many of the coefficients on *Founder* continue to be statistically significant when economic education is included but we cannot reject the hypothesis of the respective coefficients on economic education being equal to zero. This holds for standard deviation of Tobin's Q, standard deviation of stock returns, investment, cash holdings and dividends over earnings. The signs and magnitudes of the coefficients on the founder dummy when economic education is the main regressor follow closely the results from Table 1.8. Firms with founder CEOs have higher volatility of Tobin's Q (a difference of 29.92%), higher volatility of stock returns (a difference of 2.09%), more investment (a difference of 2.86%), more cash holdings (1.71-times) and less dividends over earnings (by 2.12%) than firms with non-founder CEOs. Firms with chairman CEOs have 2.21% lower R&D expenses than firms with non-powerful CEOs.

Technical education is the education-related variable for which we obtain the most statistically significant results, as reported in Table 1.10. The pattern for the founder dummy is as

in Tables 1.8 and 1.9: when the technical education is the main regressor, firms with founder CEOs have more volatile performance - 25.86% more volatile for Tobin's Q and 2.02% for stock returns, invest 3.35% more, hold 171% more cash, and have 2.75% lower dividends over earnings. When the power measure is *Accumulation of titles*, firms with powerful CEOs have, on average, 1.66% higher returns on assets and 1.83% lower R&D expenses than firms whose CEOs are not in a powerful position. Firms with founder CEOs with technical education have 2.37% lower standard deviation of stock returns than the base group firms. The interaction variable is not statistically significant, the coefficients on technical education and on founder are significant at the 1% level. For firms with only-insider CEOs with technical education, the difference compared to the base group is not economically significant according to our results. Compared to the base group firms, firms with CEOs who have technical education and higher discretion have 0.5% lower dividends over earnings. Firms with only-insider CEOs with technical education have 3.05% higher return on assets and lower interest coverage (20-times the earnings over interest) than firms with non-powerful CEOs.

The results in Tables 1.8 to 1.10 indicate a very limited role that the type of CEOs' education may play in firm outcomes. Many of the results are less economically significant than it was the case for experience-related variables. Also, more often than in the case of experience-related variables, we fail to reject the hypothesis that there is no difference between firms with powerful CEOs with a certain type of education and the benchmark group of firms.

1.5 Robustness of results and causality issues

The robustness and causality tests we perform are the following:

- running firm fixed effects regressions on the original dataset;[8]

[8]We also tried applying the mover dummy method as in Bertrand and Schoar (2003) and Graham et al. (2012). Restricting our dataset by applying certain conditions significantly decreases the number of observations. This "mover-CEO dataset" has only 251 observations, thus, taking into account the number of our covariates, the statistical power of our tests becomes seriously undermined. We do not report any of

- two-stage least squares (2SLS) regressions using generation dummies as instrument for industry and CEO experience.

In a non-experimental setting with observational data like ours it is difficult to make conclusions about the direction of causality. Firm fixed effects can be used to address endogeneity bias if the unobserved factors that cause endogeneity do not change over time, or are close to time-invariant (Graham et al., 2012). Hence, fixed effects can be used to isolate the causality effects to some extent, however, 2SLS have higher internal validity to do so (Nichols, 2007, p. 507). The pooled 2SLS may be the most robust procedure to apply when we have an unbalanced panel with endogeneity and selection bias (Semykina and Wooldridge, 2010).

Tables 1.11 and 1.12 report results from regressions where we replace industry dummies with firm fixed effects. In Table 1.11, we observe a smaller number of statistically significant results compared to Table 1.4. If the regressors of interest do not exhibit sufficient variability over time (which is certainly the case for the time-invariant education-related variables), fixed effects may absorb their influence and the coefficients on the main regressors become biased. All the most significant (at the 5% and 1% level) coefficients in Table 1.11 match in sign the coefficients presented in Table 1.4. On the other hand, as for the magnitude of the coefficients, we observe often more than a 50% drop in the magnitude of the coefficients on education-related measures. In the case of the experience-related variables, we observe an increase of more than 50% in magnitude. A one-standard-deviation increase in industry experience (8.03 years) is associated with 0.56% and 0.32% lower volatility of return on assets and stock returns, respectively. A one-standard-deviation increase in CEO experience (8.29 years) decreases the standard deviation of returns on assets, the standard deviation of stock returns and investment by 0.66%, 0.33% and 0.75%, respectively. Firms have, on average, 4.12% higher leverage when the CEO has an MBA degree, invest 1.95% more when the CEO has economic education, and have by 10.77% higher stock returns if the CEO has technical education. The time frame of ten years in our sample may be too short to apply firm fixed

the regression results and tests performed with this too small a sample.

effects. Therefore, the statistical power of our tests may be too low.

Table 1.12 presents the results from firm fixed effects regressions on industry experience in combination with the power measures. We obtain a number of significant results for all of the power measures (cf. Tables 1.12 and 1.6). The signs of the coefficient estimates generally remain the same, the magnitudes are comparable or lower. For a one-standard-deviation increase in industry experience, firms with chairman CEOs have, on average, 1.4% lower volatility of returns on assets, 29.54-times lower interest coverage and 1.95% lower overhead expenses than firms with non-powerful CEOs. For firms in industries with more managerial discretion, the volatility of return on assets is 1.17% lower compared to the base group. The difference in the volatility of stock returns between companies with and without powerful CEOs is +0.61% for founder CEOs and -0.84% for only-insider CEOs. We interpret the differences in results reported in Tables 1.12 and 1.6 as firm fixed effects absorbing some of the (less time-varying) influence of the regressors of interest.

We run 2SLS regressions for two of the CEO characteristics that we consider more interesting - the two experience measures, *Industry experience* and *CEO experience*. Using the pooled 2SLS estimator, we estimate the following model:

$$Y_{it} = \alpha + \beta Exp_{imt} + Z'_{it(-1)}\gamma + \tau'_t\delta_1 + \iota'_i\delta_2 + \upsilon_{it} \tag{1.5}$$

where i, m and t denote firms, managers and years, respectively, Exp_{imt} stands for industry or CEO experience, and υ_{it} is the error term. τ_t and ι_i represent year and industry dummies, respectively. In the 2SLS procedure, experience is instrumented by the generation dummies. The first-stage regression equation is as follows:

$$Exp_{mt} = a + Gen'_m b + Z'_{it(-1)}g + \tau'_t d_1 + \iota'_i d_2 + e_{mt} \tag{1.6}$$

where a and e_{mt} are the intercept and the error term, respectively. Gen_m represents our generation dummies. We employ three generation dummies. *Generation of WWs and Great Depression* equals one if the CEO was born before or in 1945. *Generation of Baby Boomers* equals one if the CEO was born between 1946 and 1964. *Generation X+* equals one for CEOs born after 1964. This rather crude grouping of generations is based on a socio-historical - as opposed to demographical - notion of generations (e.g., Pilcher, 1994; Howe and Strauss, 1991; Schuman and Scott, 1989). More than half of the CEOs in the sample come from the "Generation of Baby Boomers".

Employing the 2SLS estimator requires special care in the choice of excluded instruments. The advantage of the 2SLS estimator over a biased OLS estimator is its consistency. However, the 2SLS estimator is always less efficient than the OLS estimator, thus, if we do not have valid instruments, OLS is preferable to 2SLS since the bias of the 2SLS estimate is too large. Establishing the validity and relevance of excluded instruments is therefore crucial. Our exclusion restriction for the 2SLS methodology is that generational membership does not have direct effect on firm outcomes besides the effect through CEOs' industry or CEO experience. Generational membership should not be correlated with possible omitted variables (i.e. also with the error term) in Eq. (1.5). Naturally, it is not possible to control for all relevant variables in Eq. (1.5), hence we should be careful in interpreting our results. Our estimates are consistent only if there are no further endogenous or omitted variables in Eq. (1.5) and (1.6).

In Panel A of Table 1.13, we report the pooled 2SLS estimates and their standard errors, and the pooled OLS estimates and their standard errors for comparison. We also report joint (F-stat and p-values) as well as individual (p-values) overidentification tests and tests of main independent variables' endogeneity (F-stat and p-values). The majority of the 2SLS coefficients is statistically significant at the 1% level even after we control for industry unobserved effects by including industry dummies. The signs of the coefficients remain stable and follow the pattern in Table 1.4.[9] A one-standard-deviation increase in industry experience

[9]In the case of advertising as the response variable, we report results where industry unobserved effects are not explicitly controlled for, thus, the coefficients need to be interpreted with caution. The relatively small

increases return on assets by 5.46% and decreases Tobin's Q and stock returns by 24.89% and 12.04%, respectively. The changes in the respective firm performance variables due to a one-standard-deviation change in CEO experience are +3.23%, -15.09% and -6.63%. A one-standard-deviation increase in industry (CEO) experience comes with a 4.74% (2.57%) decrease in firm volatility for standard deviation of return on assets, a 53.79% (31.43%) decrease for standard deviation of Tobin's Q, and a 3.69% (2.24%) decrease for standard deviation of stock returns. Investment decreases by 5.06% and 2.99% for a one-standard-deviation increase in industry and CEO experience, respectively. Dividends over earnings, on the other hand, increase by 2.73% and 1.66% for the same change in industry and CEO experience, respectively. From among the organizational policies' proxies, it is only SG&A whose coefficients remain strongly statistically significant in both the pooled OLS and 2SLS regressions. A one-standard-deviation increase in managerial experience decreases the overhead expenses by 4.01% and 2.24% for industry and CEO experience, respectively. The estimates of the effect of CEOs' industry and CEO experience on R&D spending are the only ones that are statistically significant when estimated with pooled OLS but not statistically significant at conventional levels when estimated with pooled 2SLS. As expected, the standard errors associated with the coefficients from the pooled 2SLS regressions are larger than those of the pooled OLS coefficients. Estimates from applying IV/2SLS methods are always noisier than estimates from OLS. We find that after instrumenting the two experience-related measures with generation dummies, CEO experience measures become significantly more influential but standard errors increase as well. If our exclusion restriction holds, comparing the magnitudes of the pooled OLS and 2SLS estimates, we underestimate the influence of both industry and CEO experience on firm policies by at least 100% (in many cases more) if we do not account for endogeneity in industry and CEO experience.

sample for advertising regressions (around 4,000 observations as compared to more than 10,000 observations in the other regressions) and a large number of industry dummies results into a covariance matrix that is not of a full rank.

Ideally, the main regressor and the instruments are strongly correlated and the instruments are completely exogenous. Problems of finite-sample bias and inconsistency of estimation are exacerbated to the extent these conditions are not fulfilled (Nelson and Starz, 1990). Since 2SLS estimates can be subject to significant biases compared to a simple OLS estimation, it is of great importance to perform a number of tests confirming IV relevance. Since no IV is always better than bad IV, IV methods should be used only when valid instruments are available. Finding valid instruments, i.e. instruments that are exogenous and relevant (e.g., Stock and Yogo, 2005, p. 80), is a challenging task. Tests to warrant the usage of IV methods should be reported.

To verify the validity of our instruments, we run a number of tests (reported in both panels of Table 1.13). In the overidentification tests, we test whether the instrumental variables are uncorrelated with the standard errors. We report both the instruments' joint and the instruments' individual test results. Favorably to the validity of our instruments, we fail to reject the null at the 1% level of statistical significance in many cases, except where Tobin's Q, the standard deviation of ROA, the standard deviation of Tobin's Q and interest coverage are the dependent variables (in the second stage).[10] In the endogeneity tests, we test whether the endogenous regressors in the model are indeed endogenous. We also report Wooldridge's (1995) robust F-test. We reject the null of uncorrelated main independent variables (assumed to be endogenous) and structural errors at conventional statistical levels for leverage, interest coverage, and R&D for both industry and CEO experience as the main regressor.

In Panel B of Table 1.13, we report the first-stage from the 2SLS regression with ROA as the second-stage response variable. Naturally, the first-stage results are very similar for all firm policy variables, since the first-stage regressions have the same specification for all fourteen 2SLS regressions. What may vary is the number of observations in each regression but the differences in estimates and test results are minimal. We report the coefficients on the

[10]We should bear in mind that failing to reject the null of overidentification is neither necessary nor sufficient for instrument validity. However, rejecting the null in an overidentification test should lead us to reconsider our excluded instruments.

excluded instrumental variables - generation dummies, first-stage F-test and the respective p-values, and partial R-squared (Shea, 1997). The coefficients indicate that CEOs who belong to the baby-boom generation have, on average, 2.98 years lower industry experience and 5.54 years lower CEO experience than the related base group of CEOs (the CEOs who do not belong to the particular generation). In the case of "Generation X+", industry experience is 4.83 years lower and CEO experience is 8.14 years lower. These results are as expected and reasonable.[11] The F-tests are a robust version of the Cragg-Donald F-statistic (namely, the Kleinbergen-Paap rk Wald F-statistic) to joint significance of the instruments and indicates the strength of identification. All values in the table are significantly larger than the respective Stock-Yogo (2005) weak identification critical values. Another indicator of how good the instrumental variable is in a given setting is the partial R-squared of the first-stage regression (according to Shea, 1997). For industry experience, the results are weaker - approximately 3.63%; for CEO experience, the partial R-squared is 10.75%. According to Shea (1997), the relatively low values of partial R-squared may imply a weak-instrument problem but Hahn and Hausman (2002) show, by examining the determinants of 2SLS vs. OLS bias, that even when the R-squared of the first-stage regression is low, it is a large F-statistic of the first-stage regression that tells us whether our instruments are probably strong enough so that the 2SLS versus OLS bias is low. Indeed, our F-statistic for the joint significance of instruments in the first stage is very high (289.77 with a p-value of 0.0000). Our instruments seem to be strong.

To go further in examining the strength of our instruments, we apply weak-instrument robust estimation, namely, we employ the limited information maximum likelihood Fuller estimator with the Fuller coefficient equal first to 1, then to 4, and we also compute the

[11] In order to verify the instruments' rationale, we run dependent variables' as well as the main independent variables' (experience measures') reduced form regressions (not reported in the paper). If generation is a valid instrument, we should obtain statistically significant coefficients with reasonable signs. In the experience measures' reduced forms all coefficients are strongly statistically significant with a negative sign which is reasonable since younger generation would have less experience. Also, in the dependent variables' reduced forms the signs are as expected, the opposite of what we've seen in the associational analysis, and with comparable statistical significance. Reduced form regressions are the first step in exploring whether our choice of instrumental variables is reasonable.

two-sided conditional likelihood ratio confidence sets as first suggested by Moreira (2003).[12] The sign, magnitude and significance of estimates matches the one reported in the 2SLS estimation. These results (not reported due to strong similarity) strengthen our confidence in the choice of generational membership dummies as excluded instruments.

When performing IV/2SLS estimation, we try to give as much credibility as possible to our results. We provide evidence on instrument validity and strength, but possible heterogeneity in agents' behavioral reactions to the instrument has been raised as an issue in a number of papers (Murray, 2006). The problem is whether we are estimating the effects we want to study. In our case, the question is whether instrumenting experience with generational dummies returns estimates that correctly account for experience's effect on firm policies, or we are just estimating some partial effect of a component of experience which is correlated with generational membership. Given the "black box" nature of the process from generational membership to firm outcomes, we cannot exclude that another mechanism is at work.

1.6 Conclusion

Our findings contribute to the research on the effects of managerial characteristics on firm outcomes. We focus on three experience-related characteristics and three education-related characteristics. We study their influence on firm performance, on variability of firm performance, on investment and financing policies and on organizational strategy. The results are generally less significant for education variables than for the experience-related variables. Overall, the economic significance of the results indicates that CEOs matter for firm outcomes on a relatively small but important scale. For example, and contrary to the findings of Bertrand and Schoar (2003), we find that MBA degree holders seem to follow short-term goals and are more stability-oriented. Also, in more stable industries, it seems more advantageous to employ more experienced CEOs. Our findings also suggest that firm performance and its variability, or investment policy, are firm outcomes that reflect the consequences of

[12]The algorithm was developed and improved by Mikusheva (2010).

implementing unique strategic decisions and contain more of a CEO's personal imprint. In contrast, more "automated" or more structured decisions, such as those related to leverage or other financing policies that can be based on a firm's or an industry's "traditional knowledge", on rules of thumb.

We also include measures of CEO power and discretion to study the possible differences in influence between powerful and non-powerful CEOs. These measures relate to structural power, i.e. power that stems from the CEO's position within an organization's hierarchy. It is the measures of firm performance and volatility of firm performance for which we obtain the highest number of statistically significant results. We find that most characteristics influence the volatility of stock returns. Adding interactions with power generally increases the influence of a certain characteristic, but this does not happen in a consistent manner. From power measures, most of the significant results come from interaction with the variable *Founder*. This indicates that the most influential dimension of power may be the one that is proxied for by the founder dummy. Hence, powerful CEOs - especially founders - should be constrained if the aim is to stabilize the firm, since they are associated with more volatile firm performance.

The signs and economic significance of robustness results are in line with baseline results, but statistically significant robustness results are few. Our sample period may be simply too short to apply firm fixed effects. The 2SLS estimation confirms the role that industry and CEO experience play in determining firm outcomes, although we cannot exclude the possibility that there might be a different mechanism behind what we hypothesize as CEOs' generational membership indirectly influencing firm outcomes. Taking into account the limitations originating from our available choice of instruments, we find that experience variables' endogeneity is, as expected, an issue in our sample. It is most probably not only firms selecting CEOs to match the company's needs (i.e. CEO-firm matching), but the causality works in the opposite direction too, provided the CEO leads the company during a sufficient time period (we imposed a three-year condition).

The results can be useful for shareholders concerning corporate governance arrangements that correspond to the firm's goals. Observable CEO characteristics are useful indicators of what to expect from a CEO with a certain characteristic.

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Table 1.1: The number of firm-CEO observations per period
(sample period 1996-2006)

Period	Number of firms	Number of CEOs
1996	923	923
1997	1085	1085
1998	1221	1221
1999	1274	1274
2000	1346	1346
2001	1396	1396
2002	1562	1562
2003	1665	1665
2004	1635	1635
2005	1478	1478
2006	1166	1166
(different firms/CEOs in the whole sample)	1930	2426

The table gives the maximum number of firm-CEO observations per year.
The total number of observations is 14,751.

Table 1.2: Descriptive statistics

Variable	No. of obs.	Mean	Median	Std. dev.	Min.	Max.
Return on assets	14580	0.0112	0.0467	0.1905	-0.9592	0.3544
Tobin's Q	14639	2.1782	1.5708	1.7870	0.6052	11.2174
Stocks returns	14751	0.2547	0.0986	0.9506	-0.9800	32.0000
St.dev. of ROA	13908	0.0837	0.0368	0.1263	0.0030	0.7497
St.dev. of Tobin's Q	14749	0.8472	0.3885	1.2573	0.0323	7.7050
St.dev. of stock returns	14751	0.1424	0.1199	0.0878	0.0323	0.5125
Investment	14391	0.2557	0.2063	0.1818	0.0163	0.8666
Leverage	14541	0.2942	0.2584	0.2786	0	1.3428
Cash holdings	14538	3.0700	0.3593	8.2193	0.0006	58.2388
Interest coverage	12262	51.8563	7.4623	237.59	-473.90	1761.72
Dividends over earnings	14503	0.0602	0.0000	0.1229	-0.1467	0.7183
Advertising	4389	0.0431	0.0210	0.0588	0.0003	0.3458
R&D	8490	0.0916	0.0400	0.1401	0.0000	0.8431
SG&A	12795	0.3132	0.2318	0.3332	0.0235	2.4093
Complex firm dummy	14751	0.5027	1	0.5000	0	1
Log (total assets)	14639	5.8870	5.8628	1.9557	0.3400	13.5285
Lagged log (total assets)	14639	5.7756	5.7233	1.9654	0.0000	13.5285
Cash flow	14500	-0.0480	0.2997	3.1825	-21.5339	7.1932
Lagged Tobin's Q	14746	2.2143	1.5712	1.8703	0.6164	11.6889
Age	14719	54.5192	55	8.5040	26	90
Industry experience	14653	9.7934	7	8.0277	1	53
CEO experience	13847	10.4160	8	8.2928	1	56
MBA	11090	0.3222	0	0.4673	0	1
Economic education	11090	0.3868	0	0.4870	0	1
Technical education	11090	0.2739	0	0.4460	0	1
Power: Accumulation of titles	14751	0.6358	1	0.4812	0	1
Power: Founder	14679	0.1507	0	0.3578	0	1
Power: Only insider	14751	0.1374	0	0.3443	0	1
Power: Managerial discretion	11751	0.7168	1	0.4506	0	1
Generation of WWs and Great Depression	14751	0.4364	0	0.4960	0	1
Generation of Baby Boomers	14751	0.5473	1	0.4978	0	1
Generation of X+	14751	0.0163	0	0.1265	0	1

The table reports the descriptive statistics of the data : the dependent variables, firm-level controls, managerial characteristics, power measures and the instruments.

Table 1.3: Pairwise correlation coefficients of the explanatory variables (main regressors, power dummies, firm-level controls)

	Age	Industry experience	CEO experience	MBA	Econ. educ.	Tech. educ.	Power: Accum. of titles	Power: Founder	Power: Only insider	Power: Manager. discretion	Complex firm	Log (tot. assets)	Lagged log (tot. assets)	Lagged. Tobin's Q	Cash flow	ROA
Age	1															
	14719															
Industry experience	0.3071***	1														
	14621	14653														
CEO experience	0.4440***	0.2924***	1													
	13819	13758	13847													
MBA	-0.0431***	-0.0275***	-0.0869***	1												
	11061	11018	10399	11090												
Economic education	-0.0521***	0.0082	-0.0659***	0.3082***	1											
	11061	11018	10399	11090	11090											
Technical education	0.0157*	-0.0427***	-0.0018	0.0408***	-0.1159***	1										
	11061	11018	10399	11090	11090	11090										
Power: Accumulat. of titles	0.2258***	0.1541***	0.2676***	-0.0484***	-0.0002	-0.0087	1									
	14719	14653	13847	11090	11090	11090	14751									
Power : Founder	0.0070	-0.0455***	0.3627***	-0.1369***	-0.0795***	0.0940***	0.1205***	1								
	14647	14581	13786	11031	11031	11031	14679	14679								
Power: Only insider	-0.0001	-0.0070	-0.0138	-0.0116	-0.0125	0.0260***	0.0271***	0.0068	1							
	14719	14653	13847	11090	11090	11090	14751	14679	14751							
Power: Managerial discretion	0.0013	-0.0023	0.0016	-0.0045	0.0073	0.0023	-0.0097	-0.0025	0.0038	1						
	11723	11674	11026	8865	8865	8865	11751	11694	11751	11751						
Complex firm	0.1617***	0.1197***	0.0232***	0.0433***	0.0290***	0.0186**	0.0809***	-0.1031***	-0.0229***	0.0014	1					
	14719	14653	13847	11090	11090	11090	14751	14679	14751	11751	14751					
Log (Total assets)	0.1074***	0.1861***	-0.1008***	0.0348***	0.0879***	-0.0006	0.1359***	-0.1424***	-0.0849***	0.0045	0.2766***	1				
	14607	14542	13735	11017	11017	11017	14639	14569	14639	11653	14639	14639				
Lagged log (Total assets)	0.1144***	0.1939***	-0.0970***	0.0361***	0.0893***	-0.0009	0.1331***	-0.1484***	-0.0826***	0.0051	0.2830***	0.9860***	1			
	14607	14542	13735	11017	11017	11017	14639	14569	14639	11653	14639	14639	14639			
Lagged Tobin's Q	-0.1218***	-0.1110***	-0.0500***	0.0192**	-0.0422***	0.0247***	-0.0400***	0.1178***	0.0076	0.0128	-0.1680***	-0.1139***	-0.1594***	1		
	14714	14648	13842	11086	11086	11086	14746	14674	14746	11747	14746	14634	14634	14746		
Cash flow	0.0859***	0.0837***	0.0537***	0.0189**	0.0537***	0.0372***	0.0581***	-0.0374***	-0.0259***	0.0035	0.1109***	0.2144***	0.1912***	-0.1966***	1	
	14468	14403	13602	10923	10923	10923	14500	14433	14500	11550	14500	14500	14500	14496	14500	
ROA	0.1309***	0.1344***	0.0563***	0.0267***	0.0555***	0.0142	0.0736***	-0.0733***	0.0025	-0.0095	0.1121***	0.2867***	0.2617***	-0.1799***	0.7270***	1
	14548	14483	13681	10973	10973	10973	14580	14510	14580	11609	14580	14580	14580	14576	14500	14580

The table reports pairwise correlation coefficients (the upper number in each cell) between the potential right-hand-side variables and the respective number of observations. ***, **, * denote statistical significance at the 1%, 5% and 10% level, respectively. The pairwise correlation coefficients reported in the table are computed as Pearson product-moment correlation coefficients which is not entirely meaningful when involving a binary variable or a count variable. The point-biserial correlation coefficient is more appropriate to be used with a continuous and a binary variable. The phi coefficent is used to determine the association between two binary variables; a Pearson coefficicent estimated for two binary variables coincides with the phi coeffcient.

Table 1.4: Baseline regressions of firm performance and firm policy measures on six observable CEO characteristics (power variables not included)

Response variables \ Main regressors	Age	Industry experience	CEO experience	MBA	Economic education	Technical education
Return on assets	0.0019***	0.0015***	0.0015***	0.0040	0.0012	0.0093
	(4.80)	(5.06)	(4.36)	(0.54)	(0.16)	(1.11)
Tobin´s Q	-0.0121***	-0.0109***	-0.0087**	0.1815**	0.0001	0.0566
	(-3.56)	(-3.67)	(-2.26)	(2.30)	(0.00)	(0.67)
Stocks returns	-0.0034***	-0.0017***	-0.0013*	-0.0197	-0.0170	0.0469**
	(-3.83)	(-2.74)	(-1.65)	(-1.25)	(-1.12)	(2.29)
Std. dev. of ROA	-0.0018***	-0.0017***	-0.0017***	-0.0075	-0.0017	-0.0002
	(-6.94)	(-8.95)	(-8.52)	(-1.61)	(-0.36)	(-0.04)
Std. dev. of Tobin´s Q	-0.0170***	-0.0165***	-0.0093***	0.0788	-0.0261	0.0147
	(-7.44)	(-9.05)	(-4.47)	(1.43)	(-0.51)	(0.25)
Std. dev. of stock returns	-0.0011***	-0.0013***	-0.0006***	-0.0056**	-0.0052**	0.0084***
	(-8.31)	(-11.06)	(-4.85)	(-2.25)	(-2.13)	(2.91)
Investment	-0.0017***	-0.0016***	-0.0008***	-0.0062	0.0035	-0.0040
	(-6.34)	(-6.91)	(-2.91)	(-1.13)	(0.64)	(-0.66)
Leverage	0.0001	-0.0006	0.0005	0.0044	0.0195*	-0.0205**
	(0.27)	(-1.13)	(0.74)	(0.41)	(1.92)	(-1.97)
Cash holdings	-0.0225	-0.0284***	0.0045	-0.5269*	-0.1463	-0.3230
	(-1.4)	(-2.71)	(0.26)	(-1.77)	(-0.49)	(-1.09)
Interest coverage	0.3226	0.2032	0.8233*	-0.7915	-2.5373	16.2995
	(0.63)	(0.57)	(1.65)	(-0.11)	(-0.36)	(1.61)
Dividends over earnings	0.0006**	0.0018***	-0.0003	0.0042	0.0012	0.0002
	(2.33)	(6.26)	(-1.26)	(0.92)	(0.27)	(0.05)
Advertising	-0.0007***	0.0001	0.0000	0.0073	-0.0019	-0.0041
	(-3.16)	(0.25)	(-0.18)	(1.58)	(-0.42)	(-0.93)
R&D	0.0003	-0.0001	-0.0005**	0.0117*	0.0032	0.0101
	(1.10)	(-0.67)	(-2.42)	(1.82)	(0.52)	(1.57)
SG&A	-0.0015**	-0.0014***	-0.0008	0.0026	-0.0094	-0.0158
	(-2.44)	(-3.25)	(-1.41)	(0.23)	(-0.78)	(-1.45)

The table reports estimates of coefficients β from least squares dummy variable regressions of the form: Response variable$_{it}$ = α + β*(main regressor$_{(i)m(i)}$) + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*t_i [industry dummies] + ε_{it}. Each coefficient comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.5: Regressions on the variable *Age* and on the measures of power

	Age	Accumula-tion of titles	Age * Accum.of titles	Age	Founder	Age * Founder	Age	Only insider	Age * Only insider	Age	Managerial discretion	Age * Managerial discretion
Return on assets	0.0023***	0.0343	-0.0006	0.0021***	0.0335	-0.0009	0.0019***	0.0206	-0.0000	0.0025***	0.0082	-0.0002
	(3.08)	(0.77)	(-0.77)	(4.83)	(0.69)	(-1.00)	(4.69)	(0.37)	(-0.00)	(4.36)	(0.26)	(-0.39)
Tobin´s Q	-0.0126**	-0.0579	0.0009	-0.0150***	-0.2952	0.0101	-0.0113***	0.4510	-0.0082	-0.0196***	-0.0405	0.0014
	(-2.10)	(-0.16)	(0.13)	(-4.35)	(-0.59)	(1.08)	(-3.23)	(0.87)	(-0.88)	(-3.52)	(-0.13)	(0.25)
Stocks returns	-0.0044**	-0.0309	0.0011	-0.0032***	0.1907	-0.0022	-0.0034***	-0.0221	0.0004	-0.0058**	-0.2154	0.0038
	(-2.47)	(-0.26)	(0.51)	(-3.41)	(1.33)	(-0.89)	(-3.58)	(-0.17)	(0.16)	(-2.04)	(-1.19)	(1.18)
Std. dev. of ROA	-0.0019***	-0.0103	0.0002	-0.0017***	0.0618	-0.0010	-0.0019***	-0.0125	0.0001	-0.0026***	-0.0242	0.0004
	(-3.68)	(-0.33)	(0.28)	(-5.79)	(1.50)	(-1.43)	(-6.93)	(-0.25)	(0.16)	(-6.26)	(-1.12)	(1.01)
Std. dev. of Tobin´s Q	-0.0184***	-0.0671	0.0016	-0.0173***	0.3694	-0.0023	-0.0172***	-0.1312	0.0016	-0.0254***	-0.2037	0.0035
	(-4.13)	(-0.24)	(0.32)	(-7.05)	(1.00)	(-0.37)	(-7.34)	(-0.35)	(0.25)	(-6.58)	(-1.02)	(0.99)
Std. dev. of stock returns	-0.0010***	0.0174	-0.0002	-0.0010***	0.0694***	-0.0009***	-0.0011***	-0.0176	0.0003	-0.0013***	0.0027	-0.0000
	(-4.03)	(1.19)	(-0.89)	(-6.74)	(3.99)	(-2.95)	(-8.29)	(-0.88)	(0.88)	(-6.05)	(0.22)	(-0.09)
Investment	-0.0017***	0.0098	-0.0001	-0.0011***	0.2174***	-0.0034***	-0.0016***	0.0564	-0.0010	-0.0020***	0.0333	-0.0005
	(-3.70)	(0.33)	(-0.25)	(-4.02)	(5.26)	(-4.82)	(-5.79)	(1.26)	(-1.32)	(-4.68)	(1.44)	(-1.18)
Leverage	-0.0001	0.0133	0.0001	0.0001	-0.0228	0.0002	0.0003	0.0953	-0.0016	0.0003	-0.0531	0.0009
	(-0.12)	(0.24)	(0.06)	(0.24)	(-0.33)	(0.13)	(0.55)	(1.31)	(-1.26)	(0.33)	(-1.36)	(1.25)
Cash holdings	-0.0430**	-0.9130	0.0237	-0.0148	4.0684	-0.0511	-0.0264*	-1.5528	0.0388	-0.0512**	0.6749	-0.0076
	(-2.05)	(-0.58)	(0.85)	(-0.84)	(1.63)	(-1.22)	(-1.83)	(-0.44)	(0.59)	(-2.51)	(0.63)	(-0.40)
Interest coverage	0.5191	20.5966	-0.3358	0.1526	16.0102	0.3499	0.3452	-4.9492	-0.2448	-0.2084	-18.7756	0.4040
	(0.69)	(0.42)	(-0.36)	(0.26)	(0.25)	(0.29)	(0.65)	(-0.08)	(-0.21)	(-0.39)	(-0.49)	(0.59)
Dividends over earnings	0.0002	-0.0507*	0.0008	0.0004	-0.0807***	0.0010*	0.0006**	-0.0255	0.0003	0.0008**	-0.0097	0.0001
	(0.44)	(-1.93)	(1.60)	(1.50)	(-2.69)	(1.80)	(2.11)	(-0.90)	(0.56)	(2.25)	(-0.52)	(0.38)
Advertising	-0.0009**	-0.0123	0.0003	-0.0006***	0.0249	-0.0003	-0.0007***	-0.0093	0.0001	-0.0004	0.0011	-0.0001
	(-2.41)	(-0.58)	(0.72)	(-3.08)	(0.63)	(-0.42)	(-3.00)	(-0.37)	(0.32)	(-1.54)	(0.09)	(-0.24)
R&D	0.0002	-0.0511	0.0006	0.0003	-0.0216	0.0002	0.0002	-0.0445	0.0009	0.0002	-0.0018	0.0001
	(0.27)	(-1.55)	(1.00)	(1.07)	(-0.53)	(0.21)	(0.72)	(-1.01)	(1.16)	(0.43)	(-0.07)	(0.14)
SG&A	-0.0014	-0.0081	0.0000	-0.0017**	-0.0253	0.0007	-0.0017***	-0.1033	0.0019	-0.0024***	0.0292	-0.0004
	(-1.51)	(-0.14)	(0.02)	(-2.45)	(-0.29)	(0.47)	(-3.09)	(-0.80)	(0.79)	(-3.07)	(0.67)	(-0.56)

The table report estimates of coefficients β_1, β_2 and β_3 from least squares dummy variable regressions of the form: Response variable$_{it}$ = α + β_1*Age$_m$ + β_2*Power$_{i(m)}$ + β_3*(Age$_m$*Power$_{i(m)}$) + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*τ_i [industry dummies] + $\varepsilon_{it.}$ Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Industry dummies are excluded from the regressions containing the managerial discretion dummy, since industry dummies and the discretion dummy are collinear. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.6: Regressions on the variable *Industry experience* and on the measures of CEO power

	Industry experience	Accumulation of titles	Industry experience * Accum.of titles	Industry experience	Founder	Industry experience * Founder	Industry experience	Only insider	Industry experience * Only insider	Industry experience	Managerial discretion	Industry experience * Managerial discretion
Return on assets	0.0026***	0.0185**	-0.0016***	0.0014***	-0.0198	0.0010	0.0015***	0.0223**	-0.0001	0.0018***	-0.0033	-0.0001
	(5.10)	(2.06)	(-2.65)	(4.49)	(-1.29)	(0.94)	(4.87)	(2.03)	(-0.19)	(4.56)	(-0.51)	(-0.14)
Tobin´s Q	-0.0109*	-0.0305	0.0003	-0.0094***	0.3952***	-0.0167	-0.0114***	-0.0480	0.0061	-0.0095*	0.1158*	-0.0084*
	(-1.85)	(-0.37)	(0.05)	(-3.27)	(2.88)	(-1.41)	(-3.71)	(-0.44)	(0.78)	(-1.74)	(1.79)	(-1.69)
Stocks returns	-0.0017	0.0188	-0.0002	-0.0016**	0.0843*	-0.0022	-0.0016**	0.0069	-0.0008	-0.0031**	-0.0259	0.0015
	(-1.29)	(0.80)	(-0.13)	(-2.54)	(1.93)	(-0.86)	(-2.48)	(0.22)	(-0.37)	(-2.41)	(-0.83)	(0.94)
Std. dev. of ROA	-0.0028***	-0.0199***	0.0016***	-0.0015***	0.0224*	-0.0018**	-0.0017***	-0.0054	0.0001	-0.0022***	-0.0070	0.0003
	(-7.38)	(-3.04)	(3.82)	(-7.83)	(1.91)	(-2.36)	(-8.77)	(-0.63)	(0.13)	(-8.06)	(-1.51)	(1.06)
Std. dev. of Tobin´s Q	-0.0201***	-0.0537	0.0050	-0.0149***	0.3797***	-0.0173**	-0.0169***	-0.0927	0.0052	-0.0222***	-0.0188	0.0005
	(-4.84)	(-0.82)	(1.12)	(-8.58)	(3.55)	(-2.04)	(-8.99)	(-1.13)	(0.97)	(-7.98)	(-0.45)	(0.21)
Std. dev. of stock returns	-0.0017***	-0.0016	0.0005**	-0.0012***	0.0302***	-0.0012***	-0.0013***	-0.0008	0.0000	-0.0019***	-0.0017	0.0003*
	(-7.82)	(-0.50)	(2.17)	(-10.27)	(5.67)	(-2.64)	(-10.65)	(-0.18)	(0.03)	(-9.93)	(-0.65)	(1.93)
Investment	-0.0020***	-0.0049	0.0005	-0.0013***	0.0621***	-0.0036***	-0.0016***	0.0023	-0.0003	-0.0020***	0.0104*	-0.0004
	(-4.48)	(-0.73)	(1.11)	(-5.58)	(5.13)	(-3.98)	(-6.56)	(0.24)	(-0.43)	(-5.57)	(1.94)	(-1.22)
Leverage	-0.0019**	0.0034	0.0016*	-0.0008	-0.0309	0.0020	-0.0007	0.0021	0.0004	-0.0005	-0.0129	0.0008
	(-2.25)	(0.26)	(1.67)	(-1.38)	(-1.36)	(0.95)	(-1.14)	(0.12)	(0.37)	(-0.70)	(-1.42)	(1.14)
Cash holdings	-0.0539***	0.0419	0.0311	-0.0257**	1.6209***	-0.0402	-0.0310***	0.2784	0.0295	-0.0361***	0.5025**	-0.0267**
	(-2.65)	(0.12)	(1.39)	(-2.44)	(2.59)	(-0.88)	(-3.04)	(0.58)	(0.75)	(-2.71)	(2.01)	(-2.01)
Interest coverage	0.4281	6.3058	-0.3354	0.2639	47.8046**	-1.3172	0.2168	-17.2809	-0.1710	0.0980	5.5944	-0.2485
	(0.65)	(0.62)	(-0.46)	(0.75)	(2.17)	(-0.78)	(0.58)	(-1.35)	(-0.23)	(0.19)	(0.72)	(-0.48)
Dividends over earnings	0.0018***	-0.0110*	0.0001	0.0018***	-0.0286***	0.0005	0.0019***	0.0007	-0.0011*	0.0020***	-0.0047	0.0002
	(3.22)	(-1.88)	(0.23)	(5.86)	(-3.91)	(0.59)	(6.35)	(0.10)	(-1.87)	(5.21)	(-1.12)	(0.59)
Advertising	-0.0002	-0.0028	0.0003	0.0001	0.0177*	-0.0009	0.0001	-0.0025	0.0000	0.0003	-0.0020	0.0000
	(-0.48)	(-0.55)	(0.84)	(0.57)	(1.87)	(-1.03)	(0.23)	(-0.43)	(0.05)	(0.96)	(-0.61)	(0.00)
R&D	-0.0007	-0.0252***	0.0010**	-0.0000	-0.0050	-0.0009	-0.0002	-0.0029	0.0008	-0.0001	0.0011	0.0000
	(-1.60)	(-3.18)	(2.04)	(-0.12)	(-0.39)	(-1.05)	(-0.98)	(-0.32)	(1.27)	(-0.24)	(0.18)	(0.14)
SG&A	-0.0024***	-0.0213	0.0013	-0.0013***	0.0200	-0.0009	-0.0016***	-0.0133	0.0016	-0.0015**	0.0154	-0.0010
	(-3.01)	(-1.57)	(1.51)	(-2.76)	(0.91)	(-0.66)	(-3.51)	(-0.69)	(1.09)	(-2.23)	(1.61)	(-1.59)

The table report estimates of coefficients β_1, β_2 and β_3 from least squares dummy variable regressions of the form: Response variable$_{imt}$ = α + β_1*Industry experience$_{imt}$ + β_2*Power$_{i(m)}$ + β_3*Industry experience$_{imt}$*Power$_{i(m)}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*τ_i [industry dummies] + ε_{it}. Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Industry dummies are excluded from the regressions containing the managerial discretion dummy, since industry dummies and the discretion dummy are collinear. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.7: Regressions on the variable *CEO experience* and on the measures of CEO power

	CEO experience	Accumula-tion of titles	CEO experience * Accum.of titles	CEO experience	Founder	CEO experience * Founder	CEO experience	Only insider	CEO experience * Only insider	CEO experience	Managerial discretion	CEO experience * Managerial discretion
Return on assets	0.0018**	0.0034	-0.0004	0.0016***	-0.0413**	0.0010	0.0014***	0.0138	0.0007	0.0020***	-0.0061	-0.0000
	(2.42)	(0.38)	(-0.47)	(4.48)	(-1.99)	(0.96)	(3.97)	(1.24)	(0.95)	(4.80)	(-0.89)	(-0.01)
Tobin´s Q	-0.0130*	-0.0612	0.0057	-0.0165***	0.2373	0.0081	-0.0078*	0.0927	-0.0088	-0.0152***	-0.0037	0.0030
	(-1.75)	(-0.71)	(0.66)	(-5.19)	(1.18)	(0.70)	(-1.91)	(0.80)	(-0.88)	(-3.24)	(-0.06)	(0.55)
Stocks returns	-0.0054***	-0.0238	0.0049***	-0.0024**	0.1201***	-0.0019	-0.0012	0.0096	-0.0009	-0.0026	-0.0411	0.0028
	(-3.28)	(-1.01)	(2.64)	(-2.50)	(2.59)	(-1.00)	(-1.45)	(0.30)	(-0.35)	(-1.45)	(-1.28)	(1.27)
Std. dev. of ROA	-0.0020***	-0.0014	0.0003	-0.0020***	0.0351**	-0.0007	-0.0016***	0.0056	-0.0010*	-0.0024***	-0.0088*	0.0004*
	(-3.67)	(-0.21)	(0.51)	(-8.70)	(2.40)	(-1.08)	(-7.93)	(0.65)	(-1.79)	(-8.54)	(-1.90)	(1.71)
Std. dev. of Tobin´s Q	-0.0096*	-0.0113	0.0006	-0.0138***	0.4103***	-0.0041	-0.0084***	0.0508	-0.0096	-0.0152***	-0.0482	0.0034
	(-1.81)	(-0.18)	(0.11)	(-6.47)	(3.20)	(-0.71)	(-3.93)	(0.61)	(-1.61)	(-5.73)	(-1.14)	(1.24)
Std. dev. of stock returns	-0.0008***	0.0021	0.0002	-0.0008***	0.0418***	-0.0009***	-0.0006***	0.0004	-0.0001	-0.0006***	0.0011	0.0000
	(-2.76)	(0.62)	(0.65)	(-5.60)	(6.93)	(-2.94)	(-4.65)	(0.08)	(-0.23)	(-2.90)	(0.43)	(0.19)
Investment	-0.0011**	-0.0037	0.0005	-0.0007**	0.0788***	-0.0026***	-0.0008***	0.0006	-0.0002	-0.0001	0.0120**	-0.0006*
	(-2.33)	(-0.55)	(0.85)	(-2.46)	(5.64)	(-3.84)	(-2.75)	(0.07)	(-0.21)	(-0.35)	(2.21)	(-1.67)
Leverage	0.0007	0.0251*	-0.0007	0.0012	0.0059	-0.0016	0.0004	-0.0007	0.0008	0.0006	-0.0069	0.0001
	(0.53)	(1.76)	(-0.48)	(1.55)	(0.22)	(-1.06)	(0.60)	(-0.04)	(0.43)	(0.71)	(-0.75)	(0.14)
Cash holdings	-0.0340	-0.1001	0.0432	-0.0061	2.1058**	-0.0465	-0.0091	-0.8794	0.1442	-0.0081	0.2363	0.0002
	(-1.42)	(-0.29)	(1.42)	(-0.26)	(2.41)	(-1.12)	(-0.61)	(-1.07)	(1.37)	(-0.41)	(0.98)	(0.01)
Interest coverage	1.6716	6.5506	-1.0266	0.0833	18.9173	0.9028	0.8798*	-9.4612	-0.7961	0.4839	2.4047	-0.0316
	(1.45)	(0.59)	(-0.83)	(0.19)	(0.77)	(0.68)	(1.70)	(-0.62)	(-0.58)	(0.68)	(0.29)	(-0.04)
Dividends over earnings	-0.0006	-0.0075	0.0004	-0.0005	-0.0524***	0.0019***	-0.0004	-0.0139*	0.0004	-0.0010***	-0.0091**	0.0007**
	(-1.28)	(-1.23)	(0.82)	(-1.54)	(-6.38)	(3.57)	(-1.39)	(-1.69)	(0.74)	(-3.32)	(-2.02)	(2.33)
Advertising	-0.0007**	-0.0066	0.0008*	-0.0002	0.0117	-0.0001	-0.0001	-0.0061	0.0004	-0.0001	-0.0040	0.0001
	(-2.19)	(-1.21)	(1.92)	(-0.74)	(0.89)	(-0.08)	(-0.37)	(-0.84)	(0.69)	(-0.47)	(-1.26)	(0.55)
R&D	-0.0005	-0.0216***	0.0003	-0.0004	-0.0144	0.0002	-0.0005**	0.0050	-0.0002	-0.0008**	-0.0013	0.0003
	(-0.81)	(-2.88)	(0.49)	(-1.60)	(-0.87)	(0.27)	(-2.12)	(0.58)	(-0.36)	(-2.52)	(-0.20)	(0.65)
SG&A	-0.0010	-0.0128	0.0005	-0.0013*	0.0077	0.0009	-0.0013***	-0.0515	0.0054	-0.0014**	0.0025	-0.0002
	(-1.18)	(-0.97)	(0.45)	(-1.65)	(0.25)	(0.66)	(-3.26)	(-1.62)	(1.38)	(-2.05)	(0.27)	(-0.39)

The table report estimates of coefficients β_1, β_2 and β_3 from least squares dummy variable regressions of the form: Response variable$_{imt}$ = α + β_1*CEO experience$_{imt}$ + β_2*Power$_{i(m)}$ + β_3*CEO experience$_{imt}$*Power$_{i(m)}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*ι_i [industry dummies] + ε_{it}. Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Industry dummies are excluded from the regressions containing the managerial discretion dummy, since industry dummies and the discretion dummy are collinear. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.8: Regressions on the variable *MBA* and on the measures of CEO power

	MBA	Accumula-tion of titles	MBA * Accum.of titles	MBA	Founder	MBA * Founder	MBA	Only insider	MBA * Only insider	MBA	Managerial discretion	MBA * Managerial discretion
Return on assets	0.0113	0.0136	-0.0107	0.0041	-0.0086	-0.0019	0.0031	0.0244**	0.0078	0.0178*	0.0009	-0.0161
	(0.88)	(1.51)	(-0.72)	(0.53)	(-0.67)	(-0.06)	(0.39)	(2.35)	(0.53)	(1.67)	(0.14)	(-1.54)
Tobin´s Q	0.2169*	-0.0460	-0.0647	0.1412*	0.1646	0.6130	0.2040**	0.0922	-0.1570	0.0936	-0.0237	0.1146
	(1.71)	(-0.56)	(-0.43)	(1.82)	(1.40)	(1.55)	(2.42)	(0.84)	(-0.97)	(0.84)	(-0.39)	(1.10)
Stocks returns	-0.0229	0.0132	0.0069	-0.0145	0.0559	0.0054	-0.0208	0.0050	0.0088	0.0095	0.0050	-0.0428
	(-0.78)	(0.58)	(0.20)	(-0.93)	(1.50)	(0.09)	(-1.20)	(0.19)	(0.23)	(0.23)	(0.16)	(-0.90)
Std. dev. of ROA	-0.0161*	-0.0148**	0.0127	-0.0069	0.0011	-0.0123	-0.0078	-0.0096	0.0014	-0.0154**	-0.0086*	0.0083
	(-1.89)	(-2.26)	(1.32)	(-1.38)	(0.11)	(-0.70)	(-1.56)	(-1.15)	(0.14)	(-2.11)	(-1.94)	(1.28)
Std. dev. of Tobin´s Q	0.1765*	-0.0128	-0.1658	0.0938*	0.2304**	0.1370	0.0844	-0.0286	-0.0426	0.0293	-0.0552	0.0655
	(1.73)	(-0.21)	(-1.47)	(1.66)	(2.57)	(0.65)	(1.44)	(-0.39)	(-0.37)	(0.37)	(-1.50)	(0.93)
Std. dev. of stock returns	-0.0049	-0.0002	-0.0012	-0.0040	0.0179***	0.0037	-0.0062**	-0.0035	0.0042	-0.0100***	0.0004	0.0043
	(-1.25)	(-0.09)	(-0.25)	(-1.59)	(4.17)	(0.37)	(-2.35)	(-0.94)	(0.74)	(-2.67)	(0.18)	(1.17)
Investment	-0.0149*	-0.0078	0.0138	-0.0007	0.0332***	-0.0247	-0.0055	0.0030	-0.0046	-0.0186**	0.0026	0.0112
	(-1.71)	(-1.25)	(1.32)	(-0.12)	(3.34)	(-1.24)	(-0.95)	(0.37)	(-0.35)	(-2.17)	(0.53)	(1.35)
Leverage	0.0090	0.0116	-0.0064	-0.0015	-0.0283	0.0353	0.0113	0.0166	-0.0487**	0.0004	-0.0058	0.0047
	(0.57)	(1.04)	(-0.33)	(-0.13)	(-1.58)	(0.92)	(0.98)	(1.00)	(-2.15)	(0.03)	(-0.73)	(0.33)
Cash holdings	-0.0606	0.5828	-0.7159	-0.1839	1.8777***	-1.5487	-0.3725	1.2380*	-1.0264	-0.7416**	0.0984	0.4208
	(-0.13)	(1.59)	(-1.33)	(-0.62)	(2.82)	(-1.28)	(-1.32)	(1.70)	(-1.22)	(-1.96)	(0.39)	(0.99)
Interest coverage	7.1990	7.4796	-12.1449	-3.7388	23.7153	60.0831	-2.0482	-21.2973*	7.8042	4.3927	1.5088	-6.5211
	(0.58)	(0.76)	(-0.84)	(-0.52)	(1.42)	(1.50)	(-0.26)	(-1.79)	(0.42)	(0.36)	(0.20)	(-0.54)
Dividends over earnings	0.0006	-0.0076	0.0052	0.0033	-0.0202***	-0.0147*	0.0038	-0.0070	0.0021	0.0004	-0.0013	0.0040
	(0.08)	(-1.58)	(0.65)	(0.66)	(-4.03)	(-1.73)	(0.79)	(-1.21)	(0.22)	(0.07)	(-0.37)	(0.65)
Advertising	0.0150*	0.0051	-0.0122	0.0060	0.0060	0.0130	0.0075	-0.0041	-0.0013	0.0053	0.0000	-0.0006
	(1.95)	(1.05)	(-1.38)	(1.32)	(0.63)	(0.62)	(1.52)	(-0.82)	(-0.18)	(0.89)	(0.01)	(-0.10)
R&D	0.0085	-0.0182**	0.0030	0.0106	-0.0125	-0.0060	0.0113	0.0067	0.0052	0.0102	0.0025	0.0001
	(0.71)	(-2.25)	(0.23)	(1.56)	(-1.21)	(-0.25)	(1.59)	(0.78)	(0.37)	(1.18)	(0.46)	(0.01)
SG&A	0.0064	-0.0124	-0.0079	0.0087	0.0262	-0.0340	0.0088	0.0126	-0.0433	-0.0114	0.0013	0.0164
	(0.35)	(-0.92)	(-0.38)	(0.72)	(1.28)	(-0.88)	(0.80)	(0.47)	(-1.32)	(-0.70)	(0.15)	(1.09)

The table report estimates of coefficients β_1, β_2 and β_3 from least squares dummy variable regressions of the form: Response variable$_{imt}$ = α + β_1*MBA$_m$ + β_2*Power$_{i(m)}$ + β_3* MBA$_m$ *Power$_{i(m)}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*ι_i [industry dummies] + $\varepsilon_{it.}$ Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Industry dummies are excluded from the regressions containing the managerial discretion dummy, since industry dummies and the discretion dummy are collinear. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.9: Regressions on the variable *Economic education* and on the measures of CEO power

	Economic education	Accumula-tion of titles	Economic education * Accum.of titles	Economic education	Founder	Economic education * Founder	Economic education	Only insider	Economic education * Only insider	Economic education	Managerial discretion	Economic education * Managerial discretion
Return on assets	0.0052	0.0120	-0.0059	-0.0073	-0.0275*	0.0581***	-0.0007	0.0219*	0.0129	0.0102	-0.0056	0.0031
	(0.41)	(1.28)	(-0.42)	(-0.97)	(-1.91)	(2.58)	(-0.09)	(1.93)	(0.88)	(0.99)	(-0.83)	(0.30)
Tobin´s Q	0.0790	-0.0301	-0.1278	0.0116	0.2547*	-0.0304	-0.0032	0.0321	0.0234	-0.1332	-0.0114	0.0642
	(0.67)	(-0.34)	(-0.92)	(0.16)	(1.92)	(-0.11)	(-0.04)	(0.29)	(0.14)	(-1.28)	(-0.17)	(0.64)
Stocks returns	-0.0157	0.0166	-0.0012	-0.0061	0.0767*	-0.0600	-0.0172	0.0075	0.0013	-0.0643*	-0.0250	0.0431
	(-0.56)	(0.68)	(-0.04)	(-0.39)	(1.79)	(-1.18)	(-1.01)	(0.26)	(0.04)	(-1.66)	(-0.73)	(0.97)
Std. dev. of ROA	-0.0022	-0.0102	0.0002	0.0023	0.0096	-0.0306**	-0.0009	-0.0069	-0.0056	-0.0143*	-0.0078*	0.0051
	(-0.26)	(-1.53)	(0.02)	(0.46)	(0.92)	(-1.97)	(-0.18)	(-0.81)	(-0.49)	(-1.94)	(-1.73)	(0.77)
Std. dev. of Tobin´s Q	0.0043	-0.0540	-0.0514	0.0152	0.2992***	-0.2038	-0.0082	0.0050	-0.1271	-0.0571	-0.0176	-0.0418
	(0.05)	(-0.81)	(-0.49)	(0.29)	(2.91)	(-1.29)	(-0.15)	(0.06)	(-1.12)	(-0.78)	(-0.43)	(-0.65)
Std. dev. of stock returns	-0.0083**	-0.0023	0.0048	-0.0032	0.0209***	-0.0064	-0.0042	0.0005	-0.0070	-0.0075*	0.0031	-0.0032
	(-2.14)	(-0.74)	(1.03)	(-1.30)	(4.57)	(-0.77)	(-1.61)	(0.12)	(-1.29)	(-1.92)	(1.32)	(-0.85)
Investment	-0.0057	-0.0081	0.0142	0.0038	0.0286***	0.0028	0.0058	0.0078	-0.0162	-0.0011	0.0040	0.0060
	(-0.65)	(-1.28)	(1.38)	(0.67)	(2.58)	(0.17)	(1.01)	(0.92)	(-1.28)	(-0.13)	(0.81)	(0.73)
Leverage	0.0066	0.0019	0.0206	0.0227**	-0.0108	-0.0315	0.0215**	0.0068	-0.0137	0.0227	-0.0044	-0.0003
	(0.42)	(0.16)	(1.08)	(2.11)	(-0.56)	(-0.98)	(1.98)	(0.41)	(-0.55)	(1.44)	(-0.54)	(-0.02)
Cash holdings	-0.2915	0.2799	0.2466	-0.0515	1.7083**	-0.2234	0.0725	1.5187*	-1.5387*	-0.2702	0.2123	0.0686
	(-0.67)	(0.76)	(0.44)	(-0.17)	(2.38)	(-0.19)	(0.26)	(1.88)	(-1.72)	(-0.62)	(0.93)	(0.16)
Interest coverage	4.5824	7.5772	-10.7381	-4.9955	25.4170	31.5795	-0.6633	-13.4777	-14.2590	-1.9357	3.3129	-10.0316
	(0.38)	(0.74)	(-0.73)	(-0.74)	(1.43)	(0.92)	(-0.09)	(-1.03)	(-0.83)	(-0.17)	(0.41)	(-0.85)
Dividends over earnings	0.0018	-0.0056	-0.0014	0.0011	-0.0212***	-0.0069	0.0009	-0.0070	0.0015	0.0050	0.0021	-0.0056
	(0.27)	(-1.12)	(-0.17)	(0.22)	(-4.12)	(-0.80)	(0.21)	(-1.06)	(0.17)	(0.73)	(0.63)	(-0.88)
Advertising	-0.0007	0.0011	-0.0018	0.0003	0.0112	-0.0100	-0.0027	-0.0070	0.0061	0.0009	-0.0017	0.0031
	(-0.10)	(0.18)	(-0.21)	(0.07)	(0.90)	(-0.64)	(-0.54)	(-1.19)	(0.83)	(0.15)	(-0.48)	(0.62)
R&D	-0.0046	-0.0221***	0.0116	0.0004	-0.0173	0.0065	0.0016	0.0036	0.0111	-0.0045	0.0001	0.0069
	(-0.40)	(-2.70)	(0.95)	(0.06)	(-1.49)	(0.39)	(0.23)	(0.39)	(0.84)	(-0.55)	(0.02)	(0.79)
SG&A	-0.0150	-0.0185	0.0077	-0.0065	0.0284	-0.0327	-0.0046	0.0119	-0.0335	-0.0349**	-0.0041	0.0286*
	(-0.80)	(-1.37)	(0.36)	(-0.51)	(1.34)	(-0.88)	(-0.40)	(0.41)	(-0.97)	(-2.21)	(-0.42)	(1.95)

The table report estimates of coefficients β_1, β_2 and β_3 from least squares dummy variable regressions of the form: Response variable$_{imt}$ = α + β_1*Economic education$_m$ + β_2*Power$_{i(m)}$ + β_3*Economic education$_m$*Power$_{i(m)}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*τ_i [industry dummies] + ε_{it}. Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Industry dummies are excluded from the regressions containing the managerial discretion dummy, since industry dummies and the discretion dummy are collinear. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.10: Regressions on the variable *Technical education* and on the measures of CEO power

	Technical education	Accumula-tion of titles	Technical education * Accum.of titles	Technical education	Founder	Technical education * Founder	Technical education	Only insider	Technical education * Only insider	Technical education	Managerial discretion	Technical education * Managerial discretion
Return on assets	0.0253*	0.0166**	-0.0255*	0.0012	-0.0263*	0.0459**	0.0112	0.0305***	-0.0126	-0.0083	-0.0101*	0.0206*
	(1.92)	(1.97)	(-1.70)	(0.14)	(-1.76)	(2.03)	(1.27)	(3.11)	(-0.75)	(-0.68)	(-1.74)	(1.73)
Tobin´s Q	0.0770	-0.0714	-0.0304	0.0228	0.2096	0.0922	0.0048	-0.0599	0.3361*	0.2406*	0.0552	-0.1552
	(0.57)	(-0.85)	(-0.20)	(0.28)	(1.42)	(0.38)	(0.06)	(-0.59)	(1.75)	(1.93)	(1.00)	(-1.31)
Stocks returns	0.0755**	0.0287	-0.0455	0.0307	0.0339	0.0636	0.0580**	0.0297	-0.0724	0.0842	0.0072	-0.0580
	(2.08)	(1.60)	(-0.98)	(1.56)	(1.30)	(0.87)	(2.49)	(1.27)	(-1.60)	(1.41)	(0.32)	(-0.87)
Std. dev. of ROA	-0.0013	-0.0106*	0.0020	0.0027	0.0052	-0.0143	-0.0008	-0.0100	0.0034	0.0142	-0.0041	-0.0066
	(-0.13)	(-1.83)	(0.17)	(0.42)	(0.50)	(-0.84)	(-0.12)	(-1.39)	(0.26)	(1.59)	(-1.10)	(-0.80)
Std. dev. of Tobin´s Q	-0.0071	-0.0829	0.0360	0.0121	0.2586***	-0.0621	-0.0073	-0.0860	0.1431	0.1648**	-0.0298	-0.0168
	(-0.07)	(-1.37)	(0.29)	(0.20)	(2.60)	(-0.37)	(-0.12)	(-1.25)	(1.10)	(1.96)	(-0.87)	(-0.22)
Std. dev. of stock returns	0.0060	-0.0014	0.0038	0.0080***	0.0202***	-0.0045	0.0104***	0.0018	-0.0130**	0.0225***	0.0030	-0.0044
	(1.37)	(-0.52)	(0.72)	(2.71)	(4.42)	(-0.55)	(3.37)	(0.51)	(-2.03)	(5.12)	(1.48)	(-1.01)
Investment	0.0057	0.0015	-0.0154	-0.0036	0.0335***	-0.0113	-0.0010	0.0076	-0.0196	0.0163*	0.0075	-0.0039
	(0.56)	(0.26)	(-1.31)	(-0.57)	(3.28)	(-0.60)	(-0.15)	(1.02)	(-1.36)	(1.80)	(1.56)	(-0.44)
Leverage	-0.0101	0.0140	-0.0167	-0.0212**	-0.0235	0.0092	-0.0205*	0.0017	-0.0003	-0.0596***	-0.0102	0.0210
	(-0.68)	(1.16)	(-0.90)	(-2.01)	(-1.13)	(0.30)	(-1.84)	(0.10)	(-0.01)	(-3.96)	(-1.29)	(1.47)
Cash holdings	0.2381	0.6293*	-0.8936	-0.4057	1.7097**	-0.0805	-0.1980	1.1805	-0.8160	0.4153	0.3346	-0.3503
	(0.50)	(1.85)	(-1.55)	(-1.43)	(2.16)	(-0.08)	(-0.65)	(1.61)	(-0.93)	(0.95)	(1.40)	(-0.86)
Interest coverage	1.6549	-2.7032	22.5110	5.4979	15.7752	56.5056	15.5653	-20.5180**	5.3189	23.9608*	-1.5598	3.6377
	(0.11)	(-0.33)	(1.20)	(0.60)	(1.09)	(1.57)	(1.38)	(-2.08)	(0.24)	(1.65)	(-0.25)	(0.24)
Dividends over earnings	0.0030	-0.0050	-0.0042	-0.0006	-0.0275***	0.0116	-0.0004	-0.0077	0.0044	-0.0162***	-0.0044	0.0156***
	(0.38)	(-1.07)	(-0.47)	(-0.11)	(-4.84)	(1.43)	(-0.09)	(-1.26)	(0.47)	(-2.81)	(-1.20)	(2.63)
Advertising	0.0015	0.0023	-0.0089	-0.0020	0.0114	-0.0124	-0.0042	-0.0046	-0.0000	-0.0206***	-0.0009	0.0040
	(0.18)	(0.46)	(-0.94)	(-0.42)	(1.01)	(-0.88)	(-0.86)	(-0.88)	(-0.00)	(-4.01)	(-0.30)	(0.77)
R&D	0.0100	-0.0183**	0.0006	0.0097	-0.0196	0.0075	0.0040	-0.0058	0.0358***	-0.0011	0.0017	0.0029
	(1.03)	(-2.32)	(0.05)	(1.44)	(-1.40)	(0.45)	(0.63)	(-0.67)	(2.64)	(-0.13)	(0.31)	(0.30)
SG&A	-0.0193	-0.0166	0.0057	-0.0210*	0.0100	0.0277	-0.0200*	-0.0094	0.0272	0.0116	0.0099	-0.0111
	(-1.15)	(-1.23)	(0.28)	(-1.82)	(0.40)	(0.84)	(-1.70)	(-0.35)	(0.87)	(0.68)	(1.12)	(-0.72)

The table report estimates of coefficients β_1, β_2 and β_3 from least squares dummy variable regressions of the form: Response variable$_{imt}$ = α + β_1*Technical education$_m$ + β_2*Power$_{i(m)}$ + β_3*Technical education$_m$*Power$_{i(m)}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*t_i [industry dummies] + $\varepsilon_{it.}$ Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Industry dummies are excluded from the regressions containing the managerial discretion dummy, since industry dummies and the discretion dummy are collinear. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.11: Robustness results: Fixed-effects regressions on selected observable CEO characteristics (power measures not included)

Dependent variables \ Main independent variables	Age	Industry experience	CEO experience	MBA	Economic education	Technical education
Return on assets	0.0003	0.0002	-0.0003	0.0031	-0.0004	-0.0004
	(0.68)	(0.78)	(-0.70)	(0.25)	(-0.04)	(-0.03)
Tobin´s Q	0.0018	0.0032	0.0027	-0.0959	-0.0095	-0.0561
	(0.36)	(0.85)	(0.61)	(-0.73)	(-0.07)	(-0.41)
Stocks returns	-0.0034*	0.0027*	-0.0026	0.0083	-0.0040	0.1077**
	(-1.65)	(1.78)	(-1.48)	(0.16)	(-0.07)	(1.97)
Std. dev. of ROA	-0.0003	-0.0007***	-0.0008***	-0.0074	-0.0074	-0.0025
	(-1.41)	(-3.99)	(-3.50)	(-1.46)	(-1.35)	(-0.48)
Std. dev. of Tobin´s Q	-0.0014	-0.0016	-0.0019	-0.0103	-0.0417	-0.0186
	(-0.54)	(-0.82)	(-0.86)	(-0.13)	(-0.61)	(-0.24)
Std. dev. of stock returns	-0.0003	-0.0004***	-0.0004**	-0.0000	-0.0026	0.0040
	(-1.60)	(-2.87)	(-2.56)	(-0.01)	(-0.70)	(0.84)
Investment	-0.0005	-0.0004	-0.0009**	0.0164*	0.0195**	-0.0019
	(-1.08)	(-1.11)	(-2.35)	(1.84)	(2.29)	(-0.22)
Leverage	0.0002	0.0006	0.0006	0.0412**	0.0143	-0.0137
	(0.32)	(1.11)	(0.99)	(2.32)	(0.91)	(-0.84)
Cash holdings	0.0217	0.0089	-0.0018	0.4521	0.1394	0.2034
	(1.48)	(0.90)	(-0.11)	(0.97)	(0.37)	(0.59)
Interest coverage	0.7209	0.7055	0.2789	19.7979	-21.9520	-5.3834
	(0.86)	(1.33)	(0.31)	(1.63)	(-1.61)	(-0.34)
Dividends over earnings	0.0001	-0.0001	0.0001	0.0076	0.0026	0.0065
	(0.27)	(-0.18)	(0.30)	(1.27)	(0.42)	(0.68)
Advertising	0.0002	0.0004	0.0002	-0.0010	-0.0103*	0.0065
	(0.74)	(1.28)	(1.05)	(-0.19)	(-1.88)	(0.89)
R&D	-0.0002	-0.0000	0.0002	-0.0229	-0.0086	-0.0082
	(-0.29)	(-0.11)	(0.37)	(-1.32)	(-0.48)	(-0.77)
SG&A	-0.0002	-0.0001	-0.0008*	-0.0065	-0.0040	-0.0111
	(-0.53)	(-0.34)	(-1.68)	(-0.51)	(-0.34)	(-0.88)

The table report estimates of coefficient β from fixed-effects regressions of the form: Response variable$_{imt}$ = α + β_1*Main regressor$_{(i)m(t)}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*φ_i [firm fixed effects] + $\varepsilon_{it.}$ Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.12: Robustness results: Fixed-effects regressions on the variable *Industry experience* and on the measures of CEO power

	Industry experience	Accumula-tion of titles	Industry experience * Accum.of titles	Industry experience	Founder	Industry experience * Founder	Industry experience	Only insider	Industry experience * Only insider	Industry experience	Managerial discretion	Industry experience * Managerial discretion
Return on assets	0.0005	0.0029	-0.0004	0.0000	-0.0452	0.0022	0.0003	0.0178*	-0.0011*	0.0002	-0.0056	0.0001
	(0.88)	(0.36)	(-0.64)	(0.15)	(-1.36)	(1.46)	(1.09)	(1.79)	(-1.77)	(0.53)	(-1.28)	(0.42)
Tobin´s Q	0.0043	0.0400	-0.0017	0.0045	0.8294***	-0.0280*	0.0032	0.0296	0.0002	0.0044	0.0419	-0.0020
	(0.60)	(0.48)	(-0.27)	(1.21)	(3.07)	(-1.95)	(0.83)	(0.30)	(0.04)	(0.97)	(1.04)	(-0.82)
Stocks returns	0.0014	-0.1455***	0.0033	0.0025	-0.1480	0.0073	0.0026*	-0.0133	0.0012	-0.0017	-0.0598	0.0037*
	(0.59)	(-3.51)	(1.31)	(1.59)	(-1.59)	(1.35)	(1.68)	(-0.29)	(0.42)	(-0.81)	(-1.61)	(1.93)
Std. dev. of ROA	-0.0017***	-0.0116**	0.0014***	-0.0006***	-0.0010	-0.0002	-0.0007***	-0.0036	0.0003	-0.0010***	-0.0069***	0.0004***
	(-5.19)	(-2.12)	(4.06)	(-3.76)	(-0.07)	(-0.30)	(-4.23)	(-0.57)	(0.91)	(-4.81)	(-2.78)	(2.64)
Std. dev. of Tobin´s Q	-0.0038	0.1293**	0.0010	-0.0010	0.3485**	-0.0147	-0.0026	-0.0625	0.0110***	-0.0038	-0.0557**	0.0034**
	(-1.14)	(2.30)	(0.30)	(-0.53)	(2.26)	(-1.60)	(-1.32)	(-1.12)	(3.23)	(-1.63)	(-2.31)	(2.54)
Std. dev. of stock returns	-0.0005**	-0.0037	0.0002	-0.0003**	0.0181**	-0.0012**	-0.0005***	-0.0092**	0.0006**	-0.0006***	-0.0016	0.0003*
	(-2.37)	(-1.10)	(0.85)	(-2.14)	(2.17)	(-2.41)	(-3.20)	(-2.27)	(2.49)	(-3.06)	(-0.69)	(1.68)
Investment	-0.0007	-0.0026	0.0004	-0.0002	0.0030	-0.0018	-0.0003	0.0104	-0.0010	-0.0002	0.0093**	-0.0002
	(-1.30)	(-0.36)	(0.87)	(-0.61)	(0.13)	(-1.30)	(-0.83)	(1.08)	(-1.55)	(-0.49)	(2.04)	(-0.66)
Leverage	0.0011	0.0020	-0.0006	0.0006	0.0176	-0.0002	0.0005	-0.0018	0.0004	0.0008	0.0010	0.0001
	(1.37)	(0.19)	(-0.80)	(1.12)	(0.47)	(-0.12)	(1.05)	(-0.13)	(0.41)	(1.20)	(0.19)	(0.30)
Cash holdings	0.0072	-0.0587	0.0026	-0.0003	-3.5780***	0.1434**	0.0091	0.3731	-0.0043	0.0044	-0.0602	0.0012
	(0.39)	(-0.22)	(0.14)	(-0.04)	(-3.78)	(2.15)	(0.91)	(0.88)	(-0.17)	(0.33)	(-0.36)	(0.13)
Interest coverage	1.8853**	27.8600**	-1.6757**	0.4704	-26.4720	3.4459	0.6883	-33.3788**	0.3173	0.7397	2.8188	-0.2873
	(2.33)	(2.21)	(-2.16)	(0.88)	(-0.52)	(1.28)	(1.27)	(-2.09)	(0.34)	(1.17)	(0.40)	(-0.64)
Dividends over earnings	-0.0004	-0.0109**	0.0005	-0.0001	-0.0136	0.0002	-0.0001	-0.0106*	0.0003	-0.0005	-0.0076**	0.0004*
	(-0.68)	(-2.19)	(1.01)	(-0.25)	(-1.42)	(0.25)	(-0.25)	(-1.81)	(0.71)	(-1.12)	(-2.43)	(1.73)
Advertising	0.0006*	0.0058	-0.0003	0.0004	0.0324**	-0.0012**	0.0004	0.0026	-0.0003	0.0005	0.0022	-0.0001
	(1.68)	(1.21)	(-1.18)	(1.31)	(2.53)	(-2.25)	(1.33)	(0.78)	(-0.90)	(1.33)	(1.04)	(-0.72)
R&D	-0.0009	-0.0211**	0.0013**	-0.0000	0.0351	-0.0009	-0.0001	-0.0039	0.0010	-0.0006	-0.0031	0.0005
	(-1.39)	(-2.30)	(2.01)	(-0.06)	(0.90)	(-0.68)	(-0.42)	(-0.34)	(1.32)	(-1.61)	(-0.54)	(1.43)
SG&A	-0.0010*	-0.0219**	0.0013**	-0.0000	-0.0094	0.0008	-0.0002	-0.0194*	0.0012*	0.0003	0.0122**	-0.0006**
	(-1.92)	(-2.11)	(2.29)	(-0.10)	(-0.33)	(0.56)	(-0.61)	(-1.81)	(1.78)	(0.73)	(2.42)	(-2.12)

The table report estimates of coefficients β_1, β_2 and β_3 from fixed-effects regressions of the form: Response variable$_{imt}$ = α + β_1* Industry experience$_{imt}$ + β_2*Power$_{i(m)}$ + β_3* Industry experience$_{imt}$*Power$_{i(m)}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*φ_i [firm fixed effects] + ε_{it}. Each triplet of coefficients comes from a different regression. t-statistics based on standard errors corrected for clustering of observations at the firm level are in parentheses. The symbols ***, **, * represent statistical significance at the 1%, 5% and 10% level, respectively. Table 1.A1 in Appendix 1.1 contains the definitions of the response variables.

Table 1.13: Robustness results: IV/2SLS regressions

Panel A: Overview of the results and tests

	Industry experience				CEO experience			
	Pooled OLS	Pooled 2SLS	Overid	Endog	Pooled OLS	Pooled 2SLS	Overid	Endog
Return on assets	0.0015***	0.0068***	0.0022 (0.9624)	28.9129	0.0015***	0.0039***	0.0033 (0.9541)	21.0145
	0.000143	*0.001034*	[0.986; 0.950]	(0.0000)	*0.000162*	*0.000565*	[0.985; 0.937]	(0.0000)
Tobin´s Q	-0.0109***	-0.0310***	8.7002 (0.0032)	4.7474	-0.0086***	-0.0182***	9.6398 (0.0019)	3.6197
	0.001386	*0.009467*	[0.338; 0.001]	(0.0294)	*0.001669*	*0.005310*	[0.367; 0.000]	(0.0571)
Stocks returns	-0.0017***	-0.0150***	3.9342 (0.0473)	6.4165	-0.0013	-0.0080***	4.0053 (0.0454)	5.6350
	0.000690	*0.005384*	[0.354; 0.001]	(0.0113)	*0.000902*	*0.002992*	[0.398; 0.000]	(0.0176)
Std. dev. of ROA	-0.0017***	-0.0059***	24.7589 (0.0000)	43.5455	-0.0017***	-0.0031***	24.4903 (0.0000)	15.1986
	0.000087	*0.000685*	[0.024; 0.000]	(0.0000)	*0.000098*	*0.000355*	[0.032; 0.000]	(0.0001)
Std. dev. of Tobin´s Q	-0.0165***	-0.0670***	7.0993 (0.0077)	73.6275	-0.0093***	-0.0379***	8.7447 (0.0031)	77.4954
	0.000833	*0.006433*	[0.341; 0.001]	(0.0000)	*0.000984*	*0.003520*	[0.323; 0.000]	(0.0000)
Std. dev. of stock returns	-0.0013***	-0.0046***	0.2213 (0.6381)	64.8102	-0.0006***	-0.0027***	0.0667 (0.7962)	86.3606
	0.000067	*0.000436*	[0.890; 0.624]	(0.0000)	*0.000075*	*0.000240*	[0.949; 0.788]	(0.0000)
Investment	-0.0016***	-0.0063***	1.1378 (0.2861)	27.7016	-0.0008***	-0.0036***	0.4183 (0.5178)	33.6254
	0.000133	*0.000926*	[0.752; 0.260]	(0.0000)	*0.000157*	*0.000506*	[0.864; 0.483]	(0.0000)
Leverage	-0.0006*	0.0005	1.6600 (0.1976)	0.6167	0.0005*	0.0005	1.9404 (0.1636)	0.0009
	0.000244	*0.001410*	[0.694; 0.161]	(0.4323)	*0.000260*	*0.000771*	[0.710; 0.127]	(0.9756)
Cash holdings	-0.0284***	-0.1129***	4.1187 (0.0424)	4.2665	0.0045	-0.0631***	4.1463 (0.0417)	9.8498
	0.005037	*0.041753*	[0.563; 0.040]	(0.0389)	*0.007688*	*0.023458*	[0.615; 0.039]	(0.0017)
Interest coverage	0.2032	2.0489	14.6698 (0.0001)	1.6113	0.8233***	0.9466	12.4520 (0.0004)	0.0274
	0.216415	*1.485050*	[0.365; 0.002]	(0.2043)	*0.282836*	*0.808373*	[0.484; 0.004]	(0.8685)
Dividends over earnings	0.0018***	0.0034***	0.0061 (0.9378)	5.6630	-0.0003**	0.0020***	0.0056 (0.9403)	42.9887
	0.000142	*0.000688*	[0.987; 0.954]	(0.0173)	*0.000130*	*0.000386*	[0.989; 0.955]	(0.0000)
Advertising	0.0001	-0.0036***	1.1161 (0.2908)	29.8765	-0.0000	-0.0018***	1.8612 (0.1725)	32.3979
	0.000107	*0.000743*	[0.677; 0.267]	(0.0000)	*0.000112*	*0.000341*	[0.620; 0.099]	(0.0000)
R&D	-0.0006**	-0.0015	0.0005 (0.9826)	0.7554	-0.0005***	-0.0008	0.0374 (0.8466)	0.1780
	0..000192	*0.001128*	[0.995; 0.982]	(0.3848)	*0.000188*	*0.000641*	[0.960; 0.849]	(0.6731)
SG&A	-0.0014***	-0.0050***	0.0178 (0.8938)	5.9384	-0.0008***	-0.0027***	0.0098 (0.9210)	6.6278
	0.000204	*0.001527*	[0.960; 0.860]	(0.0148)	*0.000238*	*0.000819*	[0.974; 0.895]	(0.0101)

Columns "Pooled OLS" and "Pooled 2SLS" report coefficients (β) on the main independent variable (Industry experience and CEO experience) estimated by the pooled OLS estimator and the pooled 2SLS estimator, respectively, in regressions of the form: Responset variable$_{it}$ = α + β*Experience$_{imt}$ + γ*firm-level controls$_{it(-1)}$ + δ_1*τ_t [year dummies] + δ_2*t_i [industry dummies] + ε_{it} , where the main regressor (Experience) is instrumented by three generation dummies (*Generation of WWs and Great Depression, "Generation of Baby Boomers* and *Generation X+*). Each coefficient comes from a different regression. The response variables are in the leftmost column; Table 1.A1 in Appendix 1.1 contains the definitions of the response variables. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Robust standard errors are in *italics*.

Columns "Overid" report the Hansen J-statistic (χ^2) for the joint overidentification test of intruments, which is robust to heteroskedasticity in the errors. We test the null that the instrumental variables are uncorrealated with the structural error. Failing to reject the null is, however, neither necessary nor sufficient for instrument validity; rejecting the null in an overidentification test should lead us reconsider our instruments. p-values are in parentheses. p-values for the individual overidentification test for the *Generation of Baby Boomers* and *Generation X+* , respectively, are in square brackets.

Columns "Endog" report the results for testing for endogenous instruments' (main regressors') endogeneity. We report the robust Wooldridge's (1995) regression F-test. The null hypothesis is that the "problematic" regressors (in our case, Industry and CEO experience) are exogenous, i. e. uncorrelated with the structural error. If we fail the reject the null, OLS estimation is preferred to instrumental variables estimation. p-values are in parentheses.

Table 1.13 ***(continued)***

Panel B: First-stage results

	Industry experience				**CEO experience**			
	Gen. of Baby Boomers	*Generation X+*	F-stat	Partial R^2	*Gen. of Baby Boomers*	*Generation X+*	F-stat	Partial R^2
(Return on assets)	-2.9840*** (-22.01)	-4.8251*** (-17.54)	289.77 (0.0000)	0.0363	-5.5397*** (-37.33)	-8.1417*** (-22.64)	738.87 (0.0000)	0.1075

Columns *"Gen. of Baby Boomers"* and "*Generation X+"* report coefficients (b) on the generation dummy variables estimated by the pooled OLS estimator in regressions of the form: $Experience_{mt} = \alpha + b*Generation_m + \gamma*firm\text{-}level\ controls_{it(-1)} + d_1*\tau_t$ [year dummies] + d_2*ti [industry dummies] + e_{mt}, where the main regressor (*Generation*) is a dummy variable (*Generation of Baby Boomers* and *Generation X+; Generation of WWs and Great Depression* is the omitted dummy). The coefficient comes from a first-stage regression where the related second-stage dependent variable is return on assets, as indicated in the leftmost column. The second-stage dependent variables do not enter the first-stage regressions but they are relevant from the number of observations' point view. The coefficients on the two experience variables and the test results from the first-stages of the other dependent variables are very close to the ones reported above. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. t-values are in parentheses.

Column "F-stat" reports the F-test - the Kleibergen-Paap rk Wald F-statistic - for the first-stage regression from the pooled 2SLS estimation. This F-test is the robust version of the Cragg-Donald F-test and tests for weak identification of excluded instruments. The null hypothesis is that at least one endogenous variable is not correlated with the excluded insturments. The Stock-Yogo (2005) weak identification critical value corresponding to 10% maximal IV size is 19.93. p-values are in parentheses.

Partial R^2 according to Shea (1997), reported in column "Partial R^2", is another, though not comprehensive, indicator of excluded instruments' relevance. A low value may indicate a presence of weak instruments but to reach that conclusion, the first-stage F-test has to be inspected (for a low value), too (Hahn and Hausman, 2002).

Appendix 1.1
Table 1.A1: Overview of the response variables

Panel A: Measures of firm performance, measures of variability of firm performance

Response variable	Operational measure	Corresponding data from Compustat North America - Industrial Annual (unless stated otherwise) [data item identification]
Measures of firm performance		
(Return on assets; ROA) $_t$	EBITDA $_t$/(total assets) $_{t-1}$ (lagged)	EBITDA $_t$: [Income Before Extraordinary Items; DATA18] total assets $_{t-1}$: [Assets -Total; DATA6]
(Operating return on assets) $_t$	(operating cash flow) $_t$/(total assets) $_{t-1}$ (lagged)	operating cash flow $_t$: [Operating Activities - Net CF; DATA308] total assets $_{t-1}$: [Assets -Total; DATA6]
(Free cash flow over total assets) $_t$	FCF$_t$/(total assets) $_t$	FCF $_t$ = earnings $_t$: [Operating Income Before Depreciation; DATA13] - interest $_t$: [Interest Expenses; DATA15] - taxes $_t$: [Income Taxes – Total; DATA16] - dividends on common stocks $_t$: [Dividends - Common; DATA21] - dividends on preferred stocks $_t$: [Dividends - Preferred; DATA19] total assets $_t$: [Assets -Total; DATA6]
(Tobin's Q) $_t$ (market valuation measure)	(market value of assets) $_t$ /(book value of assets) $_t$	market value of assets $_t$ = book value of assets $_t$: [Assets -Total; DATA6] + market value of common equity at the end of calendar year $_t$: [Price-Calendar Year-Close; DATA24 × Common Shares Outstanding; DATA25] - book value of common equity $_t$: [Common Equity -Total; DATA60] - balance sheet deferred taxes $_t$: [Deferred Taxes (Balance Sheet); DATA74] book value of assets: [Assets -Total; DATA6]
Stock returns $_t$	Stock returns incl. dividends	from CRSP Monthly Stock: monthly stock returns incl. dividends $_t$ [Holding Period Return ; RET] - annualized $(1+HPR_{annual\,(t)}) = \prod^{12}_{n=1}(1+HPR_n)$
Measures of variability of firm performance		
	Standard deviation of ROA $_t$ Standard deviation of operating ROA $_t$ Standard deviation of FCF over total assets $_t$ Standard deviation of Tobin's Q $_t$ Standard deviation of stock returns $_t$	standard deviations of the respective variables' values over 5-year rolling windows; i.e. the standard deviation of variable x at time t (σ_{x_t}) is computed as $\sigma_{x_t} = \sqrt{\frac{1}{5}\sum_{i=0}^{4}(x_{t-i} - \bar{x}_t)^2}$, where $\bar{x}_t = \frac{1}{5}\sum_{i=0}^{4} x_{t-i}$

(continued)

Table 1.A1 ***(continued)***

Panel A: Measures for investment and financing policies, measures for organizational strategy

Dependent variable	Operational measure	Corresponding data from (unless stated otherwise) Compustat North America - Industrial Annual [data item identification]
Measures for investment and financing policies		
Investment $_t$	(capital expenditures) $_t$ /(fixed assets) $_t$	capital expenditures $_t$: [Capital Expenditures; DATA128] fixed assets $_t$: [Property, Plant & Equipment (Net); DATA8]
Leverage $_t$	debt $_t$ /assets $_t$; where assets $_t$ = debt $_t$ + equity $_t$	debt $_t$ = long-term debt $_t$: [Long-Term Debt - Total; DATA9] + current liabilities $_t$: [Debt in Current Liabilities; DATA34] equity $_t$ = book value of common equity: [Common Equity; DATA60]
(Cash holdings) $_t$	cash $_t$ /(fixed assets) $_t$	cash $_t$: [Cash and Short-Term Investments; DATA1] fixed assets $_t$: [Property, Plant & Equipment (Net); DATA8]
(Interest coverage) $_t$	earnings $_t$ /interest $_t$	earnings $_t$: [Operating Income Before Depreciation; DATA13] interest $_t$: [Interest Expenses; DATA15]
(Dividends over earnings) $_t$	dividends $_t$ /earnings $_t$	dividends $_t$ = dividends on common stocks $_t$: [Dividends - Common; DATA21] + dividends on preferred stocks $_t$: [Dividends - Preferred; DATA19] earnings $_t$: [Operating Income Before Depreciation; DATA13]
Measures for organizational strategy		
Advertising $_t$	(advertising expenditures) $_t$ / (total assets) $_{t-1}$ (lagged)	advertising expenditures $_t$: [Advertising Expense; DATA45] total assets $_{t-1}$: [Assets -Total; DATA6]
R&D $_t$	(R&D expenditures) $_t$ / (total assets) $_{t-1}$ (lagged)	R&D expenditures $_t$: [Research & Development Expense; DATA46] total assets $_{t-1}$: [Assets -Total; DATA6]
SG&A $_t$	(overhead costs) $_t$ /sales $_t$	overhead cost $_t$: [Selling, General & Administrative Expenses; DATA189] sales $_t$: [Sales (Net); DATA12]

The table provides an overview of our five groups of dependent variables – measures for firm outcomes, their definitions and operational measures.

Appendix 1.2

Table 1.A2: Overview of the expected signs of the relationships between firm outcomes and CEO characteristics

Regressors / Response variables	Age	Industry experience	CEO experience	MBA	Economic education	Technical education
Return on assets						
Operating return on assets	(+)?	(+)?	(+)?			
Free cash flow over total assets				(+/-)	(?)	(?)
Tobin´s Q	(-)	(-)	(-)			
Stocks returns						
St. dev. of ROA						
St. dev. of operating ROA						
St. dev. of FCF over total assets	(-)	(-)	(-)	(+/-)	(?)	(?)
St. dev. of Tobin´s Q						
St. dev. of stock returns						
Investment	(-)	(-)	(-)			
Leverage						
Cash holdings				(?)	(?)	(?)
Interest coverage	(+)?	(+)?	(+)?			
Dividends over earnings						
Advertising	(-)?	(-)?	(-)?	(+)	(?)	(?)
R&D	(-)	(-)	(-)	(-)		(+)
SG&A	(?)	(-)	(-)	(+)	(-)	

The table provides an overview of the expected signs of the relationships between the firm outcomes and the CEO characteristics that we study. (+) and (-) stand for a positive and a negative relationship, respectively. (+/-) indicates that there are alternative hypotheses. (?) means that the relationship is uncertain.

Chapter 2

CEO Compensation and Experience

2.1 Introduction

CEO compensation is a topic that has generated a vast literature.[1] Research questions involving CEO compensation are very varied and try to tackle the complexity of issues involved in determining CEO pay from different viewpoints. Efficient contracting and the role of executive labor markets in matching managerial talent with firms' demand is explored in, e.g., Murphy and Zábojník (2004; 2007), Gabaix and Landier (2008) and Edmans at al. (2009). In weak governance structures, CEOs may set their own pay if they can exercise influence on the board's compensation committee. This managerial power, or skimming, view is supported by findings of, e.g., Bertrand and Mullainathan (2000; 2001) and Bebchuk and Fried (2003; 2004). Murphy (2012) points out that the literature studying the determinants of CEO compensation can be roughly divided into two groups according to its focus on either efficient contracting or managerial power but, in the search for a general theory of executive compensation, rather than viewing these as two competing hypotheses it is more productive to view them as complements. Murphy (2012) also highlights the role of government interventions into CEO compensation (often as a consequence of public outrage) in determining the trends in how companies reward their CEOs.

[1] Murphy (1999), Core et al. (2002), Frydman and Jenter (2010) and Murphy (2012) are some of the prominent survey articles. Frydman and Saks (2010) explore the determinants of CEO pay in a long-term perspective.

Evidently, there is a complex interaction of determinants of CEO pay that come from inside (shareholders represented by boards' compensation committees versus the CEO, the firms' head strategist, as their agent) or outside (government, society) the firm. Whether or how this interaction is able to ensure effective contracts that attract, motivate and retain CEOs is not the prime line of investigation in our paper. Our point of departure is that markets for executives are efficient and determine compensation as a return to - among other factors - work experience.

We study the role of lifetime work experience in determining CEO compensation. In line with the work of Mincer (1974) which builds on Becker's (1964) human capital theory, we define experience as the human capital acquired during post-schooling years through participation in the labor market. Thus, CEO compensation reflects the return to the CEO's post-schooling investment in human capital. As we study the value and contribution of the work experience of managers in CEO compensation, we employ three proxies for managerial experience - company experience, industry experience and CEO experience. These are observable, simple chronological measures of work experience which assume that the investment in human capital is continuous and starts after the schooling phase, by participation in the labor market. In the case of CEOs, the measures proxy for how the CEOs' managerial ability develops through time, with job tenure.

Work experience of a CEO is one of the "obvious" factors in CEO pay but the value of our somewhat "back-to-basics" exercise is in the attempt to quantify this influence from several viewpoints, as a combination of different measures of experience and different measures of CEO pay. The empirical model we use is an augmented version of the Mincerian human capital earnings function, where CEO compensation is a function of managerial experience, other CEO characteristics, firm characteristics, and time-level, industry-level, firm-level and CEO-level unobservable heterogeneity. The controls we include reflect attempts to best isolate the effect of experience on compensation, thus possibly reducing the endogeneity/omitted variable bias most likely present in our non-experimental (observational) dataset. We find

that previous work experience, at least the variation captured by length-of-experience measures, plays a humble role in determining CEO compensation. After controlling for CEO unobserved heterogeneity, a one-standard-deviation increase in company, industry or CEO experience comes with an increase of up to 8% for salary and up to 5% for cash compensation. The increase in total compensation is highest, 25%, when the experience measure is the length of CEO experience, for the other two measures the effect on total compensation is approximately 10% lower. The length-of-experience measures do not seem to matter for stock grants as a component of total compensation. When examining the contribution to the models' goodness of fit (R^2) of any experience measure as a single factor, the variables' contribution does not exceed 1%, compensation measures notwithstanding.

We also study the influence of CEO power in combination with CEO experience to see whether powerful CEOs earn more than their non-powerful counterparts with the same level of experience. CEOs who are at the same time the chairman of the board or founder CEOs may earn as much as 20-50% higher total compensation. Conditional on controlling for the quality of corporate governance, a positive difference between powerful and non-powerful CEOs would indicate that self-serving CEOs are destroying shareholder value and firms do not have effectively determined systems of rewarding CEOs. But since we may not control for all contingencies potentially present in the link between CEO power and CEO pay, we cannot dismiss the potential coexistence of optimal CEO compensation which removes agency problems between shareholders and CEOs but leaves room for CEOs' rent extraction due to agency problems between directors and shareholders (Murphy, 2012).

The paper is organized as follows. Sections 3.2 and 3.3 discuss the data and the empirical methodology. We present the results from the regression analysis and the R^2 decomposition analysis in Section 3.4. Section 3.5 concludes.

2.2 Data

We use three data sources. Data on CEOs' experience come from BoardEx. Data on firm-level controls and CEO compensation are taken from Compustat North America Industrial Annual (Legacy) and ExecuComp, respectively. Our panel has a total of 6,851 firm-year observations. It follows 1,469 CEOs in 878 firms from 1992 to 2006. Table 2.1 shows how the number of firm-CEO observations vary per year throughout the 15-year sample period. The number of observations grows steadily from 104 in 1992, reaches its peak at 690 observations in 2004 and declines slightly to 609 in 2006.[2]

We employ a number of compensation variables, all commonly used in the CEO compensation literature: salary, cash compensation (the sum of salary and bonus), total compensation including the value of stock option grants, total compensation including the value of exercised stock options, and restricted stock grants over total compensation. A detailed overview of the compensation variables is in Panel A of Table 2.A1 in Appendix 2.1.

We use three measures of managers' experience - company experience, industry experience and CEO experience. They represent the length of the CEOs' labor market experience.[3] *Company experience* is determined by the number of years that the CEO has worked in the current (public) company in any position. *Industry experience* is the number of years the CEO has held any position in the industry of his/her current employer. We use the Fama and French 49 industry classification. Due to data availability on industry identification, we are constrained to public firms. *CEO experience* is the number of years the current CEO has held a CEO position in any firm (public or private) or industry, including the current position.[4]

[2]The numbers for each year show the maximum number of observations that may enter the regressions, however this number can be lower depending on the variables that enter the regressions.

[3]We count the number of months and express them in years, thus introducing more variability in the measures.

[4]In the summary statistics, we also include measures of experience that illustrate the individuals' job attainment. We count the number of different job positions the current CEO has held throughout all his/her employment history, the number of industries in which the individual held at least one job position throughout his/her career, and also the number of CEO appointments up to and including the current CEO position. These count variables provide more insight into the CEOs' career experience.

Following Adams et al. (2005), we employ four measures of CEO power. All of them are dummy variables. *Accumulation of titles* equals one if the CEO is at the same time the chairman of the board of directors. *Founder* equals one if the CEO is at the same time the founder of the firm. *Only insider* equals one if the CEO is the only insider on the board, i.e. the only board member who is also an employee of the firm, thus possibly having a firm-related information advantage over the other board members. *High-discretion industry* equals one if the firm's industry belongs to the group of industries identified by Hambrick and Abrahamson (1995) as industries where managers tend to be least constrained in their decision-making. Panel B of Table 2.A1 provides an overview of the experience measures and other CEO-level controls.

At the firm level, we control for firm size, the firm's opportunity set, firm performance, firm risk, and the strength of corporate governance (Core et al., 1999; Graham et al., 2012). The corresponding explanatory variables we employ are sales, the market-to-book ratio (an average over the preceding five years), return on assets and stock returns, the standard deviation of returns on assets and of stock returns (over the preceding five years), and Gompers et al.'s (2003) GIM index, respectively. A detailed overview of all firm-level controls can be found in Panel C of Table 2.A1 in Appendix 2.1.

Table 3.1 presents descriptive statistics of the variables. The table is divided into three panels, with Panel A presenting the compensation variables.[5] We present more compensation variables than what we report tests on in order to describe the CEOs' compensation situation in a more comprehensive manner. The average CEO earns \$682.95 thousand (median \$638.75 thousand) and \$1.37 million (median \$1.03 million) in salary and cash compensation, respectively. The non-cash compensation variables, however, indicate a much higher variation. While the average CEO receives \$4.295 million in total compensation including option grants (ExecuComp's TDC1) and \$4.229 million in total compensation including options ex-

[5] As indicated in the table, all compensation variables and most of the firm-level controls are winsorized to mitigate the influence of outliers. In the regressions, all compensation measures (the dependent variables) except the ratio variable are log-transformed.

ercised (ExecuComp's TDC2), the median values are about half the size of the mean total compensation. The share of the value of restricted stock grants in the value of total compensation goes from the average 7% to approximately ten-fold for the maximum values. The average CEO's annual salary is nearly 50% of the cash-related compensation and 16% of the total compensation. The average annual bonus matches the salary in amount but its median value is about 40% lower. Cash-related compensation represents on average approximately one third of the CEOs' total compensation. Not surprisingly, the sample CEO compensation minimum and maximum reveal a large heterogeneity in CEO compensation outcomes among firms.

Our average CEO is 56 years old, with 8.91 years of company experience, 9.11 years of industry experience and 9.81 years of CEO experience. He/she worked in almost nine job positions in 2 different Fama-French industries before becoming a CEO and the current CEO position is his/her second CEO position. A large fraction of CEOs, about 70%, are powerful when it comes to accumulation of titles or working in a high-discretion industry. The representation of powerful founders or sole insiders on the board is lower, only about one tenth of the CEOs. Only 23 (1.6%) of all CEOs are female. American CEOs dominate the sample, they represent 80% of all CEOs. Around a third of CEOs hold an MBA degree.

The availability of ExecuComp data bounds us to the universe of large S&P 1500 firms. The mean value of sales is more than $4.5 billion, with a large standard deviation and a median value of $1.4 billion. If we interpret the market-to-book ratio as an indicator of investment opportunities, the average firm has decent growth opportunities - the mean and median values for the market-to-book ratio are 2.18 and 1.71, respectively. The measures of firm performance and risk after winsorization do not exhibit extreme values. The average return on assets is 6.26% and the average stock return is 15.6%. The mean value of the GIM index is approximately 9.29 (the median value is 9), with a small standard deviation, which indicates that the typical company in our sample is rather well-governed, with more power to shareholders than managers. The GIM index could be viewed as another measure for

managerial power when looking at it through the dichotomy of shareholders' versus managers' power.[6]

Table 2.3 reports the pairwise correlation coefficients for all potential regressors. The correlation coefficients between all length-of-experience variables are very strong - close to 1, positive and strongly statistically significant. Thus, we probably do not capture very different dimensions of the individuals' work experience with these variables. The positive correlations between these variables are not surprising: longer careers naturally involve more company, industry or, eventually, CEO experience since all individuals in the sample become CEOs.[7] Power and experience measures exhibit weak positive associations. The founder indicator and the three length-of-experience variables display the strongest correlation when examining power and experience measures, with correlation coefficients close to 0.4 and significant at the 1% level. The power variables' correlation coefficients among each other show close-to-zero correlations, significant at the 1% level. The power measures seem to proxy for different aspects of CEO power. The correlation coefficients suggest a negative association between firm size and the length of their CEOs' company, industry and CEO experience. The absolute value of all correlation coefficients for the GIM index is below 0.2, most of them are significant at the 1% level. Better governed firms seem to be be smaller, riskier, with more investment opportunities and better performance, and seem to have more experienced CEOs, or founders as CEOs. The right-hand-side variables that appear in the same regression (considering CEO characteristics as well as firm controls) display overall low to moderate correlation coefficients. Not taking into account the correlation coefficients between some of the firm-level controls and their lagged versions which are naturally highly correlated, most correlation coefficients do not exceed 0.4 in absolute value.

[6]The lower the value of the GIM index, the more effective the firm's governance mechanisms are considered to be. The GIM index adds a point for each restriction that restricts shareholders rights. The maximum value of the index is 24. (Gompers et al., 2003)

[7]The correlation results have to be interpreted with an important limitation in mind: the computation of Pearson product-moment correlation coefficients relies on the assumption of a linear relationship between two continuous variables. Weak correlation coefficients indicate lack of a *linear* relationship rather than no association between the two variables.

2.3 Empirical methodology

In order to study the explanatory power of experience when it comes to compensation outcomes, we follow the empirical strategies suggested in Core et al. (1999) and Graham et al. (2012). Thus, the baseline regression equation is an augmented version of Mincer's (1974) human capital earnings function and takes the form:

$$Ln(Comp)_{mt} = \beta Ln(Exp)_{(i)mt} + \boldsymbol{X}_{it(-1)}\boldsymbol{\gamma} + \tau_t + \mu_m + \iota_i + \varepsilon_{mt} \tag{2.1}$$

where m, i, and t denote managers (CEOs), firms and years, respectively. Both the compensation variable, $Ln(Comp)_{mt}$, and the experience variable, $Ln(Exp)_{(i)mt}$, are natural-log-transformed. α is the constant, β is the coefficient of interest, γ is a vector of coefficients on the firm controls, and ε_{imt} is the error term. $\boldsymbol{X}_{it(-1)}$ is a vector of firm-level controls for firm size, investment opportunities, firm profitability, firm risk and corporate governance. τ_t, μ_m and ι_i represent year, CEO and firm fixed effect, respectively.

We build our way towards this specification gradually, so that we can observe the changes in the coefficients of interests. We start with a simple pooled OLS regression with no fixed effects, then we perform least squares dummy variable estimation by adding year and industry dummies. Industry dummies control for time-invariant industry characteristics, such as long-term industry standards. Next, we pair year dummies with CEO fixed effects, thus replacing industry dummies. Since we are interested in isolating the effect of experience on compensation, this is an important step.[8] Our goal is to determine the return to experience and through the log-transformations of the response variable and the explanatory variable, we impose a constant elasticity model.[9] The ultimate specification replaces the CEO fixed

[8] In unreported regressions - in tests *without* CEO fixed effects - we include several CEO-level controls, such as the US dummy, the female indicator, or the MBA degree indicator. Possibly due to less observations or a small between variation in these observable CEO characteristics, we do not find their coefficients significant. The conclusions from the reported tests are qualitatively unaffected and quantitatively very similar to the additional, unreported ones.

[9] Alternatively, we could replace the log-transformed experience measure with the measure and its a squared term (an alternative for capturing non-linearity), and impose thus concavity in experience-related CEO compensation.

effects in the latter specification with joint CEO and firm fixed effects (spell effects; Graham et al., 2012). We are not interested in the CEO and firm fixed effects separately. We only employ them to better isolate the effect of experience on compensation and address the omitted variable bias. The joint fixed effects estimation is also better supported by our relatively small sample, since instead of accounting for each CEO and firm separately, we only need to identify the unique CEO and firm pairs (1,469 CEO and 878 firm dummies for separate CEO and firm effects versus 1,478 CEO-firm pair dummies for their joint fixed effects).[10] The number of CEOs who during the sample period start a new CEO job in one of the firms in the sample (henceforth referred to as "in-sample movers") is very small, only 0.61% (9 out of 1469 CEOs). This implies that results from CEO fixed effects estimation probably do not differ substantially from firm fixed effects estimation. Hence, we do not expect a large change in results when moving from estimation with CEO fixed effect to spell effects.

We regress several compensation measures on each of the experience measures separately. The three length-of-experience variables - company experience, industry experience and CEO experience - allow us to seize the advantages of employing CEO fixed effects in compensation regressions. They exhibit sufficient variation through time and within subjects which is an important consideration when we employ CEO fixed effects. If the explanatory variable of interest does not change over time or if it changes slowly, controlling for unobserved time-invariant heterogeneities is detrimental to the goal of the research.[11] Graham et al. (2012) study the importance of including manager and firm fixed effects in compensation regressions as an empirical methodology to effectively address omitted variable bias issues but point out its limitations in function of the time-invariability of both the main regressors and the potential omitted variables.

[10] To clearly express this idea, we could replace μ_m and ι_i in Eq. (2.1) with ϕ_p, joint CEO and firm fixed effects, where p stands for unique firm-CEO pairs.

[11] Recall that we include three job-attainment experience measures in the descriptive statistics to capture a bit more of the CEOs' job market experience. After the newly appointed CEO commences his/her top managerial career, the variation in these measures is minimal. The lack of variation in the job-attainment measures does not allow for using them as alternatives to the length-of-experience measures and successfully employ CEO or firm fixed effects. The fixed effects would wipe out the effect of these measures on CEO pay.

When controlling for managerial power in addition to professional experience, least square dummy variable regressions which include year and industry dummies are our benchmark regressions:

$$Ln(Comp)_{mt} = \alpha + \beta_0 Ln(Exp)_{(i)mt} + \beta_1 Pwr_{mit} + \beta_2 Log(Exp)_{(i)mt} Pwr_{mit} + \boldsymbol{X}_{it(-1)}\boldsymbol{\gamma} + \tau_t + \delta_d + \varepsilon_{mt} \tag{2.2}$$

where d identifies company i's industry (Fama and French 49 classification) and δ_d represents industry dummies. Due to collinearity issues, we do not include the industry dummies in the regressions when *High-discretion industry* is the power measure. Pwr_{mit} stands for one of the four measures of managerial power and $Log(Exp)_{(i)mt}Pwr_{mit}$ is the interaction term between experience (firm, industry or CEO experience) and power. The three betas are now the coefficients of interest. A three-way fixed effects model from Eq. (2.1) is of limited use in this case since the managerial power measures are virtually time-invariant. The disadvantage of the specification in Eq. (2.2) is that it re-raises concerns about omitted variables. We can however compare the coefficient estimates for the other regressors and see whether their signs, magnitudes and significance change substantially. If so, omitted variable bias may be an important issue and can be dealt with more advanced estimation methods such as instrumental variables estimation. In all regressions, we include the same firm-level controls (observable time-variant variables), hence the comparison is straightforward.

The interpretation of the β_1 coefficient in Eq. (2.2) is conditional on including the interaction term and may not be very meaningful or useful since it expresses the effect of power on CEO compensation when the CEO has zero years of experience. If we think of first-time CEOs and external hires into a new industry, the interpretation is viable. But a perhaps more interesting case can be made when looking at the effects of power on compensation for more experienced CEOs. Accordingly, we transform the experience measures by centring them around their sample means (for each observation, we subtract the sample mean from

the experience value).[12] The β_1 coefficient may now also be closer to expressing the unconditional effect of power on CEO compensation, i.e. the effect when no interaction variable is included.

2.4 Results

2.4.1 Regression analysis

As measures of CEO compensation, we originally consider eight ExecuComp measures (Table 3.1). However, we report regressions results for only half of them: *Salary*, *Cash compensation*, *Total compensation 2* (includes the value of stock options exercised) and *Stock grants over Total compensation 2*. Results from employing these variables as response variables are sufficiently illustrative of the effect of experience on CEO compensation in our setting.

Unless stated otherwise, for the log-transformed length-of-experience variables, the reported effects correspond to a one-standard-deviation change in the experience variable in proportion to the sample mean. This change is 0.92, 0.93 and 0.83 for *Company experience*, *Industry experience* and *CEO experience*, respectively. The approximate estimated elasticity of compensation with respect to experience is evident from the coefficient estimates.[13]

Tables 2.4 and 2.5 report results from regressions with cash-related compensation. The pooled OLS (Col. 1-3) and the least squares dummy variable (LSDV) regressions results (Col. 4-6) suggest that the effect of a one-standard-deviation increase in company experience and industry experience is very similar for both salary and cash compensation, approximately 3%, for CEO experience it is 2%. After controlling for CEO fixed effects (Col. 7-9), the effect of all three experience measures on salary increases to about 7%, at the 1% level of statistical significance. The spell effect estimation (Col. 10-12) effectively does not introduce a considerable change in the estimates, the estimates are slightly lower but still close to 7%.

[12] We only transform the experience variables once. We do not transform the centred variables further by log-transformation.

[13] Through the log-transformation of the compensation and experience variables, we employ a constant elasticity model. In this model, the relative differentials in earnings are the same at any level of experience.

The positive effect of company experience on cash compensation is somewhat lower than that on salary: 4.9% with CEO fixed effects and 4.4% with spell effects. For industry experience, the estimated effects are 4.5% and 4%, respectively. The corresponding effect of an increase in CEO experience is about 4% but this result, unlike the previous strongly statistically significant results (at 1%), is significant only at the 10% level of significance.

The main results in Table 2.6 are strongly statistically significant for all measures of experience. When controlling for CEO time-invariant unobserved heterogeneities, the effect of more company and industry experience increases, from approximately 8% to 12-13%. CEO experience seems to have a considerably large effect on CEO total compensation including options exercised. The magnitude of the coefficient increases fivefold, from 5% in the pooled OLS regressions (Col. 1-3) and 6% in the LSDV regressions with year and industry dummies (Col. 4-6), to 25% when we include CEO fixed effects (Col. 7-9) or spell effects (Col. 10-12). In the spell effects regressions, the estimated coefficient are always slightly lower than with CEO fixed effects only.

Table 2.7 shows the results from regressions on the fraction of restricted stock grants in total compensation (TDC2). The coefficients on all experience values suggest a small negative effect of approximately 1% at the 1% level of significance but this effect disappears as soon as we control for CEO fixed effects (separately or jointly with firm fixed effects).

The results suggest that even almost double the firm or industry experience may not bring about a dramatic effect on CEO pay (up to 8% and 13.5% for cash-related compensation and total compensation, respectively) but the effect is still considerable. For determining cash-related compensation, firm and industry experience appear as relevant as CEO experience. None of the three experience measures, however, seems to factor in granting stocks to CEOs as part of their total compensation. When it comes to total compensation, it is CEO experience that matters more - we see economically significant changes in CEOs' total compensation related to increases in CEO experience. With a one-standard-deviation increase in CEO experience (i.e. almost double the CEO experience), the total compensation including options

exercised increases by approximately one quarter. We observe often large increases in the coefficient estimates on the experience measures after controlling for CEO and spell fixed effects. This suggests, in line with the findings of Graham et al. (2012), that unobserved time-invariant CEO and firm heterogeneity as determinants of CEO pay are important in their own right. Due to the potential complexity of interactions between our experience variables and the factors captured by fixed effects, it is hard to perform expected bias analysis of the experience variables' coefficients and address why the experience coefficients seem underestimated when fixed effects are omitted from the regression.

In Panel A of Table 2.8, we expand the specifications presented in Table 2.6 and control for CEO power. All groups of three coefficients - experience measure, power measure and their interaction - are jointly statistically significant at the 1% level. A one-standard-deviation increase in company experience, industry experience or CEO experience increases *Total compensation 2* of powerful CEOs compared to the base group of CEOs (i.e. CEOs with no given type of experience and no power) on average by around 29 to 36% when controlling for accumulation of titles, by 29 to 55% when controlling for founders, by around 5 to 6% for sole insiders, and by approximately 17% for CEOs in a high-discretion industry. The results continue to show a solid role of experience in determining pay but power seems to matter too, most significantly in the case of chairman CEOs and founder CEOs. As much as one third of CEOs' total compensation may be due to standing in a powerful role. We find the effect of power on total compensation to be strongest for the combination founders and CEO experience. The total compensation of a founder CEO with no previous CEO experience compared to a non-founder CEO with no CEO experience is almost 60% higher.

Panel B of Table 2.8 reports results from regressions where the experience measures are centred around the sample mean, i.e. CEOs with average experience determined by the sample mean and no power now represent the base group. The effect of a one-standard-deviation increase in experience for non-powerful CEOs is comparable to the ones in Panel A: between 4 and 12% for company experience and industry experience, and between 2 and 7% for CEO

experience. The effect of power on total compensation for CEOs with average experience is lower compared to the results from Panel A, except for only-insider CEOs. Chairman CEOs with average experience earn in total around 20% more compared to non-chairman CEOs with average experience. For founder CEOs and CEOs in a high-discretion industry this difference is negative, approximately -2 and -1%, respectively. CEOs who are the only insiders on the board earn around 13% more compared to non-powerful CEOs with the same (average) experience. The overall difference for a one-standard-deviation increase in experience over the average experience for powerful CEOs compared to the base group amounts to approximately 20% for chairman CEOs and only insiders. In high-discretion industries, the difference is smaller, between 1 and 6%. The overall difference in total compensation between founder CEOs and the base group CEOs, after a one-standard-deviation increase in experience over average experience, is negative. They earn 9 to 10% less on average than non-founder CEOs with the same experience. The joint significance tests of experience and power measures (and their interaction terms) indicate a statistical significance of 1% for regressions in Columns (1)-(8). The trio of coefficients in Column (12) is not jointly statistically significant at conventional levels. The remaining trios of coefficients (Columns 9-11) are jointly statistically significant at the 5% level. In the Panel B results just like in Panel A, power again largely modifies the effects of experience.[14]

The results suggest that powerful CEOs may be awarded significantly higher overall compensation than non-powerful CEOs, even after controlling for the strength of corporate gov-

[14]Unlike in Panel A, in Panel B of Table 2.8, after centring the experience variables around their sample mean, we find negative overall effects on CEO pay when experience (of powerful CEOs) increases. The increase refers to approximately 8-9 years of experience over the average 9-10 years of experience. The overall negative effect may be driven by a decreasing return to the CEOs' experience (a prediction of the theory of optimal allocation of investment in human capital). The latter is in line with Hermalin and Weisbach (1991) pointing out that too long CEO tenure may damage firm performance due to CEO' loss of flexibility and their tendency to take over decision-making, and citing Vancil (1987) that ten years is commonly considered the "right" CEO tenure. We could test this with an alternative specification to Eq. (2.2), where $Ln(Exp)$ is replaced by the non-transformed experience measure and a quadratic term of experience to capture the diminishing effects of experience. By including a quadratic, we impose the existence of a turning point: after reaching a certain amount of experience, the pay starts to decrease. Since we force the turning point to happen, we need to examine whether the resulting turning-point level of experience is reasonable. If the fraction of individuals in the sample who have more experience than the turning-point level is low, this imposition is not of a great concern when interpreting the results.

ernance through the GIM index. This may be an indication that higher CEO pay as a consequence of agency problems between shareholders and directors (the compensation committee) potentially coexists with "good" corporate governance, i.e. even if agency issues between shareholders and CEOs are rather successfully resolved.

2.4.2 R^2 decomposition analysis

It is common practice for researchers to focus the regression analysis on the individual regressors. The coefficient estimates and their statistical significance are reported. R^2 is the common goodness-of-fit measures, it represents the proportion of variability in the data that is accounted for by the statistical model.[15] These elements of regression analysis often carry the only information concerning the regressors' relevance in a given model. Decomposition analysis may be used to study further the information contents of explanatory variables and their relative "importance" or "relevance" in a model. Despite its potential in supplementing regression analysis, R^2 decomposition is not commonly reported in applied work. Through R^2 decomposition, we may also obtain an overview of the "contributions" of a large group of factors, such as a large number of dummy variables, reporting on which otherwise would not be viable.[16]

If R^2 is computed as $cov(y_{it}, \hat{y}_{it})/var(y_{it})$, the R^2 contribution of one of the factors, x_{it}, in the multiple regression is determined as $cov(y_{it}, x_{it}\hat{\beta})/var(y_{it})$, where y_{it} is the dependent variable, $\hat{y}_{it}$ its fitted value, x_{it} is the regressor of interest, and $\hat{\beta}$ is the coefficient estimate on this regressor. The weights/contributions associated with each regressor and with the residuals add up to 100%. Through the R^2 decomposition based on normalized covariance we may encounter instances of negative R^2 contribution. Although counter-intuitive, this is a computational consequence of the fact that there is a covariance in the numerator of the formula for computing the R^2 contribution, i.e. not all regressors' effects in our model move in

[15] We report the adjusted R^2 which deals with the R^2 inflation phenomenon through penalizing the R^2 statistic for including more regressors in the specification.

[16] For example, Graham et al. (2012), use decomposition analysis in unravelling the relative importance of including firm and/or CEO fixed effects in their model.

the same direction. In fact, this is what we observe with our experience measures in nearly all specifications when computing their share in the explained portion of the regressions (R^2) as normalized covariance. The contributions of our length-of-experience variables are, beyond the negative signs, very small, under 0.5% , expressed as a percentage of R^2. After the specifications control for CEO and/or firm fixed effects, the contributions decrease towards zero. The summed contributions of the three regressors - length of experience, power measure and their interaction term - are slightly higher, often positive. The highest weights in R^2, between 1 and 1.5% are attributed to the trio of coefficients with accumulation of titles as the power measure. This makes sense as these CEOs may receive higher compensation from holding two functions. The joint contributions with founder as the power measure is around 1%, with only insider and high-discretion industry it becomes under 0.5%. The contributions do not vary substantially according to the dependent variables but they tend to be fractionally higher for total compensation and stock grants over total compensation.

In line with the findings of Graham et al. (2012), including CEO and firm fixed effects considerably improves our CEO compensation model's goodness of fit (R^2). The contribution of CEO fixed effects to the model's R^2 varies between 30-40%, and the contribution of firm fixed effects between 20-30%.[17]

Huettner and Sunder (2012) suggest an alternative way to decompose R^2: a decomposition of goodness-of-fit measures based on Shapley and Owen values. These are notions born in game theory and offer a possibility of R^2 decomposition under a feasible set of axioms. Huettner and Sunder (2012) explain that the Shapley value decomposition allows for distributing the goodness of fit of the model among the regressors such that it takes into account the interaction between regressors in sub-models and is calculated on the basis of information on the same type of goodness of fit in these sub-models.[18] The Owen value is a generalization of the Shapley value and allows for group-wise decomposition, useful when

[17]These contributions are computed with either CEO fixed effects or firm fixed effect included separately in the regression. With joint CEO and firm fixed effects (spell effect), the contribution to R^2 is around 40%.

[18]Huettner and Sunder (2012) explain in detail the computation of the Shapley and Owen values.

determining the joint contribution of exogenously grouped regressors, such as firm-level controls, year dummies, industry dummies or CEO dummies. The advantages of this approach are several: insensitivity to transformation of variables if the goodness-of-fit measure is also insensitive, variables that contribute nothing to the goodness of fit in all sub-models receive the value zero, the Owen value corresponding to a exogenously given group is a sum of the values attributed to the individual variables through the Shapley value decomposition.

The Shapley and Owen value decompositions are computationally more demanding than the first, normalized-covariance approach we used.[19] The specifications with experience, firm-level controls, year dummies and industry dummies represent the maximum number of regressors we can computationally afford. The Shapley/Owen value decomposition returns no negative contributions. Our experience measures contribute less than 1% to the models' R^2, often this contribution is below 0.5%. For stock grants over total compensation as the dependent variable, we find that the contribution of experience as a share of R^2 increases to between one-tenth and one-fifth. These are the results for the most "complete" computationally viable specification with length-of-experience measures where we include year dummies and industry dummies.

The Owen value decomposition for the group of regressor variables containing the experience measure, power measure and their interaction term, suggests that the contributions of the power groups are as much as 4-6% if accumulation of titles is the power measure, 3-5% for founders, under 1-2% for only insiders, and under 1.5% for high-discretion industries. This holds if the dependent variables are salary, cash compensation or total compensation. The highest contribution values come from regressions with total compensation as the dependent variable, and accumulation of titles as the power measure. The contributions are, again, considerably higher (around one-fifth) for all power groups when stock grants over total compensation is used as the compensation measure. The most "complete" computationally viable specification with power measures includes year dummies only; no industry,

[19] In Stata, we perform the computations using the modules *gfields* for decomposition based on normalized covariance and *rego* for Shapley/Owen value decompositions.

firm or CEO dummies are included.

2.5 Conclusion

We study the role of lifetime work experience, proxied for by three length-of-experience measures, as a determinant of CEO compensation. Company, industry and CEO experience matter equally for cash-related compensation (salary, cash compensation) while CEO experience matters more when we look at the whole compensation package. None of the three experience measures seems to factor significantly in awarding stock grants as a component of total compensation. It is reasonable to assume that the managerial abilities of CEOs develop through time and the return to the accumulated human capital increases accordingly, but we also find indication that the notion of decreasing returns to experience holds for the case of chief executive officers too. Powerful CEOs (chairman CEOs, founders) seem to have room for rent-extraction through compensation but this finding is conditional on disentangling the "misuse of power" from accordingly rewarded personal qualities or superior ability that the power measures may capture. We do not exclude the possibility that this finding arises as a consequence of omitted variable bias. Furthermore, higher CEO compensation may also coexist with addressed or reduced agency problems between shareholders and CEOs when it stems from agency problems between shareholders and directors (the compensation committee of the board) responsible for setting CEO pay (Murphy, 2012).

We extend the usual regression analysis of relationships in the data through R^2 decomposition in order to learn more about the contributions of the regressor factors to the proportion of variation in the data that is explained by the statistical model. We find that, based on normalized-covariance R^2 decomposition, the sole contributions of our length-of-experience measures are low, under 1%. When the joint contribution of the length-of-experience measure, power measure and their interaction term is considered, the contributions do not exceed 1.5%. The Shapley and Owen value decompositions also point to contributions under 1% for

the length-of-experience measures but under 6% for the power groups.

In the light of recent findings on the changing character of markets for CEOs, the results are not surprising.[20] In our measures, for example, the proportion of transferable and non-transferable (firm-specific) capital in the CEOs' accumulated human capital is unclear. Since we lack more comprehensive measures of CEOs' work experience that would capture the qualitative differences between individuals in their post-schooling investment in human capital, just like in Mincer (1974, p. 95), we might understate the potential explanatory power of the distribution of CEO's work experience. It is also viable to posit that after "classifying" for a certain level of job attainment (i.e. the individual is "talented enough" to become a CEO), the potential weighs more than the track record. What makes the significant difference for pay is then not the accumulated work experience but the unobservable characteristics (e.g., an exceptional personality, social connections, attitude towards risk). When we account for time-invariant unobservable CEO characteristics, the results indeed suggest that the variation beyond lifetime work experience plays a very important role in explaining CEO compensation. Even though unobservable CEO heterogeneity comes ahead as a more significant factor of CEO pay, we establish awareness of the role of work experience as a determinant of CEO compensation.

[20] General transferable managerial ability (Murphy and Zábojník, 2004, 2007; Custódio et al., 2012) or charismatic leadership (Khurana, 2002) that helps maintain good investor relations in an environment of highly scrutinized communication are found to come at a significant CEO pay premium.

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Table 2.1: The number of observations per year

Period	No. of firm-CEO observations
1992-2006	6851
1992	104
1993	226
1994	275
1995	297
1996	329
1997	344
1998	453
1999	489
2000	530
2001	540
2002	624
2003	667
2004	690
2005	679
2006	604

The table shows how the numbers of firm-CEO observations in our panel vary throughout the years. The total number of observations is 6,851. The numbers for each year show the maximum number of observations that may enter the regressions, however this number can be lower depending on the variables that in fact enter the regressions.

Table 2.2: Descriptive statistics

Variable	No. of observations	Mean	Std. dev.	Median	Min.	Max.
Panel A: Compensation variables [in $ thousands]						
$Salary_t^{\dagger}$	6851	682.95	314.55	638.75	70	1882.93
$Bonus_t^{\dagger}$	6851	682.72	925.13	400.00	0	5672.50
$(Cash\ compensation)_t^{\dagger}$	6851	1373.29	1142.39	1030.00	179.53	7311.87
$(Total\ compensation\ 1)_t^{\dagger}$	6808	4295.48	5294.73	2449.66	273.79	31668.96
$(Total\ compensation\ 2)_t^{\dagger}$	6849	4229.32	6699.03	1863.19	229.89	42819.34
$Stock\ grants_t^{\dagger}$	6397	401.95	1183.21	0	0	7711.52
$(Stock\ grants/Total\ compensation1)_t^{\dagger}$	6356	0.0676	0.1396	0	0	0.6347
$(Stock\ grants/Total\ compensation2)_t^{\dagger}$	6390	0.0771	0.1601	0	0	0.7169
Panel B: CEO characteristics						
$Company\ experience_t$ [yrs]	6851	8.91	8.18	6	1	56
$Industry\ experience_t$ [yrs]	6822	9.11	8.50	6	1	70
$CEO\ experience_t$ [yrs]	6293	9.81	8.15	7	1	56
$No.\ of\ positions_t$	6851	8.76	4.63	8	1	55
$No.\ of\ industries_t$ (FF49)	6851	2.30	1.45	2	1	10
$No.\ of\ CEO\ appointments_t$	6851	1.12	0.39	1	1	5
$Power:\ Accumulation\ of\ titles_t$	6303	0.72	0.45	1	0	1
$Power:\ Founder_t$	6278	0.09	0.28	0	0	1
$Power:\ Only\ insider_t$	6303	0.12	0.32	0	0	1
$Power:\ High\ discretion\ industry_t$	5101	0.73	0.45	1	0	1
Age_t	6392	56.02	7.48	56	25	90
Female *indicator*	6851	0.02	0.12	0	0	1
MBA degree *indicator*	6851	0.28	0.45	0	0	1
US *indicator*	5448	0.98	0.13	1	0	1
Panel C: Firm-level controls						
$Sales_{t-1}^{\dagger}$ [$ millions]	6851	4521.88	8804.75	1409.61	62.384	59869
$(Market\ to\ book)_{t-1}^{\dagger}$	6851	2.1782	1.3653	1.7140	0.9240	8.0580
$ROA_t^{\dagger}$	6851	0.0626	0.0825	0.0615	-0.2819	0.3107
$Stock\ returns_t^{\dagger}$	6851	0.1557	0.4139	0.1103	-0.6762	1.7789
$St.dev.(ROA)_{t-1}^{\dagger}$	6851	0.0439	0.0473	0.0277	0.0042	0.2594
$St.dev.(stock\ returns)_{t-1}^{\dagger}$	6851	0.4365	0.3481	0.3307	0.0778	2.1081
$(GIM\ index)_t$	6851	9.2947	2.6427	9	2	18

† denotes winsorized variables. We apply winsorization below the 1st and above the 99th percentile.
If applicable, variable units are presented in square brackets. The power measures, the variables denoted "indicator" and the GIM index are binary variables. The remainder are continuous variables.
The table presents the descriptive statistics of our dataset. Panel A shows the response variables - the CEO compensation variables. These are all the variables we consider for the tests, however only regressions with selected compensation variables are reported in the paper. We include all the considered variables in Panel A in order to illustrate the compensation situation of our CEOs in a more comprehensive way. Panel B presents the CEO characteristics. They are related to the CEOs' experience, power, demography and education. Again, for a more comprehensive characterization of the individuals in our sample, we include more variables than what we use in the reported tests. (Employing manager fixed effects in the regressions makes the inclusion of time invariant characteristics redundant.) Panel C presents the firm-level controls employed in the regressions. We control for firm size, investment opportunities, firm performance, firm risk and corporate governance quality. If we control for the variable in its current as well as lagged form, we only report the statistics for the current form. For more detail on the variables, see Table 2.A1 in Appendix 2.1.

Table 2.3: Pairwise correlation coefficients for the potential right-hand-side variables

	Company experience$_t$	Industry experience$_t$	CEO experience$_t$	Accumulation of titles$_t$	Founder$_t$	Only insider$_t$	High discretion industry$_t$	Sales$_{t-1}$†	(Market to book)$_{t-1}$†	ROA$_t$†	ROA$_{t-1}$†	Stock returns$_t$†	Stock returns$_{t-1}$†	Standard dev.(ROA)$_{t-1}$†	St.dev.(stock returns)$_{t-1}$†	GIM index$_t$
Company experience$_t$	1 6851															
Industry experience$_t$	0.993*** 6822	1 6822														
CEO experience$_t$	0.955*** 6293	0.952*** 6267	1 6293													
Accumulation of titles$_t$	0.338*** 6303	0.334*** 6274	0.285*** 5871	1 6303												
Founder$_t$	0.393*** 6278	0.392*** 6249	0.411*** 5848	0.0754*** 6278	1 6278											
Only insider$_t$	0.0925*** 6303	0.0932*** 6274	0.0548*** 5871	0.0554*** 6303	0.0650*** 6278	1 6303										
High discretion industry$_t$	0.0242 5101	0.0259 5078	0.0212 4749	0.0116 5101	0.0238 5083	0.00536 5101	1 5101									
Sales$_{t-1}$†	-0.123*** 6851	-0.117*** 6822	-0.126*** 6293	0.183*** 6303	-0.161*** 6278	-0.0951*** 6303	0.0173 5101	1 6851								
(Market to book)$_{t-1}$†	0.0375** 6851	0.0354** 6822	0.0526*** 6293	-0.0526*** 6303	0.202*** 6278	0.0603*** 6303	-0.0104 5101	-0.125*** 6851	1 6851							
ROA$_t$†	0.0534*** 6851	0.0511*** 6822	0.0350** 6293	0.00874 6303	0.0192 6278	-0.00892 6303	-0.0110 5101	0.0690*** 6851	0.314*** 6851	1 6851						
ROA$_{t-1}$†	0.0713*** 6851	0.0699*** 6822	0.0506*** 6293	0.0166 6303	0.0279* 6278	-0.0160 6303	-0.0135 5101	0.0798*** 6851	0.371*** 6851	0.661*** 6851	1 6851					
Stock returns$_t$†	0.00454 6851	0.00498 6822	0.00139 6293	-0.0129 6303	0.0331** 6278	0.0214 6303	0.00808 5101	-0.0328** 6851	-0.0491*** 6851	0.189*** 6851	-0.0426*** 6851	1 6851				
Stock returns$_{t-1}$†	0.0306* 6851	0.0310* 6822	0.0219 6293	-0.00349 6303	0.0251* 6278	0.00481 6303	-0.0231 5101	-0.00391 6851	0.00899 6851	0.286*** 6851	0.199*** 6851	-0.0616*** 6851	1 6851			
St.dev.(ROA)$_{t-1}$†	-0.0242* 6851	-0.0241* 6822	-0.0164 6293	-0.124*** 6303	0.134*** 6278	0.0701*** 6303	-0.000174 5101	-0.340*** 6851	0.333*** 6851	-0.170*** 6851	-0.237*** 6851	0.0257* 6851	0.00120 6851	1 6851		
St.dev.(stock returns)$_{t-1}$†	0.0324** 6851	0.0327** 6822	0.0449*** 6293	-0.0800*** 6303	0.164*** 6278	0.0822*** 6303	-0.000647 5101	-0.258*** 6851	0.260*** 6851	-0.125*** 6851	-0.122*** 6851	0.0168 6851	0.128*** 6851	0.479*** 6851	1 6851	
GIM index$_t$	-0.119*** 6851	-0.118*** 6822	-0.146*** 6293	0.121*** 6303	-0.170*** 6278	-0.0249* 6303	-0.000853 5101	0.180*** 6851	-0.173*** 6851	-0.0272* 6851	-0.0379** 6851	-0.00951 6851	-0.0119 6851	-0.170*** 6851	-0.168*** 6851	1 6851

† denotes winsorized variables. We apply winsorization below the 1st and above the 99th percentile.
For more detail on the variables, see Table 2.A1 in Appendix 2.1.
The table reports pairwise correlation coefficients between potential right-hand-side variables and the respective number of observations. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.
The results have to be interpreted with a limitation in mind - the underlying assumption about a linear relationship between two variables. The pairwise correlation coefficients reported in the table (computed as Pearson product-moment correlation coefficients) are not entirely meaningful when involving a binary variable or a count variable. The point-biserial correlation coefficient is more appropriate to be used with a continuous and a binary variable. The phi coefficent is used to determine the association between two binary variables; a Pearson coefficicent estimated for two binary variables coincides with the phi coeffcient.

Table 2.4: Regressions of *Salary* on different measures of experience

	$Ln(Salary)_t$			$Ln(Salary)_t$			$Ln(Salary)_t$			$Ln(Salary)_t$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Ln(Company\ experience)_t$	0.0426***			0.0434***			0.114***			0.108***		
	(4.03)			(4.22)			(6.32)			(6.82)		
$Ln(Industry\ experience)_t$		0.0430***			0.0436***			0.106***			0.0998***	
		(4.09)			(4.29)			(6.45)			(6.94)	
$Ln(CEO\ experience)_t$			0.0228			0.0275**			0.119***			0.114***
			(1.62)			(2.04)			(4.46)			(4.28)
$Ln(Sales)_{t-1}$	0.226***	0.226***	0.223***	0.229***	0.230***	0.226***	0.167***	0.166***	0.169***	0.161***	0.160***	0.160***
	(22.19)	(22.17)	(21.37)	(23.47)	(23.52)	(22.77)	(6.54)	(6.48)	(6.05)	(6.09)	(6.00)	(5.54)
$(Market\ to\ book)_{t-1}$	0.0000148	0.000920	-0.00310	-0.0185	-0.0176	-0.0223	-0.00845	-0.00909	-0.00897	-0.00845	-0.00917	-0.00962
	(0.00)	(0.07)	(-0.24)	(-1.40)	(-1.33)	(-1.62)	(-0.46)	(-0.49)	(-0.44)	(-0.45)	(-0.49)	(-0.47)
ROA_t	0.154*	0.160*	0.141	0.148*	0.153*	0.136	0.176**	0.180**	0.182**	0.167**	0.171**	0.172**
	(1.78)	(1.84)	(1.55)	(1.82)	(1.88)	(1.59)	(2.19)	(2.23)	(2.12)	(2.07)	(2.10)	(2.00)
ROA_{t-1}	-0.239***	-0.239***	-0.185**	-0.186**	-0.188**	-0.125	0.00241	0.00450	0.0259	0.00828	0.0102	0.0292
	(-2.99)	(-2.98)	(-2.21)	(-2.41)	(-2.43)	(-1.55)	(0.03)	(0.06)	(0.34)	(0.12)	(0.14)	(0.38)
$Stock\ returns_t$	0.00543	0.00683	0.00995	0.00503	0.00572	0.0116	0.0135*	0.0133*	0.0162*	0.0130*	0.0127*	0.0153*
	(0.43)	(0.54)	(0.76)	(0.40)	(0.46)	(0.91)	(1.72)	(1.68)	(1.93)	(1.71)	(1.66)	(1.89)
$Stock\ returns_{t-1}$	0.0181	0.0160	0.0193	0.0316**	0.0286**	0.0319**	0.0232***	0.0234***	0.0221**	0.0216***	0.0218***	0.0202**
	(1.47)	(1.31)	(1.49)	(2.55)	(2.34)	(2.46)	(2.88)	(2.90)	(2.45)	(2.75)	(2.77)	(2.31)
$St.dev.(ROA)_{t-1}$	0.721***	0.683***	0.709***	0.545**	0.507**	0.541**	-0.133	-0.135	-0.0687	-0.108	-0.110	-0.0429
	(3.06)	(2.92)	(2.89)	(2.51)	(2.35)	(2.39)	(-0.63)	(-0.63)	(-0.31)	(-0.51)	(-0.52)	(-0.19)
$St.dev.(Stock\ returns)_{t-1}$	-0.0319	-0.0254	-0.0314	-0.0409	-0.0330	-0.0392	-0.0403	-0.0440*	-0.0469*	-0.0353	-0.0389	-0.0416
	(-1.01)	(-0.81)	(-0.93)	(-1.20)	(-0.98)	(-1.09)	(-1.60)	(-1.75)	(-1.65)	(-1.41)	(-1.56)	(-1.47)
$GIM\ index_t$	0.0138***	0.0143***	0.0142***	0.0113**	0.0119***	0.0120***	0.0108	0.0103	0.0114	0.0105	0.0100	0.0105
	(3.26)	(3.40)	(3.26)	(2.53)	(2.69)	(2.61)	(1.44)	(1.37)	(1.32)	(1.37)	(1.31)	(1.19)
Constant	4.524***	4.514***	4.587***	4.183***	4.515***	4.191***	4.753***	4.767***	4.713***	4.785***	4.802***	4.777***
	(41.65)	(41.54)	(40.81)	(13.51)	(47.31)	(11.68)	(25.72)	(25.58)	(24.39)	(25.22)	(25.05)	(24.03)
Year dummies	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	no	no	no	yes	yes	yes	no	no	no	no	no	no
CEO fixed effects	no	no	no	no	no	no	yes	yes	yes	no	no	no
Spell effects	no	no	no	no	no	no	no	no	no	yes	yes	yes
Adj. R^2	0.386	0.390	0.377	0.454	0.458	0.448	0.878	0.877	0.880	0.882	0.881	0.884
No. of observations	6851	6822	6293	6851	6822	6293	6851	6822	6293	6851	6822	6293

The table presents results from regressions of *Salary* on experience as proxied for by three measures: the number of years the individual has worked for the given company, in the given industry, and as a CEO. The firm-level controls are the same in all regressions. On the firm level, we control for firm size, investment opportunities, firm performance, firm risk and the quality of corporate governance. Columns (1)-(3) report results from pooled OLS regressions. We do not include further CEO-level controls in order to observe the effect of employing manager fixed effects. In Columns (4)-(6), we add year and industry dummies and report results from least squares dummy variable (LSDV) regressions. In Columns (7)-(9), we include year and CEO fixed effects. Columns (10)- (12) report results after adding joint CEO and firm (spell) fixed effects in addition to year dummies. Given that our explantory variables of interest (experience) are slowly time-varying, we have to keep this limitation in mind when interpreting results. Controlling for (time-constant) unobservable heterogeneity is most indicated for studying explanatory variables which exhibit large within-subject and over-time variation. Firm or CEO fixed effects models give a separate constant term for each firm or CEO; the intercept ("Constant") included in the table in this cases is the average value of the fixed effects.
We report the regressions' adjusted R^2 and the number of observations at the bottom of the table. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Table 2.A1 in Appendix 2.1 contains a detailed description of the variables.

Table 2.5: Regressions of *Cash compensation* on different measures of experience

	Ln(Cash compensation)$_t$			Ln(Cash compensation)$_t$			Ln(Cash compensation)$_t$			Ln(Cash compensation)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln(Company experience)$_t$	0.0432***			0.0451***			0.0731***			0.0665***		
	(3.55)			(3.89)			(3.43)			(3.03)		
Ln(Industry experience)$_t$		0.0439***			0.0457***			0.0667***			0.0602***	
		(3.61)			(3.92)			(3.35)			(2.94)	
Ln(CEO experience)$_t$			0.0363**			0.0374**			0.0701*			0.0674*
			(2.26)			(2.48)			(1.89)			(1.81)
Ln(Sales)$_{t-1}$	0.317***	0.318***	0.314***	0.325***	0.325***	0.322***	0.176***	0.174***	0.156***	0.167***	0.165***	0.150***
	(29.15)	(29.17)	(28.29)	(30.64)	(30.57)	(30.29)	(5.96)	(5.88)	(4.97)	(5.43)	(5.33)	(4.51)
(Market to book)$_{t-1}$	0.00803	0.00870	0.00571	-0.0137	-0.0127	-0.0172	-0.00182	-0.00168	0.000986	0.00140	0.00154	0.0000425
	(0.50)	(0.54)	(0.35)	(-0.86)	(-0.79)	(-1.06)	(-0.09)	(-0.08)	(0.04)	(0.07)	(0.07)	(0.00)
ROA$_t$	1.359***	1.369***	1.295***	1.367***	1.375***	1.296***	1.380***	1.395***	1.304***	1.367***	1.382***	1.293***
	(10.78)	(10.81)	(9.95)	(11.22)	(11.24)	(10.35)	(9.21)	(9.22)	(8.25)	(9.11)	(9.12)	(8.18)
ROA$_{t-1}$	-0.572***	-0.576***	-0.516***	-0.387***	-0.387***	-0.311***	-0.168	-0.169	-0.108	-0.147	-0.148	-0.106
	(-4.97)	(-4.97)	(-4.39)	(-3.41)	(-3.39)	(-2.69)	(-1.39)	(-1.39)	(-0.83)	(-1.23)	(-1.24)	(-0.81)
Stock returns$_t$	0.195***	0.192***	0.211***	0.213***	0.210***	0.232***	0.200***	0.198***	0.212***	0.200***	0.197***	0.212***
	(11.61)	(11.44)	(11.95)	(12.72)	(12.57)	(13.35)	(12.34)	(12.29)	(12.63)	(12.30)	(12.25)	(12.58)
Stock returns$_{t-1}$	0.167***	0.164***	0.170***	0.158***	0.155***	0.162***	0.138***	0.139***	0.138***	0.138***	0.139***	0.138***
	(10.46)	(10.27)	(10.30)	(9.99)	(9.81)	(9.96)	(9.15)	(9.17)	(8.68)	(9.11)	(9.14)	(8.65)
St.dev.(ROA)$_{t-1}$	1.002***	0.967***	0.959***	0.778***	0.751***	0.715***	-0.181	-0.178	-0.159	-0.187	-0.184	-0.141
	(3.73)	(3.61)	(3.42)	(2.99)	(2.88)	(2.64)	(-0.54)	(-0.53)	(-0.44)	(-0.56)	(-0.55)	(-0.38)
St.dev.(Stock returns)$_{t-1}$	-0.0134	-0.00603	-0.0213	-0.0435	-0.0359	-0.0505	-0.0787**	-0.0766**	-0.0930**	-0.0763**	-0.0742**	-0.0868**
	(-0.37)	(-0.17)	(-0.56)	(-1.22)	(-1.02)	(-1.36)	(-2.18)	(-2.11)	(-2.32)	(-2.12)	(-2.05)	(-2.16)
GIM index$_t$	0.0190***	0.0196***	0.0195***	0.0150***	0.0155***	0.0157***	0.0152*	0.0149*	0.0125	0.0151*	0.0148*	0.0122
	(3.62)	(3.72)	(3.61)	(2.98)	(3.08)	(3.05)	(1.75)	(1.71)	(1.29)	(1.69)	(1.66)	(1.23)
Constant	4.212***	4.197***	4.251***	4.075***	4.238***	4.073***	4.913***	4.927***	5.050***	4.962***	4.978***	5.092***
	(37.53)	(37.46)	(36.72)	(21.29)	(42.22)	(17.73)	(23.25)	(23.15)	(22.84)	(22.61)	(22.50)	(21.98)
Year dummies	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	no	no	no	yes	yes	yes	no	no	no	no	no	no
CEO fixed effects	no	no	no	no	no	no	yes	yes	yes	no	no	no
Spell effects	no	no	no	no	no	no	no	no	no	yes	yes	yes
Adj. R^2	0.445	0.448	0.440	0.522	0.525	0.521	0.792	0.793	0.796	0.793	0.794	0.797
No. of observations	6851	6822	6293	6851	6822	6293	6851	6822	6293	6851	6822	6293

The table presents results from regressions of *Cash compensation* on experience as proxied for by three measures: the number of years the individual has worked for the given company, in the given industry, and as a CEO. The firm-level controls are the same in all regressions. On the firm level, we control for firm size, investment opportunities, firm performance, firm risk and the quality of corporate governance. Columns (1)-(3) report results from pooled OLS regressions. We do not include further CEO-level controls in order to observe the effect of employing manager fixed effects. In Columns (4)-(6), we add year and industry dummies and report results from least squares dummy variable (LSDV) regressions. In Columns (7)-(9), we include year and CEO fixed effects. Columns (10)-(12) report results after adding joint CEO and firm (spell) fixed effects in addition to year dummies. Given that our explantory variables of interest (experience) are slowly time-varying, we have to keep this limitation in mind when interpreting results. Controlling for (time-constant) unobservable heterogeneity is most indicated for studying explanatory variables which exhibit large within-subject and over-time variation. Firm or CEO fixed effects models give a separate constant term for each firm or CEO; the intercept ("Constant") included in the table in this cases is the average value of the fixed effects.
We report the regressions' adjusted R^2 and the number of observations at the bottom of the table. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Table 2.A1 in Appendix 2.1contains a detailed description of the variables.

Table 2.6: Regressions of *Total Compensation 2* on different measures of experience

	Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln(Company experience)$_t$	0.113***			0.116***			0.193***			0.187***		
	(6.16)			(7.11)			(5.10)			(4.60)		
Ln(Industry experience)$_t$		0.113***			0.115***			0.168***			0.160***	
		(6.15)			(7.00)			(4.76)			(4.26)	
Ln(CEO experience)$_t$			0.0808***			0.0993***			0.370***			0.365***
			(3.42)			(4.77)			(5.85)			(5.74)
Ln(Sales)$_{t-1}$	0.453***	0.455***	0.450***	0.461***	0.462***	0.460***	0.350***	0.350***	0.312***	0.334***	0.332***	0.296***
	(27.46)	(27.66)	(26.35)	(27.49)	(27.53)	(26.82)	(6.38)	(6.32)	(5.31)	(5.76)	(5.66)	(4.79)
(Market to book)$_{t-1}$	0.0682**	0.0680**	0.0672**	0.0429	0.0432	0.0419	0.0686**	0.0690**	0.0758**	0.0771**	0.0775**	0.0759**
	(2.45)	(2.44)	(2.34)	(1.57)	(1.58)	(1.49)	(2.12)	(2.12)	(2.19)	(2.37)	(2.36)	(2.18)
ROA$_t$	1.735***	1.772***	1.719***	1.694***	1.723***	1.663***	2.075***	2.096***	2.021***	2.069***	2.089***	2.023***
	(7.12)	(7.23)	(6.71)	(7.21)	(7.30)	(6.76)	(7.54)	(7.55)	(7.07)	(7.49)	(7.50)	(7.07)
ROA$_{t-1}$	-0.0327	-0.0736	0.0354	0.184	0.155	0.276	0.414*	0.395*	0.520**	0.457**	0.439**	0.530**
	(-0.15)	(-0.34)	(0.16)	(0.90)	(0.75)	(1.30)	(1.93)	(1.85)	(2.28)	(2.16)	(2.08)	(2.31)
Stock returns$_t$	0.373***	0.370***	0.394***	0.406***	0.404***	0.434***	0.329***	0.328***	0.353***	0.325***	0.324***	0.348***
	(11.36)	(11.19)	(11.16)	(12.17)	(12.05)	(12.14)	(9.30)	(9.26)	(9.30)	(9.21)	(9.17)	(9.19)
Stock returns$_{t-1}$	0.369***	0.362***	0.372***	0.400***	0.394***	0.412***	0.301***	0.301***	0.306***	0.299***	0.299***	0.302***
	(10.78)	(10.57)	(10.20)	(11.72)	(11.53)	(11.45)	(9.20)	(9.16)	(8.64)	(9.11)	(9.08)	(8.54)
St.dev.(ROA)$_{t-1}$	2.274***	2.214***	2.229***	1.648***	1.585***	1.601***	0.525	0.485	0.635	0.475	0.435	0.624
	(5.39)	(5.27)	(5.02)	(3.91)	(3.77)	(3.62)	(0.78)	(0.72)	(0.88)	(0.70)	(0.64)	(0.87)
St.dev.(Stock returns)$_{t-1}$	0.0571	0.0696	0.0563	0.0182	0.0305	0.0188	0.0370	0.0435	0.0229	0.0292	0.0359	0.0225
	(1.05)	(1.28)	(0.97)	(0.33)	(0.55)	(0.32)	(0.56)	(0.65)	(0.32)	(0.44)	(0.54)	(0.31)
GIM index$_t$	0.0262***	0.0269***	0.0252***	0.0249***	0.0254***	0.0247***	0.00357	0.00331	0.00434	0.00454	0.00432	0.00493
	(3.39)	(3.48)	(3.18)	(3.34)	(3.41)	(3.24)	(0.19)	(0.17)	(0.22)	(0.23)	(0.22)	(0.24)
Constant	3.373***	3.348***	3.468***	3.101***	3.111***	3.096***	3.653***	3.668***	3.659***	3.739***	3.765***	3.755***
	(19.25)	(19.18)	(18.73)	(8.20)	(20.00)	(7.13)	(9.16)	(9.13)	(8.74)	(8.93)	(8.93)	(8.57)
Year dummies	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	no	no	no	yes	yes	yes	no	no	no	no	no	no
CEO fixed effects	no	no	no	no	no	no	yes	yes	yes	no	no	no
Spell effects	no	no	no	no	no	no	no	no	no	yes	yes	yes
Adj. R^2	0.386	0.390	0.378	0.475	0.478	0.471	0.689	0.689	0.692	0.689	0.689	0.692
No. of observations	6849	6820	6291	6849	6820	6291	6849	6820	6291	6849	6820	6291

The table presents results from regressions of *Total Compensation 2* (variable TDC2 from Execucomp) on experience as proxied for by three measures: the number of years the individual has worked for the given company, in the given industry, and as a CEO. The firm-level controls are the same in all regressions. On the firm level, we control for firm size, investment opportunities, firm performance, firm risk and the quality of corporate governance. Columns (1)-(3) report results from pooled OLS regressions. We do not include further CEO-level controls in order to observe the effect of employing manager fixed effects. In Columns (4)-(6), we add year and industry dummies and report results from least squares dummy variable (LSDV) regressions. In Columns (7)-(9), we include year and CEO fixed effects. Columns (10)-(12) report results after adding joint CEO and firm (spell) fixed effects in addition to year dummies. Given that our explantory variables of interest (experience) are slowly time-varying, we have to keep this limitation in mind when interpreting results. Controlling for (time-constant) unobservable heterogeneity is most indicated for studying explanatory variables which exhibit large within-subject and over-time variation. Firm or CEO fixed effects models give a separate constant term for each firm or CEO; the intercept ("Constant") included in the table in this cases is the average value of the fixed effects.
We report the regressions' adjusted R^2 and the number of observations at the bottom of the table. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Table 2.A1 in Appendix 2.1 contains a detailed description of the variables.

Table 2.7: Regressions of *(Stock grants/Total compensation 2)* on different measures of experience

	(Stock grants/Total compensation 2)$_t$			(Stock grants/Total compensation 2)$_t$			(Stock grants/Total compensation 2)$_t$			(Stock grants/Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln(Company experience)$_t$	-0.0175***			-0.0172***			-0.00719			-0.0106		
	(-6.37)			(-6.41)			(-0.79)			(-1.10)		
Ln(Industry experience)$_t$		-0.0164***			-0.0161***			-0.00249			-0.00511	
		(-5.98)			(-5.98)			(-0.29)			(-0.57)	
Ln(CEO experience)$_t$			-0.0170***			-0.0160***			0.0134			0.0134
			(-5.12)			(-4.94)			(1.06)			(1.07)
Ln(Sales)$_{t-1}$	0.0162***	0.0165***	0.0160***	0.0166***	0.0169***	0.0169***	0.00827	0.00976	0.00609	0.00396	0.00572	0.00205
	(6.52)	(6.61)	(6.55)	(6.32)	(6.41)	(6.56)	(0.75)	(0.89)	(0.50)	(0.35)	(0.51)	(0.17)
(Market to book)$_{t-1}$	-0.00184	-0.00193	-0.00201	-0.000976	-0.00109	-0.000650	-0.00773	-0.00762	-0.00668	-0.00746	-0.00735	-0.00672
	(-0.67)	(-0.70)	(-0.74)	(-0.36)	(-0.40)	(-0.25)	(-1.45)	(-1.42)	(-1.22)	(-1.35)	(-1.32)	(-1.24)
ROA$_t$	0.0220	0.0216	0.00542	0.0234	0.0235	0.00972	0.0176	0.0151	0.00928	0.0189	0.0165	0.0125
	(0.77)	(0.75)	(0.18)	(0.80)	(0.80)	(0.32)	(0.51)	(0.43)	(0.25)	(0.55)	(0.47)	(0.34)
ROA$_{t-1}$	-0.0729**	-0.0727**	-0.0746**	-0.0500	-0.0497	-0.0541	-0.00866	-0.00779	0.00295	-0.00413	-0.00359	0.00590
	(-2.24)	(-2.22)	(-2.21)	(-1.53)	(-1.51)	(-1.60)	(-0.25)	(-0.23)	(0.08)	(-0.12)	(-0.10)	(0.16)
Stock returns$_t$	-0.00765*	-0.00740*	-0.00716*	-0.00650	-0.00629	-0.00574	-0.00882	-0.00849	-0.00809	-0.00949*	-0.00913*	-0.00929*
	(-1.86)	(-1.79)	(-1.69)	(-1.48)	(-1.42)	(-1.27)	(-1.61)	(-1.54)	(-1.45)	(-1.74)	(-1.67)	(-1.69)
Stock returns$_{t-1}$	-0.00346	-0.00368	-0.00423	-0.00473	-0.00495	-0.00264	-0.00607	-0.00642	-0.00364	-0.00631	-0.00663	-0.00428
	(-0.84)	(-0.89)	(-0.99)	(-1.13)	(-1.17)	(-0.60)	(-1.14)	(-1.21)	(-0.68)	(-1.19)	(-1.24)	(-0.80)
St.dev.(ROA)$_{t-1}$	0.121	0.122	0.0812	0.142*	0.143*	0.0965	0.0674	0.0760	0.0514	0.0528	0.0618	0.0362
	(1.60)	(1.61)	(1.16)	(1.96)	(1.96)	(1.44)	(0.69)	(0.78)	(0.52)	(0.55)	(0.64)	(0.37)
St.dev.(Stock returns)$_{t-1}$	-0.0123	-0.0120	-0.0122	-0.0176**	-0.0173**	-0.0167**	0.000634	0.000715	-0.00192	-0.0000493	-0.00000818	-0.00277
	(-1.55)	(-1.50)	(-1.54)	(-2.30)	(-2.25)	(-2.18)	(0.06)	(0.06)	(-0.16)	(-0.00)	(-0.00)	(-0.23)
GIM index$_t$	0.00265**	0.00271**	0.00225*	0.00186	0.00193	0.00137	0.00104	0.00111	0.00216	0.000656	0.000757	0.00159
	(2.03)	(2.07)	(1.71)	(1.45)	(1.50)	(1.07)	(0.30)	(0.32)	(0.59)	(0.19)	(0.22)	(0.44)
Constant	-0.0266	-0.0306	-0.0181	-0.0806*	-0.122***	-0.0705*	0.0182	0.00499	-0.00644	0.0509	0.0355	0.0251
	(-1.15)	(-1.32)	(-0.74)	(-1.91)	(-3.02)	(-1.70)	(0.24)	(0.07)	(-0.08)	(0.66)	(0.46)	(0.30)
Year dummies	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	no	no	no	yes	yes	yes	no	no	no	no	no	no
CEO fixed effects	no	no	no	no	no	no	yes	yes	yes	no	no	no
Spell effects	no	no	no	no	no	no	no	no	no	yes	yes	yes
Adj. R^2	0.042	0.041	0.040	0.089	0.088	0.090	0.360	0.361	0.377	0.361	0.362	0.380
No. of observations	6390	6361	5836	6390	6361	5836	6390	6361	5836	6390	6361	5836

The table presents results from regressions of the share of the value of stock grants in the CEO's total compensation (Stock grants/Total Compensation 2) on experience as proxied for by three measures: the number of years the individual has worked for the given company, in the given industry, and as a CEO. The firm-level controls are the same in all regressions. On the firm level, we control for firm size, investment opportunities, firm performance, firm risk and the quality of corporate governance. Columns (1)-(3) report results from pooled OLS regressions. We do not include further CEO-level controls in order to observe the effect of employing manager fixed effects. In Columns (4)-(6), we add year and industry dummies and report results from least squares dummy variable (LSDV) regressions. In Columns (7)-(9), we include year and CEO fixed effects. Columns (10)-(12) report results after adding joint CEO and firm (spell) fixed effects in addition to year dummies. Given that our explantory variables of interest (experience) are slowly time-varying, we have to keep this limitation in mind when interpreting results. Controlling for (time-constant) unobservable heterogeneity is most indicated for studying explanatory variables which exhibit large within-subject and over-time variation. Firm or CEO fixed effects models give a separate constant term for each firm or CEO; the intercept ("Constant") included in the table in this cases is the average value of the fixed effects.
We report the regressions' adjusted R^2 and the number of observations at the bottom of the table. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Table 2.A1 in Appendix 2.1 contains a detailed description of the variables.

Table 2.8: Regressions of *Total compensation 2* on measures of experience and power

Panel A: Regressions without centering the experience measures

	Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Power measure: Accumulation of titles			Power measure: Founder			Power measure: Only insider			Power measure: High-discretion industry		
Ln(Company experience)$_t$	0.110***			0.150***			0.0974***			0.151***		
	(3.34)			(7.96)			(5.33)			(5.19)		
Ln(Industry experience)$_t$		0.108***			0.148***			0.0958***			0.153***	
		(3.12)			(7.69)			(5.14)			(5.33)	
Ln(CEO experience)$_t$			0.118***			0.150***			0.0853***			0.143***
			(2.62)			(6.08)			(3.62)			(3.82)
Power measure	0.223***	0.223***	0.288***	0.262	0.265	0.469	-0.0685	-0.0908	-0.0476	0.0952*	0.0994*	0.111
	(3.40)	(3.38)	(3.04)	(0.62)	(0.62)	(0.98)	(-0.62)	(-0.82)	(-0.36)	(1.73)	(1.80)	(1.48)
Power measure* Experience measure	-0.0468	-0.0457	-0.0729	-0.194	-0.194	-0.259	0.0903	0.100*	0.0778	-0.0579*	-0.0604**	-0.0644*
	(-1.19)	(-1.13)	(-1.39)	(-1.35)	(-1.35)	(-1.61)	(1.62)	(1.78)	(1.20)	(-1.90)	(-1.97)	(-1.67)
Ln(Sales)$_{t-1}$	0.450***	0.451***	0.448***	0.455***	0.456***	0.454***	0.462***	0.463***	0.461***	0.441***	0.442***	0.440***
	(25.09)	(25.12)	(24.66)	(26.20)	(26.23)	(25.63)	(26.85)	(26.90)	(26.32)	(24.86)	(24.99)	(24.02)
(Market to book)$_{t-1}$	0.0416	0.0422	0.0408	0.0499*	0.0504*	0.0492*	0.0382	0.0386	0.0377	0.0588*	0.0596*	0.0553*
	(1.50)	(1.52)	(1.45)	(1.87)	(1.88)	(1.81)	(1.36)	(1.37)	(1.32)	(1.91)	(1.92)	(1.75)
ROA$_t$	1.716***	1.745***	1.709***	1.691***	1.722***	1.688***	1.724***	1.753***	1.712***	1.659***	1.669***	1.671***
	(6.98)	(7.06)	(6.67)	(6.80)	(6.88)	(6.50)	(7.05)	(7.14)	(6.70)	(6.44)	(6.46)	(6.15)
ROA$_{t-1}$	0.181	0.148	0.259	0.140	0.106	0.225	0.187	0.154	0.272	0.165	0.128	0.228
	(0.85)	(0.69)	(1.19)	(0.64)	(0.48)	(1.00)	(0.88)	(0.72)	(1.25)	(0.68)	(0.53)	(0.92)
Stock returns$_t$	0.419***	0.417***	0.442***	0.422***	0.419***	0.441***	0.417***	0.414***	0.437***	0.422***	0.420***	0.440***
	(11.92)	(11.82)	(11.86)	(12.05)	(11.92)	(11.87)	(11.87)	(11.76)	(11.72)	(11.15)	(11.07)	(10.98)
Stock returns$_{t-1}$	0.400***	0.394***	0.414***	0.399***	0.393***	0.411***	0.399***	0.393***	0.413***	0.421***	0.414***	0.436***
	(11.20)	(11.03)	(11.10)	(11.00)	(10.83)	(10.83)	(11.28)	(11.11)	(11.11)	(10.59)	(10.40)	(10.43)
St.dev.(ROA)$_{t-1}$	1.565***	1.497***	1.553***	1.439***	1.370***	1.435***	1.577***	1.510***	1.571***	1.945***	1.867***	1.994***
	(3.53)	(3.39)	(3.39)	(3.24)	(3.09)	(3.11)	(3.52)	(3.38)	(3.38)	(3.95)	(3.81)	(3.85)
St.dev.(Stock returns)$_{t-1}$	0.0236	0.0375	0.0197	0.0308	0.0444	0.0269	0.0260	0.0396	0.0221	0.00134	0.0160	-0.0142
	(0.41)	(0.65)	(0.33)	(0.52)	(0.76)	(0.44)	(0.45)	(0.69)	(0.37)	(0.02)	(0.26)	(-0.22)
GIM index$_t$	0.0233***	0.0239***	0.0224***	0.0251***	0.0257***	0.0252***	0.0264***	0.0270***	0.0255***	0.0231***	0.0237***	0.0226***
	(3.01)	(3.09)	(2.83)	(3.27)	(3.34)	(3.20)	(3.46)	(3.53)	(3.27)	(2.94)	(3.02)	(2.80)
Constant	3.118***	3.094***	3.062***	3.074***	3.104***	3.028***	3.123***	3.123***	3.113***	2.837***	2.814***	2.830***
	(8.14)	(19.03)	(6.95)	(8.24)	(19.06)	(7.08)	(8.10)	(19.16)	(7.09)	(15.27)	(15.12)	(14.49)
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no
CEO fixed effects	no	no	no	no	no	no	no	no	no	no	no	no
Spell effects	no	no	no	no	no	no	no	no	no	no	no	no
Adj. R^2	0.476	0.479	0.471	0.478	0.481	0.473	0.474	0.477	0.469	0.445	0.448	0.440
No. of observations	6301	6272	5869	6276	6247	5846	6301	6272	5869	5100	5077	4748

(continued)

Table 2.8 *(continued)*

Panel B: Regressions with centered experience measures

	Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$			Ln(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Power measure: Accumulation of titles			Power measure: Founder			Power measure: Only insider			Power measure: High-discretion industry		
(Company experience)$_t$	0.0125**			0.0144***			0.00510**			0.0114***		
	(1.98)			(5.28)			(2.01)			(3.00)		
(Industry experience)$_t$		0.0103			0.0133***			0.00441*			0.0109***	
		(1.53)			(4.51)			(1.69)			(2.95)	
(CEO experience)$_t$			0.00894			0.0109***			0.00261			0.00817**
			(1.41)			(3.63)			(0.98)			(2.08)
Power measure	0.170***	0.176***	0.173***	-0.0183	-0.0200	-0.00783	0.125***	0.123***	0.123**	-0.00607	-0.00752	-0.0143
	(3.55)	(3.54)	(3.52)	(-0.15)	(-0.16)	(-0.06)	(2.65)	(2.62)	(2.56)	(-0.21)	(-0.26)	(-0.47)
Power measure* Experience measure	-0.0120*	-0.0101	-0.0105	-0.0236***	-0.0225***	-0.0227***	0.00708	0.00851	0.00459	-0.00608	-0.00625	-0.00552
	(-1.76)	(-1.44)	(-1.52)	(-2.91)	(-2.76)	(-2.74)	(1.02)	(1.22)	(0.63)	(-1.54)	(-1.56)	(-1.35)
Ln(Sales)$_{t-1}$	0.443***	0.444***	0.442***	0.455***	0.456***	0.454***	0.459***	0.460***	0.458***	0.438***	0.439***	0.436***
	(24.74)	(24.72)	(24.33)	(26.00)	(26.00)	(25.39)	(26.39)	(26.43)	(25.89)	(24.55)	(24.66)	(23.69)
(Market to book)$_{t-1}$	0.0423	0.0427	0.0420	0.0477*	0.0478*	0.0481*	0.0382	0.0385	0.0390	0.0582*	0.0589*	0.0564*
	(1.54)	(1.54)	(1.49)	(1.78)	(1.78)	(1.77)	(1.36)	(1.37)	(1.37)	(1.88)	(1.90)	(1.79)
ROA$_t$	1.718***	1.747***	1.705***	1.708***	1.741***	1.694***	1.727***	1.757***	1.707***	1.662***	1.673***	1.661***
	(6.97)	(7.03)	(6.63)	(6.80)	(6.89)	(6.49)	(6.97)	(7.06)	(6.64)	(6.37)	(6.39)	(6.09)
ROA$_{t-1}$	0.203	0.175	0.262	0.179	0.145	0.237	0.226	0.195	0.277	0.203	0.167	0.246
	(0.95)	(0.82)	(1.20)	(0.82)	(0.66)	(1.06)	(1.06)	(0.91)	(1.27)	(0.83)	(0.68)	(0.99)
Stock returns$_t$	0.420***	0.418***	0.441***	0.420***	0.417***	0.438***	0.417***	0.415***	0.436***	0.422***	0.421***	0.440***
	(11.96)	(11.85)	(11.86)	(11.99)	(11.87)	(11.79)	(11.86)	(11.75)	(11.70)	(11.13)	(11.06)	(10.97)
Stock returns$_{t-1}$	0.402***	0.396***	0.415***	0.399***	0.393***	0.410***	0.400***	0.394***	0.412***	0.422***	0.415***	0.436***
	(11.19)	(11.01)	(11.08)	(10.90)	(10.72)	(10.72)	(11.18)	(11.00)	(11.00)	(10.48)	(10.28)	(10.33)
St.dev.(ROA)$_{t-1}$	1.495***	1.426***	1.465***	1.381***	1.312***	1.345***	1.503***	1.433***	1.470***	1.903***	1.821***	1.930***
	(3.40)	(3.25)	(3.23)	(3.09)	(2.94)	(2.92)	(3.37)	(3.22)	(3.18)	(3.87)	(3.72)	(3.73)
St.dev.(Stock returns)$_{t-1}$	0.0256	0.0397	0.0219	0.0291	0.0429	0.0251	0.0284	0.0425	0.0246	0.00399	0.0191	-0.0112
	(0.44)	(0.69)	(0.36)	(0.49)	(0.73)	(0.41)	(0.48)	(0.72)	(0.40)	(0.06)	(0.31)	(-0.17)
GIM index$_t$	0.0213***	0.0216***	0.0196**	0.0257***	0.0262***	0.0248***	0.0249***	0.0254***	0.0234***	0.0220***	0.0224***	0.0208***
	(2.74)	(2.80)	(2.49)	(3.32)	(3.39)	(3.15)	(3.26)	(3.33)	(3.01)	(2.80)	(2.86)	(2.60)
Constant	3.355***	3.311***	3.331***	3.321***	3.388***	3.312***	3.311***	3.317***	3.304***	3.135***	3.124***	3.150***
	(8.49)	(21.13)	(7.36)	(8.77)	(21.07)	(7.67)	(8.41)	(21.11)	(7.46)	(17.56)	(17.49)	(17.38)
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	no
CEO fixed effects	no	no	no	no	no	no	no	no	no	no	no	no
Spell effects	no	no	no	no	no	no	no	no	no	no	no	no
Adj. R^2	0.473	0.476	0.470	0.473	0.475	0.469	0.469	0.471	0.465	0.440	0.442	0.437
No. of observations	6301	6272	5869	6276	6247	5846	6301	6272	5869	5100	5077	4748

The table presents results from regressions of *Total Compensation 2* on three experience measures in combination with four different proxies for managerial power. Experience is measured by the number of years the individual has worked for the given company, in the given industry, or as a CEO. In Panel B, we use a centered version (around the sample mean) of the experience variables to obtain a more meaningful estimate of the power coefficients. The experience measures are not log-transformed in the Panel B regressions. We consider a CEO powerful if he/she is also the Chairman of the Board (Columns 1-3), the founder of the company (Columns 4-6), the only insider on the board (Columns 7-9), or works for a firm in a high-discretion industry (Columns 10-12). On the firm level, we control for firm size, investment opportunities, firm performance, firm risk and the quality of corporate governance. The firm-level controls are the same in all regressions.

We report results with least squares dummy variable regressions (LSDV) with year and industry dummies. In the last group of regressions we do not include industry dummies due to collinearity with the *High discretion industry* indicator. Given that our explantory variables of interest (power measures) are rather stable over time and within-CEO, we opt for reporting results from the LSDV regressions only. The concern of employing firm or CEO fixed effects, or both, is that they wipe out the influence of the variable of interest with very low variation.

We report the regressions' adjusted R^2 and the number of observations at the bottom of the table. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Table 2.A1 in Appendix 2.1 contains a detailed description of the variables.

Appendix 2.1

Table 2.A1: Overview of the response and regressor variables

Panel A: Compensation measures

Variable	Operational measure	**Corresponding data from Compustat Execucomp** (unless stated otherwise) **[data item identification]**
$(Salary)_t$	$Ln(Salary_t)$	The dollar value of the base salary (cash and non-cash) earned by the CEO during the fiscal year *t*, in $ thousands [SALARY]
$(Cash\ compensation)_t$	$Ln(Salary_t + Bonus_t)$	Cash compensation = the dollar value of the base salary (cash and non-cash) earned by the CEO during the fiscal year *t*, in $ thousands[SALARY] + the dollar value of a bonus (cash and non-cash) earned by the CEO during the fiscal year *t*; in $ thousands [BONUS]
$(Total\ compensation\ 1)_t$	$Ln(Total\ Compensation\ Including\ Option\ Grants_t)$	Total compensation for the individual in year *t*, comprised of the following components: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black-Scholes), Long-Term Incentive Payouts, and All Other Total, in $ thousands [TDC1]
$(Total\ compensation\ 2)_t$	$Ln(Total\ Compensation\ Including\ Options\ Exercised_t)$	Total compensation for the individual year *t* comprised of the following components: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Net Value of Stock Options Exercised, Long-Term Incentive Payouts, and All Other Total, in $ thousands [TDC2]
$(Stock\ grants\ over\ Total\ compensation\ 1)_t$	$Ln(Restricted\ Stock\ Grant_t\ /\ Total\ Compensation\ Including\ Option\ Grants_t)$	Restricted Stock Grant: The value of restricted stock granted during the fiscal year *t* (determined as of the date of the grant), in $ thousands [RSTKGRNT]* Total Compensation Including Option Grants: Total compensation for the individual year *t*, comprised of the following: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black-Scholes), Long-Term Incentive Payouts, and All Other Total, in $ thousands [TDC1]
$(Stock\ grants\ over\ Total\ compensation\ 2)_t$	$Ln(Restricted\ Stock\ Grant_t\ /\ Total\ Compensation\ Including\ Options\ Exercised_t)$	Restricted Stock Grant: The value of restricted stock granted to the CEO during the fiscal year *t* (determined as of the date of the grant), in $ thousands [RSTKGRNT] Total compensation for the individual year *t* comprised of the following: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Net Value of Stock Options Exercised, Long-Term Incentive Payouts, and All Other Total, in $ thousands [TDC2]

(continued)

Table 2.A1 ***(continued)***

Panel B: Experience measures, power measures and other CEO-level controls

Variable	Definition (source)
$(\text{Company experience})_t$	The number of months/years the individual has worked in the company (public firm) of his/her current employer up to and including time *t* (BoardEx)
$(\text{Industry experience})_t$	The number of months/years the individual has worked in the industry of his/her current employer (public firm) up to and including time *t*; the industry is identified according to the Fama-French 49 industry classification (BoardEx, Execucomp)
$(\text{CEO experience})_t$	The number of months/years the individual has worked as a CEO up to and including time *t* in any company (public or private) or industry (BoardEx, Execucomp)
$(\text{No. of positions})_t$	The number of different job positions (in public or private firms) the individual has worked at up to and including time *t* (BoardEx); we do not report results for regressions with this alternative measure for experience, we use it only to better describe the CEOs' job experience.
$(\text{No. of industries})_t$	The number of different industries the individual has worked in up to and including time *t*; industries are identified according to the Fama-French 49 industry classification (BoardEx, Execucomp); we do not report results for regressions with this alternative measure for experience, we use it only to better describe the CEOs' job experience.
$(\text{No. of CEO appointments})_t$	The number of different CEO appointments (in public or private firms) the individual has worked at up to and including time *t* (BoardEx, Execucomp); we do not report results for regressions with this alternative measure for experience, we use it only to better describe the CEOs' job experience.
Power: Accumulation of titles_t	An indicator variable that equals one if the CEO is at the same time the chairman of the board of directors at time *t* (BoardEx, Execucomp)
Power: Founder_t	An indicator variable that equals one if the individual is the founder of the firm at which he/she works as a CEO at time *t* (BoardEx)
Power: Only insider_t	An indicator variable that equals one if the individual is the only member of the board that is also employed by the firm at time *t* (BoardEx)
Power: High-discretion industry_t	An indicator variable that equals one if the CEO works at time *t* in an industry identified in Hambrick and Abrahamson (1995) as a high-discretion industry
Age_t	The difference between the individual's year of birth and the current year *t* (BoardEx, Execucomp); we do not report results for regressions involving this variable, we use it only to better describe the CEOs in our sample.
Female *indicator*	An indicator variable that equals one if the individual is a female (BoardEx, Execucomp); we do not report results for regressions involving this variable, we use it only to better describe the CEOs in our sample.
MBA degree *indicator*	An indicator variable that equals one if the individual holds an MBA degree (BoardEx); we do not report results for regressions involving this variable, we use it only to better describe the CEOs in our sample.
US *indicator*	An indicator variable that equals one if the individual has American nationality (BoardEx, Execucomp); we do not report results for regressions involving this variable, we use it only to better describe the CEOs in our sample.

(continued)

Table 2.A1 ***(continued)***

Panel C: Firm-level controls

Variable	Operational measure/Definition	**Corresponding data from Compustat North America - Industrial Annual (Legacy)** (unless stated otherwise) **[data item identification]**
$Sales_t$	Log ($Sales_t$)	Sales [Sales (Net); DATA12]
$(Market\ to\ book)_t$	$(Market\ value\ of\ assets)_t / (Book\ value\ of\ assets)_t$	market value of assets = book value of assets: [Assets -Total; DATA6] + market value of common equity at the end of calendar year: [Price-Calendar Year-Close; DATA24 × Common Shares Outstanding; DATA25] - book value of common equity: [Common Equity -Total; DATA60] - balance sheet deferred taxes: [Deferred Taxes (Balance Sheet); DATA74] book value of assets: [Assets -Total; DATA6]
$(Return\ on\ assets)_t$ (ROA_t)	$EBITDA_t$/(lagged) $(Total\ assets)_{t-1}$	EBITDA: [Income Before Extraordinary Items; DATA18] total assets: [Assets -Total; DATA6]
$(Stock\ returns)_t$	Stock returns incl. dividends for year t	from CRSP Monthly Stock: monthly stock returns incl. dividends [Holding Period Return ; RET] - annualized $(1+HPR_{annual}) = \prod^{12}_{n=1}(1+HPR_n)$
$(Standard\ deviation\ of\ ROA)_t$ $(Standard\ deviation\ of\ stock\ returns)_t$	Standard deviations of the respective variables' values over 5-year rolling windows (between t and t-4)	
$(GIM\ Index)_t$	A governance index introduced by Gompers et al. (2003) (the higher the value, the weaker the governance); based on 24 management-favoring provisions tracked by the Investor Responsibility Research Center (IRRC) (Compustat)	

*Before FAS 123, only applies for 1992 reporting format; the Execucomp variable STOCK_AWARDS_FV takes account of the FAS 123 measure and it is applicable from 2006 onwards only (the 2006 reporting format)

The table provides an overview of all variables in our dataset, their sources, their definitions and operational measures (if applicable). Panel A contains the potential response variables (we only report regressions on four of these). Panel B provides an overview of our regressor variables of interest - measures of experience, power measures, and additional observable CEO characteristics that may serve as CEO-level controls. Panel C contains the definition of our firm-level controls; we control for firm size, firms' opportunity set, firm performance, firm risk, and the strength of corporate governance.

Chapter 3

Do the Initial Job Market Conditions Really Matter for CEO Pay?

3.1 Introduction

In efficient labor markets, fair compensation is a relevant consideration. Efficient labor markets should recognize the difference between skill and luck, and should not punish for adverse circumstances beyond an individual's control. Recent research studying different niches of the labor market, however, finds that initial job conditions such as the phase of the business cycle (exogenous shocks) may determine the long-term success of a career (Oyer, 2006, 2008; Kahn, 2010; Kwon et al., 2010). Should individuals be concerned about carrying a bad signal (stigma) due to exogenous shocks to the economy at their career start? We find that the answer may depend on the niche of the labor market.

Despite being seen as an increasingly competitive market (e.g., Murphy, 2012), the executive job market has not been found immune to shortcomings when it comes to rewarding CEOs. For example, CEOs may be rewarded or penalized for exogenous firm performance shocks beyond their control. As for the upside outcomes, weak governance structures create room for rent extraction by CEOs (Bertrand and Mullainathan, 2001; Garvey and Milbourn, 2006), for the downside outcomes, there may be instances of "unfair" CEO dismissal (Jenter and Kanaan, 2012). We examine the existence and persistence of cohort effects in compensation for individuals who at some point in their career become CEOs. We ask

whether current success, proxied for by current CEO compensation, depends on initial placement success as measured by first firm size. In particular, is the quality of a future CEO's very first job (better initial placement) reflected in higher current compensation? Our results suggest that it is not the case. After controlling for unobserved firm heterogeneity, successful initial placement does not seem to matter for current CEO compensation. In instrumental variables regressions, the results are even less supportive of the existence of procyclical cohort effects for CEOs. This finding is robust to different measures of firm size and regression specifications. We find, however, a stronger promotion effect for luckier managers. Although it is established in the literature that promotions come with large wage increases (e.g., Gibbons and Waldman, 1999), CEOs who get hired from a top-ranked firm, graduated in favourable economic times, or started their first job in a good economy receive on average a higher first compensation than individuals whose career start is marked by recession. This promotion effect seems to dissipate over time.[1] CEOs who start in recessions seem to have as good career prospects and be as well rewarded as their boom counterparts. Furthermore, results from instrumental variables estimation suggest, at odds with findings of procyclical effects from other cohort effects research, that "recession CEOs" receive *higher* CEO pay than CEOs who entered the job market in good economic times. Robustness results confirm this finding.

We proxy for firm quality with firm size and associate larger firms with higher productivity and better organizational practices. Whether it is becoming a CEO of a larger firm or just starting a career in a larger firm, we consider working at larger firms a proxy for a more successful career. Starting out at larger, busier firms offers more opportunities for learning and human capital accumulation (the opportunity to work on many different projects) and promotion (Gibbons and Waldman, 2006). Research shows that better managers tend to work for larger firms and CEOs in larger firms earn more: in highly competitive markets for managerial talent, even a relatively small difference in managerial talent can bring significant

[1]Compared to previous studies that are observationally constrained to follow individuals often for only up to 10-15 years, we are able to observe careers for a longer time. For about half of the individuals in our full sample, the observational period is more than 20 years.

benefits to larger firms (Rosen, 1982; Gabaix and Landier, 2008; Terviö, 2008). Market capitalization - the market value of equity - is our primary firm size measure since it also reflects the markets' evaluation of the firm's future prospects.[2]

We instrument the quality of the first CEO job by using several indicators of the overall economic situation at the time the CEO took up his first CEO engagement. We establish that, conditional on the controls included in the regression, the economic conditions at the time of the first job have no effect on CEO pay other than the effect through first job quality. Thus, we exploit the variation in the indicators for the overall economic situation as a source of exogenous variation in first job quality, and investigate a causal link going from first job quality to current job quality.

Instrumental variables estimation also alleviates concerns of selection bias and endogeneity. All individuals in our dataset make it to the "present" (1992-2007) as CEOs, so this achievement is "guaranteed" to happen in the data. Thus we cannot really study cohort effects on a full scale of success in careers by involving and comparing to individuals who never climb the job ladder to a CEO position. We can only see if the individuals have a more or less successful CEO career. Also, we are not able to follow all future public-firm CEOs for the same amount of time. The first job is any first assignment in the individual's career *for which we have firm-related data*, so here again we are constrained to public firms. CEOs fall out of our observational data, fired, retired, moving to a non-public firm or to a non-CEO job, or due to other (e.g., personal) reasons but only after they become CEOs. The possibility that endogenous choices of individuals drive the results requires a careful selection of controls when performing pooled OLS, least square dummy variable or fixed effects estimation, and credible choices when it comes to instruments for instrumental variables estimation. The instrumental variables should influence the dependent variable of

[2]Gabaix and Landier (2008) argue in favour of using full market capitalization (total value of debt plus equity) to predict CEO compensation from the point of view of their model (under the supposition that the contribution of managerial talent to the firm's future earnings is permanent, as opposed to temporary) but also based on empirical data analysis. Given that the market value of equity is the main source of variation in firms' market values, our choice of market capitalization of equity for the proxy for firm size and success is a highly substitutable alternative.

interest only indirectly (valid instruments) while being highly correlated with our endogenous variables (strong instruments).

As robustness checks, we perform cross-sectional regressions to check for the stability of coefficient estimates, instrumental variables regressions with an alternative set of instruments, and weak-instrument-robust instrumental variables regressions based on conditional likelihood ratio confidence intervals. The findings from the robustness analysis suggest countercyclical cohort effects in CEO compensation.

Several recent papers study cohort effects (in pay, in job rankings, in promotions) in labor markets for college graduates, PhD economists, investment bankers, executives, blue- or white-collar workers. Oyer (2006) provides evidence on career stickiness for economist with a PhD degree. Academics who enter the job market in a recession tend to work for lower-ranked institutions years later, have lower research output, and are offered less tenure-tracked positions. Oyer (2008) finds that MBA investment bankers who start careers on Wall Street during bullish stock markets are more likely to keep their prestigious position in the long term, and their earnings are substantially higher than those of MBA graduates whose prospects were diminished by adverse stock market shocks. Kahn's (2010) results show that white male US college graduates who graduate in downturns are at a disadvantage which translates into significantly lower wages in the medium to long term (as much as two decades into their careers), and worse career prospects. According to Kwon et al. (2010), the employment growth rate, rather than the unemployment rate which is widely used in cohort effects studies, becomes more relevant in determining long-term job attainment. Workers entering the job market in a recovery phase of a business cycle earn more and get promoted faster than those who enter during the peak.

In terms of the niche labor market they study, Schoar and Zuo (2012) is the paper closest to ours. Their results suggest, again, long-term cohort effects present in the executive (CEO) job market. "Recession CEOs", i.e. CEOs who started their careers in a recession year, work on average for smaller companies, and switch less between companies or industries. They are

promoted faster to become CEOs but their first CEO compensation is lower in comparison to "non-recession CEOs". Their management styles tend to be more conservative: they hold less debt, invest less, tend to diversify across segments, and their firms have lower stock return volatility. While our focus is on the long-term consequences of first job quality for CEO pay, Schoar and Zuo (2012) study the implications of being a "recession CEO" for the CEO's career path, *first* CEO compensation, and for the strategic decision-making in firms with these CEOs. The setup for capturing the link from "then" (at the start of the individual's career) to "now" (the developments in the individual's CEO career) is different. We instrument the first job quality measure by a wider array of measures for initial job market conditions, and consider implications for CEO pay only. Schoar and Zuo (2012) study a variety of response variables but use a single indicator variable, instrumented by the individual's age, for conditions at the start of the individual's career.

The findings from the research on cohort effects are puzzling in that they all point towards an unexplained persistent effect of the start-of-career macroeconomic conditions on individuals' careers. Those who begin in booms seem to get more options for career development, reflected also in their higher earnings (procyclical effects).[3] But the persistence story may have many layers. Even if the workings of a suitable underlying model are yet to be attributed and tested, partial potential explanations are of importance at this point.

According to Kahn (2010), the relative importance of human capital disparities at the career start, and the ease with which they can be overcome determines how persistent initial effects are. Arguments concerning persistence versus non-persistence of first job effects can also be boiled down to a "born or made" (Oyer, 2008), "nature (selection) or nurture (imprinting)" (Schoar and Zuo, 2012), "skills or luck" (Oyer, 2006) discussion. As Oyer (2008) puts it, if starting to work on Wall Street, an opportunity that is more easily attainable in booms, *causes* one to work there later on, then investment bankers are "made" rather than "born" to work on Wall Street. In the context of CEO careers and the business cycle, due to

[3]Certainly, individuals realizing this may time their job market entry to favourable economic times. This endogeneity issue should be kept in mind when performing empirical tests.

early career experience, managers may acquire a certain set of skills (different for recession and non-recession managers) and the given cohort of managers becomes more apt to manage firms either during recessions or during booms. Schoar and Zuo (2012) name it the "imprinting effect" and point out its role in determining the supply of managers in each cohort. They distinguish this effect from the "selection effect", when there are managers with different sets of skills in each cohort. Firms and managers (CEOs) then match and re-match according to their needs and abilities along the business cycle.[4]

In a deeper look at the theories that provide possible explanations for why initial placement may have long-term effects on one's career, Kwon et al. (2010) distinguish between productivity-based and non-productivity-based theories of cohort effects. *Productivity-based theories* suggest that starting a career in a good economy, with a better first job, allows to learn more and develop higher-than-average productivity, and be rewarded by higher-than-average pay in the long run. Firm-specific human capital, or rather task-specific human capital (Gibbons and Waldman, 2004; 2006) developed through more advanced on-the-job training in better quality institutions may make it more advantageous for an individual to continue working for the same (type of) better-quality firm. Initial match quality, however, can generate procyclical or countercyclical cohort effects. In the procyclical view, more jobs available during booms allow workers to find better matches. An argument for countercyclical cohort effects is that during recessions, when there are less jobs available, firms are at an advantage. The selection process is more careful, firms find better matches (more productive employees) for the positions they offer and reward them with higher pay. *Non-productivity-based theories* suggest that downward rigidity in jobs, long-term contracts, or signalling may cause procyclical cohort effects without the existence of productivity disparities between cohorts. Employees hired during recessions may be more willing to sign long-term contracts

[4]If the latter effect is at work in the executive labor market, we will probably not find evidence on persistent influence of initial market conditions. Also, if managers are formed - lastingly "imprinted" - early on in their careers, then if a recession hits in the middle of their careers (for example, at the time they take up their first CEO assignment), it will not have long-run consequences for them. In additional, here unreported work, we perform tests on the persistence of *first CEO job* effects and find no statistically significant results.

with lower long-term wages (consistent with findings of Beaudry and DiNardo, 1991). Also, the job market may fail to account for the role of luck in the first placement and the first job may be considered a strong signal of the individual's ability (Waldman, 1984) even though it could represent a systematic non-rational behaviour of markets (Oyer, 2006).

The remainder of the paper is organized as follows. Section 3.2 describes the data and Section 3.3 explains our empirical methodology choices. The results and their interpretation as well as a robustness analysis are presented in Section 3.4. Section 3.5 concludes.

3.2 Data

Data-wise we are limited to examining public firms only. Data availability due to reporting requirements and more transparency demanded by regulators from these firms gives us a kind of an "efficiency" advantage. CEOs of these firms find themselves under more public scrutiny and under the spotlight of financial markets. We are interested in whether this scrutiny can ensure that it is the CEOs' managerial ability rather than lucky circumstances that shape their career path.

The data for our panel with 13,378 firm-year observations come from several sources.[5] Data on firm financials come from Compustat North America Industrial Annual, and for financial markets related data from CRSP. Data on CEOs' profile come from BoardEx and are complemented with compensation data from Execucomp. Further, we gather data from the Federal Reserve (interest rates), National Bureau for Economic Research (recession indicators) and U.S. Bureau for Labor Statistics (unemployment) to build our instrumental variables. The dataset follows 1,473 publicly listed companies from the S&P 1500 universe and their 2,184 CEOs throughout 16 years, from 1992 to 2007.

We apply two conditions to the full sample: the CEO has to be present in the firm for at least 3 years (Bertrand and Schoar's (2003) condition for a CEO to leave an imprint on

[5]We perform tests with a full sample and several subsamples. Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

the company), and we take into account only non-financial firms, i.e. observations for firms with two-digit SIC codes from 60 to 69 are dropped. Less than 1% (0.87%) of CEOs in our sample appear as CEOs in another firm of the sample.[6]

The summary statistics for the full sample and the pairwise correlations for the potential right-hand-side variables are presented in Table 3.1 and in Table 3.A3 in Appendix 3.3, respectively. The variables computed in a ratio form or variables more prone to measurement error are winsorized to mitigate the influence of outliers. We apply winsorization below the 1st percentile and above the 99th percentile.

First firm size refers to the size of the firm at the time of our individuals' first job assignment for which data is available on his/her employer - a public company. For a more complete characterization of our future CEOs' first employment, there are four measures of "first firm size" that appear in the statistical description of the data in Table 3.1: *First Market Capitalization*, *First Total Assets*, *First Sales* and *First Number of Employees*.[7] We report regression results with only two of them, *First Market Capitalization* and *First Total Assets*. Since we focus on the success in publicly listed companies, we consider market capitalization, our market-related measure, the most relevant measure for first firm size and quality. The correlation coefficient between *First Market Capitalization* and our alternative firm size measure, *First Total Assets*, is 0.881.

Given the availability of compensation data in Execucomp, we follow CEOs at S&P 1500 companies. The average firm at the time of our individuals' first assignment as a

[6] As we discuss in more detail below, because of the small percentage of within-sample movers, accounting for firm fixed effects almost coincides with employing managerial fixed effects.

[7] All four are commonly used in the literature but they are not interchangeable and may produce divergent conclusions in different settings (Smyth et al., 1975; Shalit and Sankar, 1977). Unreported in Table 3.A3 in Appendix 3.3, the four firm size measures are highly correlated in-sample. The strongest correlation arises between *First Total Assets* and *First Sales* (0.936), and the weakest between *First Market Capitalization* and *First Number of Employees* (0.742). Sales is a measure less susceptible to accounting manipulation than total assets but there are less observations available - the first year of data availability for the variable "SALE" in Compustat is 1975. Another non-accounting measure, number of employees, has a "long intellectual tradition" (Rajan et al., 2001). Because of the connection to the stock market, however, market capitalization seems the most relevant measure for our public firms' sizes. Moreover conclusions from regressions with *First Sales* or *First Number of Employees* are qualitatively very close to those with *First Total Assets* and we do not report these results.

CEO in a public company has a market capitalization of $2.57 billion (median value $434.5 million), total assets of $2.27 billion (median value $368.6 million), annual sales of $30.5 million (median value $5.86 million), and employs 2.13 million employees (median 412,220 employees).

As controls at the firm-level, we include those that appear in the compensation regressions of Graham et al. (2012): lagged market capitalization *or* lagged total assets, lagged market to book, stock return and lagged stock return, return on assets and lagged return on assets, and stock return volatility.[8] The pairwise correlations between firm-level controls are rather low, with the exception of variables and their lagged versions and the alternative firm size measures. The correlation coefficients between current firm size and first firm size measures are moderate (between 0.33 - 0.425) which may be caused by persistence in firm size dynamics - the minimum time difference between "current" and "first" in the full sample is one year. We address this issue through subsamples, by applying the condition that this difference is at least 10 years.

We use two measures for CEO compensation. Execucomp's TDC1 comprises of several components in a CEO compensation package: Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using the Black and Scholes option valuation model), Long-Term Incentive Payouts, and All Other Total. TDC2 adds the Net Value of Stock Options Exercised to the former list of components. The average annual CEO compensation in our sample is $4.23 million (TDC1; includes the value of granted stock options) and $4.27 million when the net value of exercised option is accounted for (TDC2). The median compensation values are $2.33 million and $1.81 million, respectively. The average CEO in our sample has a CEO tenure of 106 months (8.83 years) and gets his/her first CEO job in a publicly listed company at the age of 52.5 years.[9] The individuals in our sample graduate on average at the age of 23.3 years, they start their career (as far as

[8]More detail on these variables can be found in Table 3.A2 in Appendix 3.2.

[9]This relatively young age for first-time CEOs in public firms is consistent with the findings of Schoar and Zuo (2012) that CEOs born in later decades start their CEO jobs at younger and younger ages. Most CEOs in our dataset were born in the 1950s and 1960s.

it can be traced back in our data, not necessarily the first firm if it is a private firm) at the average age of 29.6 years.[10] The average career start in a public company (observations for which we have firm data) happens at the age of 36.4 years.

56.27% of individuals become CEOs in the same public company where they start their career. 5.74% of individuals start in a top-ten company. More than 65% of these CEOs are also the chairman of the board of directors in addition to their CEO assignment. Around 40% of the CEOs are hired from outside the firm. Around a third of our CEO-to-be's have an MBA degree. Only about 1.5% of the individuals in our sample are women. From among the CEO-level controls, CEO tenure and the CEO & Chairman indicator have the highest correlation (0.323), suggesting that more experienced CEOs tend to be more powerful.[11] The other pairwise correlations within this group of variables are close to zero. The CEO-level and firm-level controls are also weakly correlated.

We employ six instrumental variables: (1) The recession indicator equals one if NBER identified the period at which the CEO entered the company as contraction or through. 15.78% of individuals in our sample start their career in a recession or through (11.78% when considering only public firms for which we have data). 14.07% of individuals graduate at the time of a contraction or through. In some instances, for purposes of comparison, we employ Schoar and Zuo's (2012) recession-year indicator which identifies years of mild economic expansion or recession, i.e. years that do not contain the peak of a business cycle. The correlation between the two NBER business cycle classification based indicators is low (0.0454). The limitation of these indicators is that they are based on NBER's ex-post business cycle classification and may not reflect market participant's expectations concerning the business cycle at the given historical moment; (2) The average U.S. unemployment rate for the preceding year is another macroeconomic instrument. The unemployment rate is a coincident, countercyclical indicator; (3) The investment-grade bond yield spread is the

[10] We can address the concern of data non-availability for private firms by using macro conditions in the graduation year or at the date of the first position ("reduced-form" regressions).

[11] On the importance of controlling for CEO power, see, for example, Adams et al. (2005).

difference between interest rates on highest quality bonds (Standard & Poor's Aaa) and lowest quality bonds (Standard & Poor's Baa) in the category of investment-grade bonds. In times of economic strain, this spread is wider. Conditional on financial markets' ability to reflect market participants' expectations of the future (i.e. conditional on financial markets being efficient to some extent), financial indicators such as the evolution of the S&P 500 composite index or bond yield spreads are useful indicators, readily available at any phase of the business cycle; (4) The one-year change in the S&P 500 index volume, (5) the one-year return on the S&P 500, and (6) the standard deviation of returns on this index of the 500 biggest publicly traded companies are three financial-markets-related instruments as in Oyer (2008), with which we complement the NBER-classification-based and macro indicators.

The instruments are weakly or only moderately correlated with firm-level and CEO-level controls and exhibit somewhat stronger correlations among themselves. The strongest positive within-sample correlation arises between the investment-grade bond yield spread and the unemployment rate (0.562) and the strongest negative correlation between the recession indicator and the S&P 500 return (-0.587) (see Table 3.A3 in Appendix 3.3).

Figures 3.1 and 3.2 show the evolution of firm size throughout CEOs' careers. We depict the average market capitalization (y-axis) at the time of the job market entry (x-axis) and, on each other separate plot, the average firm sizes 10, 20 and 30 years after the job market entry. In Figure 3.1, we plot the in-sample average market capitalizations for all firms for which we have data in a given year 10 years, 20 years or 30 years after the initial year. To capture the macroeconomic conditions at the time of the market entry, we also include a dotted line: it shows the annual S&P 500 index return during the career-start years. Up to the mid-1970s and from the mid-1980s on, we can observe procyclicality demonstrating itself as the very similar shapes of the plots of the S&P 500 return and the average market capitalization at the start of career. In Figure 3.2, we plot the average market capitalizations only for firms where the initial CEOs work for 10 years, 20 years or 30 years. We focus on the same cohort of future CEOs through time. The attrition is, naturally, more pronounced

in this graph (as shown by the changes in the numbers of observations below the line chart).

If our hypothesis on the persistence of conditions at the first job holds true, we would expect very similar shapes for all full lines in the two figures. For example, individuals who started their career at smaller (worse quality/less successful) firms, would also work on average for smaller firms 10, 20 or 30 years later. However, such pattern does not emerge in any of the figures. The lines for average firm sizes take on very diverging shapes; more often than not they exhibit very weak similarity in shape. More frequently in Figure 3.2 than in Figure 3.1, they intersect on several instances which means that CEOs who started out at a larger firm may later end up either in a smaller firm, or in a larger firm - there is no pattern identifiable or easily perceptible from the plots. Furthermore, the full lines for average firm size at the start of career correspond to the shape of the dotted lines representing the macro conditions at the start of career only to a very small extent. Although the number of observations for each depicted entry year is fairly equally distributed, we need to keep in mind the selection bias in our data. All the individuals we consider become CEOs at some point. Some of them become CEOs faster than others (on average, they take around 20 years), so the period for which we can follow each of them in their CEO position in our data is also quite different (on average, 7.5 years).

3.3 Empirical methodology

We base our empirical methodology on Graham et al.'s (2012) executive compensation specification. It is a version of the classic Mincerian earnings function augmented to include fixed effects to address omitted-variable bias. Fixed effects estimation however cannot address all instances when explanatory variables and idiosyncratic errors are correlated. Omitted-variable bias may arise due to unobserved time-varying factors, measurement errors, or simultaneous responses to exogenous shocks.[12] Instrumental variable regressions may address several issues in our panel affected by selection and endogeneity. The small percentage of

[12]Under fixed effect estimation here we also include least squares dummy variable estimation.

within-sample movers as well as the smaller statistical power in firm fixed effects when we have a large number of firms relatively to the sample size give us further incentives to engage in instrumental variables estimation.

Our approach in the instrumental variables estimation is similar to that of Oyer (2006; 2008): our start-of-career measure is a proxy for first placement success (*First Firm Size*). We instrument our main explanatory variable with measures for macroeconomic conditions at the start of the individual's career. The regressor of interest in our case is just a "more lagged" version of a firm-level control (the lag varies between 2 and 55 years). Individuals may choose when and in which firm they start their careers but instrumenting should capture the variation in first jobs beyond the individuals' control.[13]

As a point of departure in examining the persistent effect of first job circumstances, we define the following pooled OLS regression:

$$Log(Comp)_{jt} = \alpha + \beta Log(FirstFirmSize)_{i,t-k} + \boldsymbol{X}_{j,t(-1)}\boldsymbol{\gamma} + \boldsymbol{Y}_{i(t)}\boldsymbol{\delta} + \varepsilon_{jt} \tag{3.1}$$

where j, i, t and k indicate companies, individuals, current years and the time that passed since the job market entry, respectively. $Log(Comp)_{jt}$ is firm j's CEO's log-transformed compensation (TDC1 or TDC2) at time t. $Log(FirstFirmSize)_{i,t-k}$ is the log-transformed size of the firm where the current CEO i started his/her career.[14] $\boldsymbol{X}_{j,t(-1)}$ represents the vector of firm-level controls. They correspond to the controls used in managerial compensation regres-

[13]Schoar and Zuo (2012) have a slightly different approach. With their "recession CEO" indicator variable, they directly control for whether the individual started his/her career during a recession year. They account for possible self-selection and timing one's job market market entry by instrumenting the "recession CEO" dummy with the individual's year of birth plus 24, the average age at which the individuals in their sample enter the job market. This timing is probably more relevant for individuals with average abilities. As discussed for example in (Oyer, 2006), "superstar" employees are likely to be hired without regard to the phase of the business cycle.

[14]As for the coefficient estimates of interest, we report regression results with *First Market Capitalization*(main tables of results) and *First Total Assets* (due to similarity with the market capitalization results, reported mostly in the appendix). Note that for greater consistency, the current (lagged) firm size control variable corresponds to the first firm size variable; with *First Market Capitalization*, we use log-transformed lagged current market capitalization, and with *First Total Assets*, we use log-transformed lagged current total assets.

sions in Graham et al. (2012). We control for firm size (lagged one period, log-transformed), market-to-book ratio (lagged one period), return on assets (both current and lagged one period), stock return (both current and lagged one period) and stock return volatility (during five years up to and including the current year). $\boldsymbol{Y}_{i(t)}$ represents the vector of CEO-level controls. We include indicators for holding an MBA degree, for being a powerful CEO in terms of chairing the board of directors, and for being a female CEO. In addition, we control for CEO tenure (a log-transformed variable).

The simple pooled OLS regressions are expanded to include year dummies (τ_t, to control for time fixed effects), year dummies and industry dummies, and eventually, as in Eq. (3.2) below, year and firm fixed effects (ι_j):[15]

$$Log(Comp)_{jt} = \beta Log(FirstFirmSize)_{i,t-k} + \boldsymbol{X}_{j,t(-1)}\boldsymbol{\gamma} + \boldsymbol{Y}_{i(t)}\boldsymbol{\delta}_{i(t)} + \tau_t + \iota_j + \varepsilon_{jt} \quad (3.2)$$

In the interpretation of results from the latter, we need to keep in mind that due to a small percentage of within-sample movers (less than 1%), applying firm fixed effects is almost equivalent to including CEO fixed effects. Graham et al. (2012) highlight the importance of including both firm and managerial fixed effect in compensation regressions to avoid misleading coefficient estimates.[16] But they also point out that controlling for unobserved heterogeneity should correspond to the goals of the research. When dealing with variables that vary cross-sectionally or are highly time-persistent, fixed effects may wipe out the variation of interest. Since our main variable of interest, the firm size at the start of a career, is time-invariant and fixed for each individual, CEO fixed effects would pick up this influence and distort the estimation of first firm size effects.

We run the pooled OLS and other specifications for the full sample as well as for two

[15] We identify industries according to the Fama-French 12 industry classification.

[16] According to Graham et al.'s (2012) results, manager fixed effects and firm fixed effects contribute significantly to their model's R-squared. The fraction of the model sum of squares corresponding to manager fixed effects and firm fixed effects is 54% and 25%, respectively.

subsamples. Subsample 1 is obtained from the full sample by applying the condition that the time difference between starting the first job in a public firm and becoming a CEO is at least 10 years. The idea is to decrease the influence of possible firm size/performance persistence on current CEO compensation. Subsample 2 is obtained from Subsample 1 by applying the additional condition that the individual is not more than 30 years of age at the start of his/her career (in a public firm). Thus we intend to examine the effects for observations for which we are probably capturing the very beginning of an individual's career. A drawback of applying the two conditions is a significant decrease in the number of observations. We lose more than half of observations by moving from the full sample to Subsample 2.

Controlling for time-invariant firm heterogeneities in panel data may take us beyond correlation analysis and can be considered suggestive of a causal relationship going from - in our case - first firm size to current CEO compensation. Instrumental variables estimation (in this case, two-step least squares, 2SLS) can be used as another technique to study causal relationships. The success of the technique lies in the choice of instruments. These instruments should be strong, valid and take proper account of possible heterogeneous responses of economic agents (Murray, 2006).[17] Instruments always represent a somewhat arbitrary choice but require a lot of sophistication in order to establish credibility in the results. The consistency of instrumental variables estimation may be defeated by huge inefficiency issues, even to the point that instrumental variables estimation does not offer any advantage over largely biased inconsistent OLS estimates.

We use two sets of instruments, each of which includes three variables. The financial-markets-related set of excluded instruments comprises the one-year S&P 500 volume change, one-year S&P 500 return and two-year S&P 500 standard deviation. The set of macroeconomic-conditions-related instruments includes the recession indicator, the investment-grade bond

[17]We are studying a group of individuals all of whom eventually become CEOs. To the point that this group may be considered less heterogeneous than, for example, a large cohort of workers with different job attainments, we can expect less heterogeneous reactions to the changes in the business cycle. This certainly does not imply that by studying the given group of individuals and their employers we ensure capturing the economically interesting responses.

yield spread and the one-year average US unemployment rate. We also run instrumental variables regressions with a single instrument by including each variable from the previous two instrumental variable sets separately. This helps understand the particular influence and contribution of each of the instrumental variables to the results. "Reduced-form" regressions serve as another robustness check for the relationship between variables that are separated in the two stages of 2SLS. In these regressions, instruments enter in the main equation, replacing the instrumented main variable of interest. "Reduced-form" equations serve as important checks for the instruments' intuition, and if the instruments are valid, these equations are estimated consistently with OLS (Murray, 2006).

All individuals in our sample become CEOs at some point in their career. After the panel data analysis, we turn to cross-sectional regressions by examining the effects of first job conditions on first CEO compensation:

$$Log(FirstComp)_i = \alpha + \beta Log(FirstFirmSize)_i + \boldsymbol{X}_j\boldsymbol{\gamma} + \boldsymbol{Y}_i\boldsymbol{\delta} + \varepsilon_i \tag{3.3}$$

where $Log(FirstComp)_i$ represents the individual i's first compensation (TDC1 or TDC2) as CEO. As before, $Log(FirstFirmSize)_i$ may stand for *First Market Capitalization* or *First Total Assets*. We then replace $Log(FirstFirmSize)_i$ in Eq. (3.3) with the $TopTen_i$ indicator, or directly with several variables from among the instruments that characterize the macroeconomic conditions at the time of the individual's first job *or* at the time of his/her graduation. Note that the cross-sections for when we employ macro variables as main explanatory variables are larger compared to the previous cross-sectional samples since we are not required to have information on the individuals' first employers. Data on macroeconomic conditions at the time of the job market entry are more widely available than company data.

3.4 Results

In Subsection 3.4.1, we discuss the results from employing the empirical methodology suggested in Section 3.3. Some of these tests already serve as robustness checks to the benchmark results. In Subsection 3.4.2, we offer and discuss further considerations to test the robustness of the main results.

3.4.1 Main results

Table 3.2 presents our benchmark results. We run pooled OLS, least squares dummy variable (LSDV) regressions and fixed effects regressions with the full sample and Subsamples 1 and 2. The results from the simplest of the specifications, pooled OLS, suggest a statistically strongly significant association between first firm size and CEO compensation. The effect amounts to 3.57%, 4.11% and 4.39% for a one-standard-deviation change in *First Market Capitalization* for the full sample, Subsample 1 and Subsample 2, respectively. (A one-standard-deviation change in *First Market Capitalization* is 2.58-times the full-sample mean.) Similarly, when total assets are used as the firm size control as in Table 3.A4 in Appendix 3.4, the estimates on *First Total Assets* suggest a strongly statistically significant effect of approximately 3% for the full sample and Subsample 1, and 4.83% for Subsample 2. After we control for more factors by including year dummies and year and industry dummies, the estimated effects corresponding to a one-standard-deviation change in first firm size slightly decrease but are still between 2 and 3%. The statistical significance of these results is lower; for TDC2, however, we do not obtain significant results.

Firm fixed effects may partially control for causality. In all but one of the fixed effects regressions, the effect of first firm size on CEO compensation is not found to be statistically significant. The coefficient estimates on first firm size become rather small (under 1%), in some cases negative. In Panel C of Table 3.2, the estimated effect of a one-standard-deviation change in first firm size on TDC2 is large, 10.53%, but statistically significant

only at the 10% level. In Table 3.A4, with total assets as the control for firm size, we find overall less statistically significant results. The absence of statistically significant results in the regressions with firm fixed effects may have two different interpretations: there are indeed no persistent effects in first job conditions on CEO pay, suggesting the executive job market is efficient and does not reward CEOs for good initial conditions. The other possible explanation is the lack of variation in the observations (little within-firm variation, large number of firms for too few observations), and thus lack of support in the data to perform a firm fixed effect regression.

Instrumental variables (IV) regressions are another possibility to explore causal effects going from first job conditions to CEO compensation. Panel A of Table 3.3 reports the results from instrumenting *First Market Capitalization* with the set of financial-markets-related instruments. There are no positive and statistically significant results. The estimates suggest a large, in most cases negative effect on CEO pay for both TDC1 and TDC2. Individuals starting their career in smaller firms (in worse economic times) earn on average approximately between 30% to 50% more for a one-standard-deviation change in firm size. The signs of the coefficients for the instruments based on the S&P 500 are as expected, although the positive signs of the strongly statistically significant estimates for the S&P 500 volatility are not straightforward to interpret. Accumulated empirical evidence suggests that causality between financial market volatility and recessions works in both directions (e.g., Hamilton and Lin, 1996; Engle et al., 2008). Higher uncertainty in the financial markets may be reflected in higher volatility of the financial markets and may trigger a recession. Our volatility measure covers the two years *before* the individual's job market entry. The results suggest a strong positive association between *First Market Capitalization* and stock market volatility on average. The possible effect of a recession in that it decreases the average market capitalization may show up later, when stock market volatility is lower, but it could be induced also by this larger volatility.

When employing the set of proxies for macroeconomic conditions as instruments in Panel

B of Table 3.3, there are less statistically significant results. The estimated effects are, again, negative, suggesting that starting out at a company larger by one standard deviation leads to lower CEO compensation (TDC1) by as much as 30%. Although the estimates of the macro instruments in the first stage are not statistically significant at conventional levels, they are of the expected sign. The overidentification tests in both Panel A and B of Table 3.3 all fail to reject the null and suggest that our instruments are not weak. The endogeneity tests fail to reject the null in a number of cases, thus suggesting that we might be better off using non-IV regressions.

When running the IV tests with each instrument separately (Table 3.4), all coefficient estimates on *First Market Capitalization* are negative and suggest large negative effects on CEO compensation for a one-standard-deviation increase in first firm size, most of them between 20 and 80%. The results are, however, not statistically significant. Marginally statistically significant results (at the 10% level) arise when we instrument *First Market Capitalization* with S&P 500 standard deviation. For a one-standard-deviation increase in *First Market Capitalization*, CEO compensation decreases by 39% and 47% for TDC1 and TDC2, respectively. The signs of the instruments' coefficients in the first stage are as expected; half of these coefficients are statistically significant at the 5% level.[18] The results from Table 3.4 provide some support for the hypothesis that, as a consequence of being rewarded for succeeding in a stricter selection process in bad economic times, starting a career in a recession results in higher CEO pay on average.

We rerun regressions from Eq. (3.1) and its variations with *First Firm Rank* and lagged current firm rank in place of the firm size measures. By using firm rank, we study first job effects after flattening the variation in firm size. To establish the firm rank, we order the firms from largest to smallest in each year and assign them their ordinal numbers. The largest

[18]The regressions in Table 3.4 also include regressions with Schoar and Zuo's (2012) recession year indicator as one of the instruments (see Table 3.A2 in Appendix 3.2 for variable definitions). The sign of its coefficient estimate is positive, opposite to that of *our* recession indicator. This might be the consequence of the recession year indicator capturing on average mild but still positive economic activity while the recession indicator captures only adverse conditions.

firm receives the highest number which equals the total number of firms in the group. The rank is a number between 0 and 1, computed as *n:N* where *n* stands for the ordinal number of the firm and N is the total number of firms. The biggest firm is ranked 1 and the smallest very close to 0 if the number of firms in the group is large. Thus, in Table 3.5, we replace *First Market Capitalization* with *First Firm Rank* based on ranking firms in each starting year according to their initial market capitalization. The results with these "smoothed out" data support the conclusions from Table 3.2. Good conditions at the start of a career may lead to higher CEO compensation but the question remains whether we control for sufficient factors in these regressions. The coefficients are statistically significant at the 1% level for all specifications with TDC1 as the response variable, except for when we control for firm fixed effects. The size of the effects corresponding to a one-standard-deviation increase in the measure of firm size is larger than in Table 3.2, between 6 and 12% for specifications in Columns (1)-(3) of Table 3.5. As for TDC2, we obtain strong results only in the simplest, the pooled OLS specification (Column 5). Overall, the effects are slightly stronger for the regressions where we set the upper limit for the age at the start of one's career to 30 years (unreported results with Subsample 2).

Another variable to characterize the conditions of first employment in a public company is *Top Ten*. Following Schoar and Zuo (2012), *Top Ten* is an indicator variable that equals one if the individual started his/her career in one of the following top-ten firms: Arthur Andersen, AT&T, DuPont, Ford, General Electric, General Motors, IBM, McKinsey, Procter & Gamble, and Texas Instruments (Schoar and Zuo, 2012, p. 9). When we characterize start-of-career success as working for a top-ten firm, the findings do not differ much from those in Tables 3.2, 3.A4 and 3.5. In Table 3.6, we report results from LSDV regressions with year and industry dummies, using the full sample and both subsamples. Market capitalization is the measure for firm size. The estimates suggest a long-term positive effect between 12-14.5% of starting a career in a top-ten firm on CEOs' TDC1 compensation. The effects are statistically significant (at the 5% level) for TDC1 in the role of the response variable for the

full sample only. The average effect on TDC2 amounts to 5.7-9% but these results are not statistically significant at conventional levels.[19]

To further study the persistence of effects of the start-of-career conditions on CEO compensation, we run "reduced-form" regressions in which macroeconomic variables that serve as instruments in the instrumental variables regressions now appear as the main explanatory variable. This allows us to look at the time closest to our individuals' career start - at the first employment and at graduation.[20] We do not need first firm data here; we use data on macroeconomic conditions that are more widely available. We focus on variables whose influence on CEO pay we hypothesize is indirect, through first firm size. In Table 3.7, we report results with the specification including year and industry dummies, with the full sample, and with market capitalization as the control for current firm size.[21] The estimates are not statistically significant at conventional levels and their signs largely vary, suggesting no long-term impact of the start-of-career conditions - whether macroeconomic conditions at the start of the first job or at graduation - on CEO pay. Schoar and Zuo's (2012) recession year indicator at graduation is the only exception here. The coefficient estimate on the recession year indicator suggests a rather large negative effect, 9%, on CEO compensation (TDC1) which is strongly statistically significant (at the 1% level). Finding a negative effect supports the hypothesis of procyclical cohort effects in compensation and imprinting effects at the start of future CEOs' career. It might be the case that the recession year indicator is a better characterization of initial conditions, capturing influences that the other variables do not, but persistence in firm size may also be driving the results (the results are from regressions on the full sample).

Even if the results concerning persistent effects of first job conditions on CEO pay remain

[19]Table 3.A5 in Appendix 3.5 reports the results with total assets as the control for firm size. The results are similar. The coefficients on *Top Ten* are all positive, of comparable magnitude, and significant at the 5% level for TDC1 in both the full sample and Subsample 1.

[20]The first employer may be a private firm for which data is not available at all, or at least it is not easily obtainable.

[21]Table 3.A6 in Appendix 3.6 reports the results with total assets as the control for current firm size. The results are similar.

weak or ambivalent, circumstances at the start of future CEOs' career may influence their first CEO compensation. In Table 3.8, we present these results. In Panel A of Table 3.8, the estimates are statistically significant at the 1% level for all regressions on TDC1. We run regressions with Subsamples CS and CS1.[22] Working for a larger firm, both in terms of market capitalization and total assets, or for a top-ten firm at the beginning of the individuals' career contributes to a larger CEO compensation. Since all individuals in our sample become CEOs, we capture the effect of the promotion from a non-CEO to a CEO position.[23] A one-standard-deviation increase in firm size is associated with 3-5% higher CEO compensation (we obtain a larger effect on TDC1 than on TDC2). The effect of starting out at a top-ten firm is approximately 26% for TDC1, about 10 times larger than for the one-standard-deviation increase in first firm size. The estimates on the top-ten indicator are not statistically significant at convetional levels for TDC2 as the CEO pay measure. In Panel B of Table 3.8, we report results from "reduced-form" cross-sectional regressions: as in Table 3.7, the macroeconomic conditions at the time of the first job and at graduation are employed as main explanatory variables. A number of estimates is now strongly statistically significant. For TDC1, the effects of conditions at graduation are moderately higher than at the start of the first job. A one-standard-deviation increase in unemployment rate (1.5%) represents a 3.7% increase in first CEO pay (TDC1) if at the start of the first job and 5% if at graduation. The respective effects for a one-standard-deviation increase in the bond-yield spread (0.5%) are 5% and 6% for TDC1, and 4.7% and 6% for TDC2. The direction of estimated effects supports the hypothesis of granting larger compensations for CEOs hired in turbulent economic times. Thus, to be hired in a recession may mean passing a stricter, more careful selection process, a sign of better skills and qualities which are rewarded correspondingly.

In Table 3.9, we replicate selected regressions from Table IV and Panel B of Table V in Schoar and Zuo (2012) using our data so as to perform further testing of the first job

[22]Subsample CS is a cross section obtained by selecting the observations with the very first CEO pay for each CEO. For more details on the subsamples, see Table 3.A1 in Appendix 3.1.

[23]Graham et al. (2012) discuss the promotion versus the person-specific effects in the context of their empirical model with manager fixed effects.

effects on the first CEO compensation. These regressions examine the effects of the first job conditions on the first CEO compensation under a different (simpler) specification:

$$Log(FirstComp)_i = \alpha + \beta RecessionYear_i + \tau_d + \iota_s + \varepsilon_i \tag{3.4}$$

where $Log(FirstComp)_i$ is the first CEO compensation (TDC1 or TDC2, log-transformed) of individual i and $RecessionYear_i$ is the recession year indicator for the year when individual i started his/her career. Schoar and Zuo (2012) control for decade and industry fixed effects where d denotes the decade in which the CEO was born and s is the industry in which the individual started his/her career.[24] The alternative specifications replace *Recession Year* with the *Top Ten* indicator and/or add firm-level controls (*Total Assets*, *Return on Assets* and *Sales*). Except for the specification in Column (6) of *our* Table 3.9, the signs of the estimates on the recession year indicator as the main explanatory variable are negative. This suggests that individuals who start their careers in a "recession year" receive lower first CEO compensation, but the estimates are not statistically significant at conventional levels. According to the Schoar and Zuo regression specifications where the top-ten indicator is the main explanatory variable, all but the estimate in Column (8) are statistically significant at the 1% level. The positive effects on the first CEO compensation suggested by the estimates are very large: 84% on TDC1 (Column 3), but it decreases to 35% on TDC1 when current firm controls are included (Column 4), and to 38% on TDC2 in the specification without current firm controls (Column 7). The results in Schoar and Zuo (2012) are obtained with a smaller number of observations and are stronger for the recession year indicator than for the top-ten indicator. Our results further support the findings from Panel A of *our* Table 3.8 that the first CEO pay (at least for the compensation measured by TDC1) may be as much as 30% higher if the individual started his/her career in a top-ten public company.

[24]The industries are identified according to the first SIC digit.

3.4.2 Robustness analysis

If all individuals in our sample were movers, that is, if all CEOs could be observed in at least one other firm, employing firm fixed effects would be a useful strategy to quantify the first firm size effects. As discussed above, this is not the case, thus the coefficient estimates of first firm size may be conflated (firm fixed effects wipe out the time-constant between-manager variation). These estimates may also be otherwise altered due to possible omitted variable bias.

Despite the data issues, we can still get an idea of a distortion in coefficient estimates if we perform cross-section regressions for selected years.[25] Table 3.10 reports the results from such cross-section regressions, with market capitalization as the measure for firm size. Table 3.A7 in Appendix 3.7 reports the results with total assets as the control for firm size. The selected years are 1995, 2000 and 2005. 2005 is the year with the largest number of observations, 1995 and 2000 were selected to representatively cover and be evenly spread out throughout the data period 1992-2007. When we compare the magnitudes, signs and statistical significance of coefficients in Table 3.2 to the ones in Table 3.10 (or, alternatively, those in Table 3.A4 to the ones in Table 3.A7), the coefficients of the control variables remain rather stable. The coefficients of interest are low in magnitude, not very different from to the ones obtained in the benchmark regressions with firm fixed effects. The estimated coefficients on first firm size are not statistically significant at conventional levels. Only *First Market Capitalization* is positively associated with the 2000 TDC1 compensation at the 5% level (Column 2 in Panel B of Table 3.10); similarly for *First Total Assets* and TDC2 in Column 6 in Panel A of Table 3.A7.[26]

In some instances, tests for validity and strength of instruments point to our instruments being weak. OLS estimation should be preferred to instrumental variables estimation in

[25] Hermalin and Weisbach (1991) use one-year regression as a robustness check to a model driven by between-firm variation, a model where using firm-fixed effects may be fallacious.

[26] On an interesting note, the results in both Table 3.10 and Table 3.A7 suggest that in the mid-nineties, female CEO may have earned significantly less than male CEOs. 1995 is the year with least observations so this may affect the results but the 1% significance holds not only for the full sample but for Subsample 2 as well.

these cases. We make another attempt for instrumental variables estimation with a set of employment rate related variables. In the context of studying cohort effect in promotions, Kwon et al. (2010) find that employment rate in interaction with the employment growth rate matter more than the unemployment rate alone. The key to this argument is that the employment growth rate is a variable reflecting economic prospects, a forward-looking variable. Using the set of employment-related variables (the US annual employment rate, the US annual employment growth rate, and the interaction term of the former two variables), however, does not lift the suspicion of weak instruments. As reported in Table 3.11, all tests, from partial correlations and first-stage R-squared through weak identification tests and endogeneity tests, indicate that we are probably better off without engaging in 2SLS estimation. The coefficients on *First Firm Size* are not statistically significant at conventional levels, they may carry very large bias and thus be misleading. The conclusions are the same for the alternative firm size measure, and for both Subsample 1 and Subsample 2 (unreported results). Our choice of alternative instruments proves to be of little aid in determining first job effects but - rather than performing first-stage data mining - it can be credited with a careful evaluation of theoretical arguments, some of which are supported by empirical research.

Advances in instrumental variables estimation due to the work of Moreira (2003) and Mikusheva (2010) allow for weak-instrument robust testing with conditional likelihood ratio (CLR) confidence sets. We report these results in Table 3.12. The first row of each panel contains the coefficient estimates of *First Market Capitalization* obtained through normal approximation. We include this coefficient's limited information maximum likelihood (LIML) estimates for comparison as well as some first-stage diagnostics. Columns (3) and (6) of each panel contain perhaps the most important results - the results from LSDV estimation with year and industry dummies.[27] With the financial-markets-related and the employment-rate-related sets of instruments, we find CLR confidence sets with a rather large span (the p-values

[27]The data does not support fixed-effect 2SLS estimation. Also, the results for TDC1 are likely to be less erratic (although one may argue that the Black and Scholes model is not the most appropriate to determine the value of the stock options granted). TDC2 includes the value of exercised stock options, thus it is more likely to be affected by measurement error.

are large but so are the sets). When the set of macro variables is used as instruments, the CLR confidence sets become narrower. The results are strongly statistically significant and suggest a negative effect of first firm size on CEO compensation. The suggested first firm size elasticity relative to CEO compensation varies between -0.1 and -0.8% (taking into account all CLR-confidence-set results in Column (3) in all panels of Table 3.12). The negative sign lends support to the countercyclical cohort effects theory: individuals who due to the bad economy started their careers in smaller firms on average, earn higher CEO compensation. Thus, again, to succeed and be hired in a bad economy could be a sign of higher ability. During recessions, firms may apply stricter selection processes in order to find the best match, the most able employees. When performing the weak instrument robust testing with Subsample 2 (untabulated results), the results suggest positive effects which, in most cases, are not statistically significant at conventional levels. Cohort effects seem to be inexistent in CEO compensation when we pick observations with the earliest possible stages of the individuals' careers but we have to keep in mind the much lower number of observations used to obtain these results.

3.5 Conclusion

Several recent papers study the possible influence of initial career conditions on individuals' current professional situation. They find that a good economy makes it more likely to start one's career in a position with better opportunities and plays a role in shaping one's career path in the long term. So much so that those whose initial placement is a worse match may not be able to catch up to their luckier peers. We study CEOs in publicly listed companies and investigate whether the conditions at the time these individuals start their careers influence their current CEO compensation. Do CEOs whose job market entry coincides with a bad economy earn less than their counterparts who started their first job assignment in peaks and booms?

We test the influence of the quality of initial placement through pooled ordinary least squares, least square dummy variables and fixed effects regressions, as well as instrumental variables regressions. We do not find evidence that first firm size has a persistent procyclical effect on CEO compensation. Thus, the niche of the job market seems to play a role in how persistent first job effects are. Even if first positions influence subsequent job attainment and compensation, more than two decades into the individuals' careers this effect seems to disappear when it comes to (future) CEOs. The results from instrumental variables estimation lend support to the notion of countercyclical cohort effects in CEO compensation.

Our results from cross-section regressions suggest that initial career conditions (firm size, top-ten firm) have a large effect on the *first* CEO compensation. A large part of the pay increase - as much as 30% - comes from individual-specific factors positively correlated with initial job conditions. The increase in first CEO compensation due to initial job conditions dissipates over time, suggesting efficient workings of the executive job market. A number of robustness checks support these conclusions.

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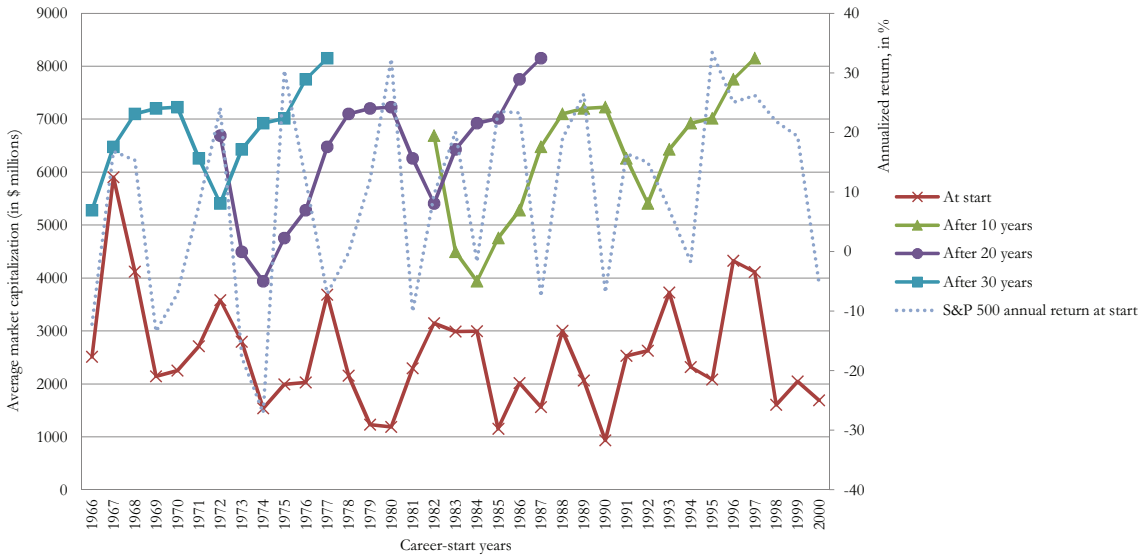
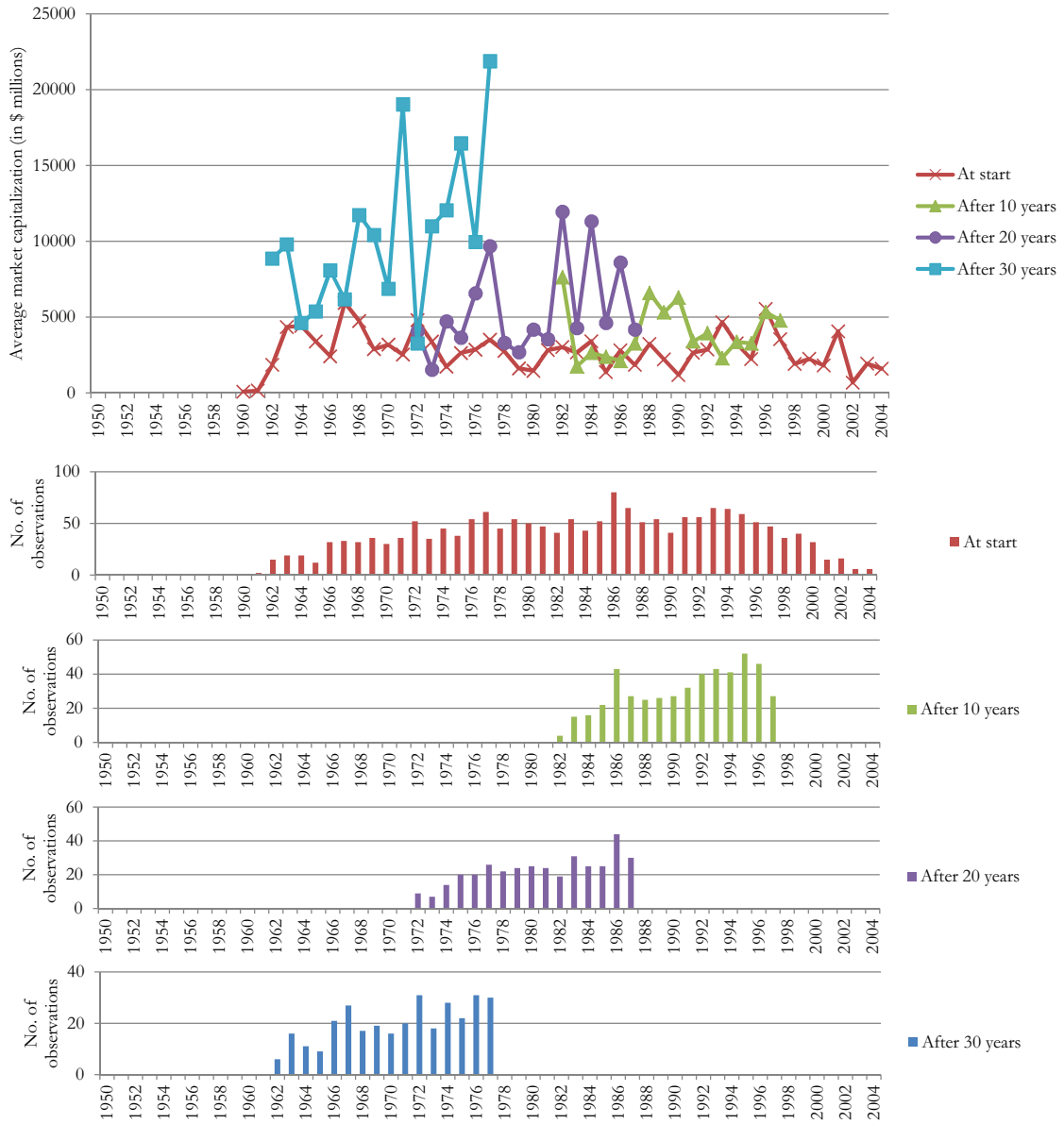
Figure 3.1: The evolution of in-sample average firm size throughout CEOs' careers (full sample[‡])



[‡] Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.
The figure shows the evolution of in-sample average firm size as measured by market capitalization. The (red) line with cross markers shows the average firm size at the start of individuals' careers . There are at least 30 entries for each initial year and around 300 entries for each data point of the decades thereafter. The (green) line with triangle markers shows the average market capitalization 10 years after, the (violet) line with circle markers after 20 years and the (blue) line with square markers after 30 years. For example, moving up on an imaginary vertical line from the 1985-value on the (red) line with cross markers, crossing the (green) line with triangle markers represents the average firm size in 1995 and crossing the (violet) line with circle markers shows the average firm size in 2005. Since the current firm size measures are available for 1992-2007, there is attrition in the plots. Thus, corresponding to the 1975 initial average firm size, we are only able to plot the 1995 (after 20 years) and 2005 (after 30 years) average firm sizes on the (violet) line with circle markers and the (blue) line with square markers, respectively.
In order to depict the initial market conditions (financial market conditions are probably more relevant for our measure of firm size), we plot the annual S&P 500 index return for the career-start years.

Figure 3.2: Average firm size throughout CEOs' careers

(following the same cohorts of CEOs through time)



The figure plots the average market capitalizations only for firms where the can trace the same individuals for 10 years, 20 years or 30 years. Thus we focus on the same cohort of future CEOs through time. The lower portions of the graph show the numbers of observations used to compute the average firm size at the start of the individula's career, and after 10, 20 and 30 years, respectively.

Table 3.1: Summary statistics (full sample[‡])

	Variable	No. of obs.	Mean	Std. dev.	Median	Min.	Max.
Response variables	(Total compensation 1)$_t$ [†] [*$thousands*]	13268	4232.26	5315.96	2329.19	261.5	32164.63
	(Total compensation 2)$_t$ [†] [*$thousands*]	13369	4267.77	7028.64	1808.20	219.953	46339.73
	(Total compensation 1)$_{t-k}$ [†□] [*$thousands*]	2981	3558.11	4972.20	1856.97	234.474	32372.49
	(Total compensation 2)$_{t-k}$ [†□] [*$thousands*]	3040	2615.79	3697.47	1257.04	146.355	22911.81
Main explanatory variables	(Market capitalization)$_{t-k}$ [†] [*$millions*]	11148	2568.19	6625.40	434.54	5.7239	40369.69
	(Total assets)$_{t-k}$ [†] [*$millions*]	13310	2271.09	5528.43	368.55	3.2000	37243.01
	(Top ten *indicator*)$_{t-k}$	13378	0.0542	0.2264	0.0000	0	1
	(No. of employees)$_{t-k}$ [†◊] [*thousands*]	13280	2128.32	4991.41	412.22	1.4640	32657
	Sales$_{t-k}$ [†◊] [*$millions*]	12641	30.49	65.86	5.86	0.0300	380
Firm-level controls	(Market capitalization)$_t$ [†] [*$millions*]	13378	6450.42	15747.51	1580.89	58.0108	112732.3
	(Total assets)$_t$ [†] [*$millions*]	13378	5072.50	9551.45	1498.34	72.577	59920.0
	(Market to book)$_{t-1}$ [†]	13378	2.0542	1.3333	1.5958	0.8043	8.3404
	(Stock return)$_t$ [†]	13378	0.0070	0.0322	0.0084	-0.0965	0.0976
	(Return on assets)$_t$ [†]	13378	0.1425	0.0886	0.1386	-0.2003	0.3800
	(Stock return volatility over 5 years)$_t$ [†]	13378	0.0314	0.0203	0.0256	0.0058	0.1035
CEO-level controls	(CEO tenure)$_t$ [*months*]	13369	105.83	92.75	78	6	690
	(External hire *indicator*)$_t$	13378	0.4152	0.4928	0	0	1
	(CEO & Chairman *indicator*)$_t$	13378	0.6531	0.4760	1	0	1
	MBA degree *indicator*	13378	0.3100	0.4625	0	0	1
	Female *indicator*	13378	0.0155	0.1234	0	0	1
Excluded instruments	(Recession *indicator*)$_{t-k}$	13378	0.1218	0.3270	0	0	1
	(Recession year *indicator*)$_{t-k}$ [°]	13378	0.8651	0.3417	1	0	1
	(US unemployment rate, 12-month average)$_{t-k}$ [%]	13378	6.1839	1.4688	6.0000	2.9000	10.2000
	(Investment-grade bond yield spread)$_{t-k}$ [%]	13378	1.0516	0.4566	0.9300	0.3200	2.6900
	(S&P 500 volume, 1-year change)$_{t-k}$ [†] [%]	13375	17.852	26.342	14.714	-25.329	89.478
	(S&P 500 average return over 1 year)$_{t-k}$ [†] [%]	13368	9.9946	15.279	12.309	-29.718	38.736
	(S&P 500 st. deviation over 2 years)$_{t-k}$ [†] [%]	13364	364.73	475.77	178.45	26.482	2216.35
	(US employment rate, 12-month average)$_{t-k}$ [%]	13378	93.816	1.4688	94.000	89.800	97.100
	(US employment annual growth rate)$_{t-k}$ [%]	13378	-0.0003	0.0895	0.0000	-0.3254	0.3289

Notes:
[‡] Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.
[†]: Winsorized variables
[◊]: Included for a more comprehensive firm characterization, results with these regressors are not reported in the paper.
[□]: For the regressions on *First CEO Compensation*, the sample is restricted to the cross-section that captures each individual's first CEO assignment.
[°]: As in Schoar and Zuo (2012)

The table presents summary statistics for the regressands and regressors that we include in our tests. It contains the numbers of observations, means, standard deviations, medians, minima and maxima for both continuos and indicator variables. Where applicable, the units of measurement are indicated in square brackets. All dummy variables are designated "indicator". *t* refers to current values, *t-1* to lagged values and *t-k* to values at career start. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2. Variables that can take extreme values (e.g., variables computed as a fraction), or variables very likely to be affected by measurement errors are winsorized. The fraction of observations modified in each tail is 1%, i.e. we modify the values below the 1st percentile and above the 99th percentile. Winsorization is applied in order to prevent results from being heavily influenced by outliers. The summary statistics are based on the full sample.

Table 3.2: Pooled OLS, least square dummy variable and fixed effects regressions with *First Market Capitalization* as the main regressor

Panel A: Full sample regressions‡

	Log(Total compensation 1)$_t$				Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Market capitalization)$_{t-k}$	0.0275***	0.0182**	0.0179**	0.0152	0.0199**	0.00287	0.00340	-0.000224
	(3.31)	(2.23)	(2.28)	(1.24)	(2.15)	(0.32)	(0.39)	(-0.02)
Log(Market capitalization)$_{t-1}$	0.454***	0.438***	0.449***	0.311***	0.440***	0.413***	0.424***	0.350***
	(42.74)	(41.29)	(43.15)	(11.67)	(37.82)	(36.06)	(37.36)	(12.53)
(Market to book)$_{t-1}$	-0.0513***	-0.0525***	-0.0759***	0.00586	-0.0563***	-0.0526***	-0.0678***	0.0283
	(-4.14)	(-4.23)	(-5.59)	(0.38)	(-4.04)	(-3.89)	(-4.53)	(1.50)
(Stock return)$_t$	3.249***	3.638***	3.792***	3.240***	6.301***	6.627***	6.747***	6.274***
	(11.08)	(11.61)	(12.07)	(9.92)	(19.80)	(19.32)	(19.71)	(16.98)
(Stock return)$_{t-1}$	1.484***	1.642***	2.019***	1.205***	4.682***	4.869***	5.120***	3.675***
	(5.40)	(5.74)	(7.13)	(4.85)	(13.86)	(13.92)	(14.60)	(11.18)
(Return on assets)$_t$	0.272	0.464***	0.281*	0.781***	1.057***	1.248***	1.102***	1.719***
	(1.63)	(2.81)	(1.71)	(4.32)	(5.17)	(6.31)	(5.56)	(8.19)
(Return on assets)$_{t-1}$	-0.388**	-0.330**	-0.414***	-0.131	-0.669***	-0.433**	-0.510**	-0.346*
	(-2.44)	(-2.04)	(-2.59)	(-0.79)	(-3.35)	(-2.18)	(-2.56)	(-1.67)
(Stock return volatility over 5 years)$_t$	6.801***	5.653***	4.451***	1.913**	3.429***	2.643***	1.928***	-0.284
	(10.22)	(8.35)	(6.48)	(2.54)	(4.86)	(3.74)	(2.70)	(-0.34)
Log(CEO tenure)$_t$	0.00167	-0.0212	-0.0268*	-0.00409	0.140***	0.0894***	0.0852***	0.126***
	(0.11)	(-1.37)	(-1.80)	(-0.29)	(8.55)	(5.57)	(5.40)	(8.18)
(External hire indicator)$_t$	0.0817***	0.0809***	0.0955***	0.131***	-0.000892	0.00669	0.0173	-0.000126
	(2.62)	(2.66)	(3.32)	(3.13)	(-0.03)	(0.21)	(0.56)	(-0.00)
(CEO & Chairman indicator)$_t$	0.106***	0.158***	0.168***	0.0229	0.0677**	0.168***	0.173***	0.0315
	(3.59)	(5.41)	(5.94)	(0.86)	(2.11)	(5.42)	(5.75)	(1.01)
MBA degree indicator	0.103***	0.0886***	0.0764***	0.0476	0.101***	0.0814***	0.0747**	0.0294
	(3.65)	(3.18)	(2.92)	(1.35)	(3.14)	(2.63)	(2.50)	(0.64)
Female indicator	0.0556	-0.00981	-0.0362	0.141	0.0963	-0.00371	-0.0212	0.0551
	(0.50)	(-0.09)	(-0.32)	(1.22)	(0.81)	(-0.03)	(-0.18)	(0.46)
Constant	4.044***	3.585***	3.634***	4.379***	3.482***	3.206***	3.210***	3.521***
	(37.60)	(27.86)	(29.13)	(20.10)	(29.43)	(23.59)	(24.20)	(15.26)
Year dummies		yes	yes	yes		yes	yes	yes
Industry dummies			yes				yes	
Firm fixed effects				yes				yes
No. of obs.	11001	11001	11001	11001	11066	11066	11066	11066
Adj. R^2	0.470	0.503	0.523	0.716	0.428	0.488	0.498	0.668

(continued)

Table 3.2 (*continued)*

Panel B: Subsample 1 regressions‡

	Log(Total compensation 1)$_t$				Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Market capitalization)$_{t-k}$	0.0316***	0.0213**	0.0216**	0.00805	0.0287***	0.00956	0.0108	-0.000512
	(3.63)	(2.44)	(2.56)	(0.55)	(2.89)	(0.99)	(1.13)	(-0.03)
Log(Market capitalization)$_{t-1}$	0.444***	0.429***	0.438***	0.293***	0.431***	0.407***	0.415***	0.307***
	(37.04)	(35.90)	(37.54)	(8.47)	(32.69)	(31.62)	(33.02)	(8.72)
(Market to book)$_{t-1}$	-0.0473***	-0.0494***	-0.0656***	0.0263	-0.0496***	-0.0471***	-0.0570***	0.0498**
	(-3.25)	(-3.37)	(-4.07)	(1.40)	(-3.07)	(-3.01)	(-3.33)	(2.34)
(Stock return)$_t$	3.208***	3.658***	3.865***	3.396***	6.685***	7.112***	7.285***	6.556***
	(10.24)	(11.22)	(11.93)	(9.55)	(17.96)	(17.93)	(18.62)	(14.94)
(Stock return)$_{t-1}$	1.582***	1.821***	2.172***	1.253***	5.103***	5.281***	5.518***	3.794***
	(5.14)	(5.57)	(6.77)	(4.17)	(13.65)	(13.57)	(14.30)	(9.93)
(Return on assets)$_t$	0.351*	0.536***	0.304	0.960***	1.101***	1.252***	1.077***	2.000***
	(1.79)	(2.73)	(1.56)	(4.62)	(4.46)	(5.22)	(4.52)	(8.06)
(Return on assets)$_{t-1}$	-0.543***	-0.446**	-0.569***	-0.263	-0.740***	-0.446*	-0.557**	-0.350
	(-2.98)	(-2.41)	(-3.13)	(-1.35)	(-3.09)	(-1.88)	(-2.36)	(-1.38)
(Stock return volatility over 5 years)$_t$	6.618***	5.378***	4.161***	1.550	3.749***	2.912***	2.024**	-0.872
	(8.33)	(6.71)	(5.01)	(1.64)	(4.50)	(3.52)	(2.36)	(-0.87)
Log(CEO tenure)$_t$	0.0236	-0.00297	-0.00670	0.00808	0.177***	0.121***	0.117***	0.151***
	(1.32)	(-0.17)	(-0.39)	(0.50)	(9.51)	(6.63)	(6.50)	(8.18)
(External hire indicator)$_t$	0.102***	0.0942***	0.114***	0.134**	0.00993	0.00873	0.0203	-0.0225
	(2.82)	(2.65)	(3.39)	(2.53)	(0.25)	(0.23)	(0.56)	(-0.35)
(CEO & Chairman indicator)$_t$	0.0876***	0.147***	0.157***	0.00173	0.0556	0.166***	0.173***	0.0243
	(2.70)	(4.53)	(4.94)	(0.05)	(1.58)	(4.86)	(5.20)	(0.64)
MBA degree indicator	0.0914***	0.0813***	0.0701**	0.0214	0.0708**	0.0602*	0.0551*	-0.00681
	(2.84)	(2.59)	(2.37)	(0.51)	(1.97)	(1.75)	(1.65)	(-0.13)
Female indicator	0.0124	-0.0410	-0.0616	-0.0336	0.0710	-0.0128	-0.0218	0.0321
	(0.09)	(-0.30)	(-0.45)	(-0.27)	(0.53)	(-0.10)	(-0.16)	(0.25)
Constant	4.039***	3.533***	3.588***	4.458***	3.362***	3.080***	3.098***	3.666***
	(32.12)	(24.40)	(25.22)	(15.66)	(25.09)	(20.52)	(21.01)	(12.35)
Year dummies		yes	yes	yes		yes	yes	yes
Industry dummies			yes				yes	
Firm fixed effects				yes				yes
No. of obs.	8425	8425	8425	8425	8468	8468	8468	8468
Adj. R^2	0.469	0.504	0.526	0.730	0.430	0.494	0.506	0.684

(continued)

Table 3.2 (*continued)*

Panel C: Subsample 2 regressions‡

	Log(Total compensation 1)$_t$				Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Market capitalization)$_{t-k}$	0.0337***	0.0257**	0.0185	0.0443	0.0222	0.00838	0.00424	0.0785*
	(2.80)	(2.16)	(1.62)	(1.25)	(1.61)	(0.64)	(0.33)	(1.85)
Log(Market capitalization)$_{t-1}$	0.453***	0.437***	0.436***	0.325***	0.427***	0.398***	0.398***	0.354***
	(27.27)	(26.66)	(27.87)	(8.10)	(22.47)	(21.52)	(22.64)	(6.31)
(Market to book)$_{t-1}$	-0.0352*	-0.0377*	-0.0579***	0.0322	-0.0408*	-0.0337	-0.0448*	0.0363
	(-1.78)	(-1.89)	(-2.71)	(1.28)	(-1.81)	(-1.57)	(-1.91)	(1.11)
(Stock return)$_t$	3.040***	3.611***	3.712***	3.430***	6.718***	7.208***	7.304***	6.787***
	(6.66)	(7.63)	(7.84)	(6.23)	(11.90)	(12.08)	(12.41)	(9.98)
(Stock return)$_{t-1}$	1.221***	1.637***	1.987***	1.217***	5.348***	5.649***	5.883***	4.443***
	(2.81)	(3.54)	(4.33)	(2.73)	(9.95)	(10.29)	(10.70)	(7.39)
(Return on assets)$_t$	0.573**	0.725***	0.508*	0.865***	1.628***	1.636***	1.469***	2.050***
	(2.08)	(2.67)	(1.88)	(3.10)	(4.40)	(4.49)	(4.04)	(5.02)
(Return on assets)$_{t-1}$	-0.694**	-0.588**	-0.661**	-0.360	-1.359***	-1.053***	-1.120***	-0.827**
	(-2.50)	(-2.13)	(-2.43)	(-1.31)	(-3.54)	(-2.75)	(-2.92)	(-1.97)
(Stock return volatility over 5 years)$_t$	5.800***	4.475***	3.138***	1.399	2.314**	1.587	0.709	-1.019
	(4.96)	(3.83)	(2.62)	(1.20)	(1.97)	(1.36)	(0.59)	(-0.71)
Log(CEO tenure)$_t$	0.00863	-0.0187	-0.0220	0.00202	0.186***	0.127***	0.125***	0.151***
	(0.36)	(-0.79)	(-0.98)	(0.09)	(6.90)	(4.77)	(4.86)	(5.32)
(External hire indicator)$_t$	0.117**	0.104**	0.140***	0.283***	0.0164	0.00392	0.0272	-0.0753
	(2.24)	(2.05)	(2.97)	(2.62)	(0.29)	(0.07)	(0.53)	(-0.57)
(CEO & Chairman indicator)$_t$	0.0811*	0.139***	0.145***	0.0213	0.101**	0.206***	0.210***	0.0481
	(1.78)	(3.12)	(3.38)	(0.51)	(2.04)	(4.43)	(4.67)	(0.93)
MBA degree indicator	0.0133	0.0225	0.0553	-0.0784	0.0119	0.0373	0.0638	0.0406
	(0.29)	(0.51)	(1.30)	(-0.97)	(0.23)	(0.76)	(1.32)	(0.44)
Female indicator	-0.117	-0.138	-0.158	-0.0268	-0.0615	-0.0845	-0.0990	0.0552
	(-0.59)	(-0.69)	(-0.77)	(-0.09)	(-0.30)	(-0.41)	(-0.47)	(0.14)
Constant	4.050***	3.386***	3.553***	4.039***	3.416***	3.014***	3.104***	2.856***
	(23.78)	(18.39)	(20.35)	(10.46)	(17.92)	(15.28)	(16.83)	(5.60)
Year dummies		yes	yes	yes		yes	yes	yes
Industry dummies			yes				yes	
Firm fixed effects				yes				yes
No. of obs.	3752	3752	3752	3752	3767	3767	3767	3767
Adj. R^2	0.513	0.553	0.575	0.744	0.454	0.520	0.530	0.684

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports results from pooled OLS regressions (columns 1 and 5), LSDV regressions with year dummies (columns 2 and 6) and with year and industry dummies (columns 3 and 7), and with year and firm fixed effects (columns 4 and 8). The firm fixed effects model gives a separate constant term for each firm, the intercept ("Constant") included in columns 4 and 8 is the average value of the fixed effects. Panels A, B and C report results from regression on the full sample, Subsample 1 and Subsample 2, respectively. The response variables are log(TDC1) (columns 1-4) and log(TDC2) (columns 5-8). The main regressor variable is *First Market Capitalization,* thus the control for current firm size is (lagged, log-transformed) market capitalization as well. The choice of the remaining determinants of CEO compensation follows Graham et al. (2012). For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.3: Instrumental variables regressions with *First Market Capitalization* as the instrumented variable (full sample‡)

Panel A: Regressions using a set of financial-markets-related excluded instruments

	Log(Total compensation 1)$_t$			**Log(Total compensation 2)$_t$**		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}^{\Delta}$	0.0113	-0.495*	-0.435*	0.196*	-0.564**	-0.483*
	(0.11)	(-1.89)	(-1.90)	(1.65)	(-1.97)	(-1.95)
Log(Market capitalization)$_{t-1}$	0.462***	0.680***	0.661***	0.353***	0.681***	0.652***
	(9.14)	(5.53)	(6.17)	(5.84)	(5.05)	(5.64)
(Market to book)$_{t-1}$	-0.0520***	-0.0718***	-0.0945***	-0.0484***	-0.0734***	-0.0870***
	(-3.83)	(-3.22)	(-4.23)	(-3.00)	(-3.07)	(-3.73)
(Stock return)$_t$	3.258***	3.868***	4.012***	6.201***	6.898***	6.991***
	(11.12)	(8.98)	(9.82)	(18.56)	(14.27)	(15.64)
(Stock return)$_{t-1}$	1.445***	0.284	0.872	5.090***	3.417***	3.924***
	(3.97)	(0.36)	(1.26)	(10.87)	(3.95)	(5.24)
(Return on assets)$_t$	0.274	0.623**	0.459*	1.040***	1.396***	1.272***
	(1.63)	(2.38)	(1.81)	(4.85)	(4.72)	(4.53)
(Return on assets)$_{t-1}$	-0.414*	-1.076**	-1.078***	-0.386	-1.238**	-1.210***
	(-1.78)	(-2.37)	(-2.66)	(-1.36)	(-2.42)	(-2.65)
(Stock return volatility over 5 years)$_t$	6.844***	6.664***	5.140***	2.950***	3.797***	2.689**
	(9.58)	(5.08)	(4.34)	(3.63)	(2.63)	(2.12)
Log(CEO tenure)$_t$	-0.00717	-0.315**	-0.282**	0.236***	-0.235	-0.189
	(-0.13)	(-2.04)	(-2.11)	(3.50)	(-1.39)	(-1.32)
(External hire indicator)$_t$	0.0970	0.564**	0.524**	-0.167	0.540*	0.477**
	(0.99)	(2.23)	(2.35)	(-1.42)	(1.95)	(1.99)
(CEO & Chairman indicator)$_t$	0.107***	0.231***	0.229***	0.0544	0.247***	0.237***
	(3.48)	(3.57)	(4.01)	(1.52)	(3.53)	(3.90)
MBA degree indicator	0.106***	0.152**	0.137**	0.0759*	0.153**	0.140**
	(3.34)	(2.43)	(2.40)	(1.91)	(2.20)	(2.25)
Female indicator	0.0686	0.363	0.293	-0.0424	0.400	0.326
	(0.49)	(1.23)	(1.10)	(-0.30)	(1.23)	(1.13)
Year dummies		yes	yes		yes	yes
Industry dummies			yes			yes
No. of obs.	11001	11001	11001	11066	11066	11066
R^2 (centered)	0.4703	-0.2502	-0.0884	0.3635	-0.3032	-0.1070
Overidentification test of all instruments - Hansen J stat. (p-val)	1.978	0.562	0.476	0.054	0.001	0.086
	(0.3719)	(0.7552)	(0.7884)	(0.9732)	(0.9997)	(0.9581)
Endogeneity test of endogenous regressor	0.015	11.718	10.851	2.587	11.809	10.002
	(0.9013)	(0.0006)	(0.0010)	(0.1078)	(0.0006)	(0.0016)
First stage	**Log(Market capitalization)$_{t-k}$**					
(S&P 500 volume, 1-yr % change)$_{t-k}$	0.0004***	0.0003	0.0002	0.0004	0.0003	0.0002
	(0.26)	(0.20)	(0.12)	(0.27)	(0.20)	(0.14)
(S&P 500 return, 1-yr)$_{t-k}$	0.0009	0.0008	0.0017	0.0009	0.0008	0.0017
	(0.29)	(0.24)	(0.56)	(0.30)	(0.25)	(0.56)
(S&P 500 standard deviation, 2-yr)$_{t-k}$	0.0003***	0.0002**	0.0002**	0.0003***	0.0002**	0.0002**
	(3.63)	(2.34)	(2.30)	(3.58)	(2.29)	(2.25)
R^2 (centered)	0.2654	0.2572	0.2510	0.2654	0.2572	0.2510
Weak identification test[1]: Cragg-Donald Wald F statistic/	22.46	10.02	11.17	22.28	9.77	10.96
Kleibergen-Paap Wald rk F statistic	5.15	2.15	2.31	5.02	2.07	2.23

(continued)

Table 3.3 *(continued)*

Panel B: Regressions using a set of proxies for macroeconomic conditions as excluded instruments

	Log(Total compensation 1)$_t$			**Log(Total compensation 2)$_t$**		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}^{\Delta}$	-0.182	-0.262*	-0.246*	0.0149	-0.0831	-0.0646
	(-1.54)	(-1.89)	(-1.87)	(0.13)	(-0.72)	(-0.59)
Log(Market capitalization)$_{t-1}$	0.558***	0.570***	0.573***	0.443***	0.454***	0.455***
	(9.50)	(8.76)	(9.34)	(7.90)	(8.38)	(8.80)
(Market to book)$_{t-1}$	-0.0609***	-0.0630***	-0.0867***	-0.0565***	-0.0557***	-0.0705***
	(-4.07)	(-3.90)	(-5.04)	(-3.82)	(-3.87)	(-4.48)
(Stock return)$_t$	3.361***	3.763***	3.920***	6.304***	6.668***	6.781***
	(10.71)	(10.82)	(11.31)	(19.61)	(19.13)	(19.61)
(Stock return)$_{t-1}$	0.978**	0.901*	1.350***	4.671***	4.648***	4.953***
	(2.35)	(1.83)	(2.92)	(10.77)	(10.10)	(11.07)
(Return on assets)$_t$	0.303	0.550***	0.385*	1.058***	1.270***	1.125***
	(1.63)	(2.73)	(1.90)	(5.16)	(6.23)	(5.48)
(Return on assets)$_{t-1}$	-0.731***	-0.737***	-0.802***	-0.677**	-0.555**	-0.608**
	(-2.87)	(-2.72)	(-3.08)	(-2.51)	(-2.13)	(-2.37)
(Stock return volatility over 5 years)$_t$	7.355***	6.205***	4.853***	3.443***	2.818***	2.034***
	(8.86)	(6.79)	(5.46)	(4.51)	(3.67)	(2.71)
Log(CEO tenure)$_t$	-0.113*	-0.181**	-0.176**	0.137**	0.0401	0.0469
	(-1.69)	(-2.21)	(-2.29)	(2.20)	(0.59)	(0.73)
(External hire indicator)$_t$	0.280**	0.345**	0.346***	0.00386	0.0876	0.0816
	(2.38)	(2.53)	(2.67)	(0.03)	(0.78)	(0.76)
(CEO & Chairman indicator)$_t$	0.122***	0.198***	0.203***	0.0680**	0.180***	0.182***
	(3.42)	(4.58)	(4.99)	(2.02)	(4.93)	(5.23)
MBA degree indicator	0.132***	0.123***	0.112***	0.101***	0.0922***	0.0839**
	(3.48)	(2.93)	(2.77)	(2.86)	(2.63)	(2.47)
Female indicator	0.224	0.194	0.156	0.100	0.0575	0.0273
	(1.24)	(0.99)	(0.83)	(0.66)	(0.36)	(0.18)
Year dummies		yes	yes		yes	yes
Industry dummies			yes			yes
No. of obs.	11001	11001	11001	11066	11066	11066
R^2 (centered)	0.3567	0.2559	0.2870	0.4287	0.4185	0.4285
Overidentification test of all instruments - Hansen J stat. (p-val)	0.285	0.686	0.313	0.921	0.243	0.312
	(0.8674)	(0.7097)	(0.8550)	(0.6310)	(0.8858)	(0.8554)
Endogeneity test of endogenous regressor	3.917	6.540	6.518	0.001	0.571	0.367
	(0.0478)	(0.0105)	(0.0107)	(0.9737)	(0.4499)	(0.5444)
First stage	**Log(Market capitalization)$_{t-k}$**					
(Recession indicator)$_{t-k}$	-0.2575	-0.2327	-0.2528	-0.2571	-0.2319	-0.2526
	(-1.63)	(-1.48)	(-1.61)	(-1.63)	(-1.47)	(-1.61)
(Investment-grade-bond yield spread)$_{t-k}$	-0.1538	-0.1518	-0.1556	-0.1554	-0.1537	-0.1576
	(-1.21)	(-1.20)	(-1.22)	(-1.22)	(-1.21)	(-1.24)
(US unemployment rate, 12-m. avg.)$_{t-k}$	-0.0333	-0.0306	-0.0238	-0.0329	-0.0303	-0.0236
	(-0.88)	(-0.81)	(-0.64)	(-0.87)	(-0.80)	(-0.63)
R^2 (centered)	0.2661	0.2599	0.2535	0.2662	0.2600	0.2536
Weak identification test[1]: Cragg-Donald Wald F statistic/	25.99	23.26	23.72	26.17	23.45	23.99
Kleibergen-Paap Wald rk F statistic	3.09	2.75	2.78	3.10	2.75	2.79

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

$^{\Delta}$: instrumented variable

[1]The Stock-Yogo (2005) weak identification critical values (valid for Cragg-Donald F statistic and i.i.d. errors) for 1 endogenous variable and 3 excluded instruments are as follows:

5% maximal IV relative bias	13.91	10% maximal IV size	22.30
10% maximal IV relative bias	9.08	15% maximal IV size	12.83
20% maximal IV relative bias	6.46	20% maximal IV size	9.54
30% maximal IV relative bias	5.39	25% maximal IV size	7.80

The table reports results from IV regressions on the full sample - pooled 2SLS estimation (columns 1 and 4), with year dummies (columns 2 and 5) and with year and industry dummies (columns 3 and 6). The data does not support fixed effects 2SLS estimation. Panels A and B report results from regressions with two different sets of excluded instruments, financial-markets-related and macroeconomic-conditions-related, respectively. The dependent variables are log(TDC1) (columns 1-3) and log(TDC2) (columns 4-6). The explanatory variable of interest - the instrumented variable - is *First Market Capitalization*. The remaining controls (included instruments) correspond to those in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2. In addition to the coefficient estimates, second-stage-regression R^2 and the number of observations, we also include results from overidentification and endogeneity tests. These results together with first-stage test results are important indicators for intrument validity and strength, and may reveal large inefficiencies in 2SLS estimation.

The lower sections of the table refer to first-stage results. It contains selected coefficent estimates (for the excluded instruments only, omitting the included instruments' coefficent estimates) and results from tests for weak identification.

Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.4: Instrumental variable regressions using a single excluded instrument, with *First Market Capitalization* as the instrumented variable (full sample‡)

Panel A: Results with Log(Total compensation 1)$_t$ as the response variable

	Log(Total compensation 1)$_t$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log(Market capitalization)$_{t-k}$ Δ	-0.152	-0.321	-0.207	-0.131	-1.174	-0.709	-0.383*
	(-0.92)	(-1.61)	(-1.30)	(-0.55)	(-0.27)	(-0.94)	(-1.73)
Log(Market capitalization)$_{t-1}$	0.528***	0.608***	0.554***	0.519***	1.007	0.789**	0.636***
	(6.80)	(6.47)	(7.54)	(4.64)	(0.49)	(2.23)	(6.19)
(Market to book)$_{t-1}$	-0.0829***	-0.0898***	-0.0851***	-0.0820***	-0.125	-0.106**	-0.0923***
	(-5.02)	(-4.57)	(-5.00)	(-4.67)	(-0.69)	(-2.54)	(-4.37)
(Stock return)$_t$	3.874***	3.957***	3.901***	3.864***	4.370**	4.145***	3.986***
	(11.62)	(10.71)	(11.39)	(11.34)	(1.97)	(6.71)	(10.19)
(Stock return)$_{t-1}$	1.590***	1.160*	1.450***	1.642**	-0.997	0.179	1.005
	(3.20)	(1.90)	(2.86)	(2.41)	(-0.09)	(0.09)	(1.52)
(Return on assets)$_t$	0.348*	0.414*	0.369*	0.339*	0.750	0.567	0.438*
	(1.87)	(1.84)	(1.85)	(1.67)	(0.42)	(1.33)	(1.82)
(Return on assets)$_{t-1}$	-0.663**	-0.911***	-0.743***	-0.633*	-2.161	-1.479	-1.001**
	(-2.17)	(-2.61)	(-2.60)	(-1.66)	(-0.34)	(-1.31)	(-2.57)
(Stock return volatility over 5 years)$_t$	4.709***	4.967***	4.793***	4.678***	6.264	5.557***	5.061***
	(5.85)	(4.86)	(5.67)	(5.68)	(0.87)	(2.82)	(4.60)
Log(CEO tenure)$_t$	-0.122	-0.218*	-0.153*	-0.111	-0.697	-0.436	-0.252**
	(-1.30)	(-1.88)	(-1.71)	(-0.82)	(-0.28)	(-1.03)	(-1.97)
(External hire indicator)$_t$	0.256	0.417**	0.308**	0.237	1.223	0.783	0.475**
	(1.61)	(2.18)	(1.99)	(1.03)	(0.30)	(1.09)	(2.22)
(CEO & Chairman indicator)$_t$	0.191***	0.213***	0.198***	0.188***	0.327	0.265**	0.222***
	(4.94)	(4.31)	(4.95)	(4.25)	(0.55)	(2.25)	(4.12)
MBA degree indicator	0.0990***	0.122**	0.106***	0.0962**	0.235	0.173	0.130**
	(2.60)	(2.45)	(2.71)	(2.19)	(0.40)	(1.40)	(2.46)
Female indicator	0.0870	0.210	0.127	0.0720	0.829	0.491	0.255
	(0.48)	(0.93)	(0.65)	(0.31)	(0.26)	(0.80)	(1.00)
Year dummies	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes
No. of obs.	11001	11001	11001	11001	11001	11001	11001
R^2 (centered)	0.4011	0.1615	0.3410	0.4193	-3.4587	-0.9843	0.0357
Overidentification test of all instruments - Hansen J stat. (p-val)	-	-	-	-	-	-	-
	-	-	-	-	-	-	-
Endogeneity test of endogenous regressor	1.283	5.760	3.320	0.496	0.968	6.468	7.544
	0.2574	0.0164	0.0685	0.4814	0.3252	0.0110	0.0060
First stage	**Log(Market capitalization)$_{t-k}$**						
(Recession year indicator)$_{t-k}$ ◦	0.2731**						
	(2.18)						
(Recession indicator)$_{t-k}$		-0.2891**					
		(-2.03)					
(Investment-grade-bond yield spread)$_{t-k}$			-0.2428**				
			(-2.46)				
(US unemployment rate, 12-m. avg.)$_{t-k}$				-0.0420			
				(-1.44)			
(S&P 500 volume, 1-yr % change)$_{t-k}$					0.0005		
					(0.29)		
(S&P 500 return, 1-yr)$_{t-k}$						0.0030	
						(1.04)	
(S&P 500 standard deviation, 2-yr)$_{t-k}$							0.0002**
							(2.57)
R^2 (centered)	0.2510	0.2511	0.2521	0.2497	0.2487	0.2493	0.2508
Weak identification test[1]: Cragg-Donald Wald F statistic/	33.25	34.69	49.84	15.29	0.63	8.25	30.65
Kleibergen-Paap Wald rk F statistic	4.74	4.12	6.03	2.08	0.08	1.08	6.59

(continued)

Table 3.4 *(continued)*

Panel B: Results with Log(Total compensation 2)$_t$ as the response variable

	Log(Total compensation 2)$_t$						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log(Market capitalization)$_{t-k}^{\Delta}$	-0.142	-0.0125	-0.0856	-0.168	-0.756	-0.361	-0.501*
	(-0.85)	(-0.09)	(-0.63)	(-0.66)	(-0.27)	(-0.77)	(-1.92)
Log(Market capitalization)$_{t-1}$	0.492***	0.431***	0.465***	0.504***	0.780	0.595***	0.660***
	(6.22)	(6.37)	(7.29)	(4.22)	(0.59)	(2.68)	(5.43)
(Market to book)$_{t-1}$	-0.0735***	-0.0684***	-0.0713***	-0.0746***	-0.0978	-0.0822***	-0.0877***
	(-4.30)	(-4.29)	(-4.42)	(-3.97)	(-0.85)	(-3.10)	(-3.67)
(Stock return)$_t$	6.820***	6.755***	6.792***	6.833***	7.129***	6.930***	7.000***
	(18.93)	(19.41)	(19.41)	(18.45)	(4.69)	(15.09)	(15.41)
(Stock return)$_{t-1}$	4.764***	5.081***	4.902***	4.699***	3.253	4.224***	3.881***
	(8.94)	(10.14)	(10.04)	(6.49)	(0.47)	(3.40)	(5.02)
(Return on assets)$_t$	1.152***	1.107***	1.133***	1.162***	1.368	1.229***	1.278***
	(5.43)	(5.41)	(5.42)	(5.02)	(1.30)	(4.29)	(4.45)
(Return on assets)$_{t-1}$	-0.719**	-0.533*	-0.638**	-0.757*	-1.604	-1.035	-1.236***
	(-2.22)	(-1.83)	(-2.28)	(-1.80)	(-0.39)	(-1.44)	(-2.59)
(Stock return volatility over 5 years)$_t$	2.155***	1.953***	2.067***	2.196**	3.117	2.498**	2.717**
	(2.63)	(2.60)	(2.69)	(2.46)	(0.65)	(1.96)	(2.09)
Log(CEO tenure)$_t$	0.00359	0.0762	0.0351	-0.0112	-0.342	-0.120	-0.198
	(0.04)	(0.91)	(0.45)	(-0.08)	(-0.21)	(-0.45)	(-1.31)
(External hire indicator)$_t$	0.154	0.0323	0.101	0.179	0.736	0.362	0.494*
	(0.96)	(0.24)	(0.76)	(0.73)	(0.28)	(0.81)	(1.94)
(CEO & Chairman indicator)$_t$	0.192***	0.175***	0.185***	0.196***	0.273	0.221***	0.239***
	(4.91)	(4.71)	(5.12)	(4.08)	(0.72)	(2.94)	(3.80)
MBA degree indicator	0.0942**	0.0769**	0.0867**	0.0978**	0.177	0.124	0.143**
	(2.38)	(2.15)	(2.43)	(2.00)	(0.46)	(1.59)	(2.22)
Female indicator	0.0823	-0.00988	0.0423	0.101	0.521	0.239	0.339
	(0.45)	(-0.06)	(0.25)	(0.42)	(0.26)	(0.62)	(1.13)
Year dummies	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes
No. of obs.	11066	11066	11066	11066	11066	11066	11066
R^2 (centered)	0.4045	0.4385	0.4209	0.3714	-0.8928	0.1325	-0.1469
Overidentification test of all instruments -	-	-	-	-	-	-	-
Hansen J stat. (p-val)	-	-	-	-	-	-	-
Endogeneity test of endogenous	0.424	0.012	0.484	0.594	0.419	1.377	9.523
regressor	0.5149	0.9126	0.4866	0.4408	0.5173	0.2406	0.0020
First stage	**Log(Market capitalization)$_{t-k}$**						
(Recession year indicator)$_{t-k}^{\circ}$	0.2768**						
	(2.21)						
(Recession indicator)$_{t-k}$		-0.2892**					
		(-2.03)					
(Investment-grade-bond yield spread)$_{t-k}$			-0.2440**				
			(-2.47)				
(US unemployment rate, 12-m. avg.)$_{t-k}$				-0.0422			
				(-1.45)			
(S&P 500 volume, 1-yr % change)$_{t-k}$					0.0005		
					(0.30)		
(S&P 500 return, 1-yr)$_{t-k}$						0.0030	
						(1.04)	
(S&P 500 standard deviation, 2-yr)$_{t-k}$							0.0002**
							(2.52)
R^2 (centered)	0.2633	0.2511	0.2522	0.2498	0.2488	0.2493	0.2508
Weak identification test[1]: Cragg-Donald Wald F statistic/	33.97	34.79	50.60	15.49	0.68	8.23	30.00
Kleibergen-Paap Wald rk F statistic	4.89	4.11	6.11	2.10	0.09	1.07	6.35

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.
$^{\Delta}$: instrumented variable
$^{\circ}$: Variable defined as in Schoar and Zuo (2012)
[1]The Stock-Yogo (2005) weak identification critical values (valid for Cragg-Donald F statistic and i.i.d. errors) for 1 endogenous variable and 1 excluded instrument are as follows:

10% maximal IV size	16.38
15% maximal IV size	8.96
20% maximal IV size	6.66
25% maximal IV size	5.53

The table reports results from IV regressions with year and industry dummies on the full sample. As before, the data does not support fixed effects 2SLS estimation. The table contains results from regressions with Schoar and Zuo (2012)'s recession year indicator (col. 1) and each of the excluded instruments from the two sets, financial-markets-related and macroeconomic-conditions-related, separately (col. 2-7). The dependent variables are log(TDC1) (Panel A) and log(TDC2) (Panel B). The explanatory variable of interest - the instrumented variable - is *First Market Capitalization.* The remaining controls (included instruments) correspond to those in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
In addition to the coefficient estimates, second-stage-regression R^2 and the number of observations, we also include results of endogeneity tests. Overidentification tests cannot be performed with a single excluded instrument.
The lower sections of the table contains selected first-stage results: coefficent estimates for the single excluded instruments (the included instruments' coefficent estimates are omitted) and results from tests for weak identification.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.5: Pooled OLS, least square dummy variable and fixed effects regressions with *First Firm Rank* as the main regressor (full sample‡)

	Log(Total compensation 1)$_t$				Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Firm rank (market capitalization)$_{t-k}$	0.304***	0.197***	0.197***	0.146*	0.256***	0.0840	0.0892	0.0412
	(5.23)	(3.50)	(3.65)	(1.66)	(4.02)	(1.39)	(1.51)	(0.43)
Firm rank (market capitalization)$_{t-1}$	2.234***	2.207***	2.263***	1.225***	2.113***	2.087***	2.136***	1.506***
	(38.15)	(38.06)	(40.67)	(9.45)	(33.77)	(34.48)	(36.08)	(11.76)
(Market to book)$_{t-1}$	-0.0304**	-0.0351***	-0.0611***	0.0316**	-0.0332**	-0.0363***	-0.0537***	0.0529***
	(-2.41)	(-2.79)	(-4.47)	(1.99)	(-2.37)	(-2.69)	(-3.61)	(2.86)
(Stock return)$_t$	2.793***	3.480***	3.626***	2.851***	5.844***	6.478***	6.588***	5.943***
	(9.42)	(11.05)	(11.48)	(8.80)	(18.12)	(18.77)	(19.14)	(16.34)
(Stock return)$_{t-1}$	1.770***	1.584***	1.992***	1.230***	4.982***	4.811***	5.093***	3.687***
	(6.41)	(5.54)	(7.07)	(4.92)	(14.79)	(13.87)	(14.65)	(11.23)
(Return on assets)$_t$	0.254	0.469***	0.277*	0.792***	1.050***	1.251***	1.097***	1.718***
	(1.50)	(2.84)	(1.69)	(4.27)	(5.05)	(6.33)	(5.55)	(8.14)
(Return on assets)$_{t-1}$	-0.384**	-0.275*	-0.350**	-0.0374	-0.655***	-0.384*	-0.452**	-0.276
	(-2.44)	(-1.74)	(-2.23)	(-0.23)	(-3.27)	(-1.95)	(-2.28)	(-1.34)
(Stock return volatility over 5 years)$_t$	6.099***	5.521***	4.118***	1.764**	2.552***	2.509***	1.597**	-0.324
	(9.10)	(8.17)	(5.96)	(2.31)	(3.52)	(3.51)	(2.20)	(-0.38)
Log(CEO tenure)$_t$	0.0190	-0.0159	-0.0221	-0.000890	0.156***	0.0943***	0.0893***	0.130***
	(1.17)	(-1.00)	(-1.46)	(-0.06)	(9.19)	(5.82)	(5.61)	(8.17)
(External hire indicator)$_t$	0.0543*	0.0605*	0.0735**	0.121***	-0.0293	-0.0129	-0.00395	-0.0101
	(1.68)	(1.95)	(2.52)	(2.81)	(-0.84)	(-0.40)	(-0.13)	(-0.21)
(CEO & Chairman indicator)$_t$	0.0921***	0.159***	0.172***	0.0289	0.0595*	0.169***	0.178***	0.0360
	(3.03)	(5.39)	(5.99)	(1.05)	(1.80)	(5.43)	(5.84)	(1.14)
MBA degree indicator	0.127***	0.105***	0.0900***	0.0463	0.126***	0.0965***	0.0874***	0.0262
	(4.36)	(3.70)	(3.37)	(1.28)	(3.82)	(3.08)	(2.86)	(0.57)
Female indicator	0.0724	-0.00274	-0.0306	0.146	0.105	0.00323	-0.0159	0.0671
	(0.65)	(-0.03)	(-0.28)	(1.23)	(0.95)	(0.03)	(-0.14)	(0.57)
Constant	6.220***	5.922***	6.039***	6.090***	5.599***	5.390***	5.463***	5.408***
	(72.80)	(52.15)	(55.21)	(54.97)	(61.30)	(47.94)	(49.64)	(44.08)
Year dummies		yes	yes	yes		yes	yes	yes
Industry dummies			yes				yes	
Firm fixed effects				yes				yes
No. of obs.	11008	11008	11008	11008	11073	11073	11073	11073
Adj. R^2	0.436	0.487	0.510	0.711	0.390	0.477	0.488	0.665

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports full-sample results from pooled OLS regressions (columns 1 and 5), LSDV regressions with year dummies (columns 2 and 6) and with year and industry dummies (columns 3 and 7), and with year and firm fixed effects (columns 4 and 8). The firm fixed effects model gives a separate constant term for each firm, the intercept ("Constant") included in columns 4 and 8 is the average value of the fixed effects. The dependent variables are log(TDC1) (columns 1-4) and log(TDC2) (columns 5-8). The main regressor variable is *First Firm Rank* based on market capitalization. Correspondingly, the control for current firm size is (lagged) current firm rank. The remaining controls correspond to those in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.6: Least squares dummy variable regressions with *Top Ten* as the main explanatory variable, with *Market capitalization* as the control for firm size

	Log(Total compensation 1)$_t$			Log(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
(Top ten)$_{t-k}$	0.123**	0.112*	0.0989	0.0773	0.0550	0.0614
	(2.31)	(1.94)	(1.59)	(1.29)	(0.85)	(0.88)
Log(Market capitalization)$_{t-1}$	0.454***	0.446***	0.446***	0.425***	0.422***	0.406***
	(46.78)	(41.92)	(30.18)	(39.79)	(36.52)	(24.78)
(Market to book)$_{t-1}$	-0.0825***	-0.0666***	-0.0639***	-0.0687***	-0.0589***	-0.0498**
	(-5.77)	(-4.47)	(-3.24)	(-4.46)	(-3.59)	(-2.20)
(Stock return)$_t$	3.997***	4.291***	4.224***	6.703***	7.387***	7.613***
	(14.01)	(14.64)	(9.64)	(21.40)	(20.34)	(14.37)
(Stock return)$_{t-1}$	2.136***	2.337***	2.262***	5.063***	5.477***	6.138***
	(8.16)	(7.75)	(5.38)	(15.77)	(15.11)	(11.75)
(Return on assets)$_t$	0.214	0.255	0.343	1.095***	1.217***	1.513***
	(1.44)	(1.43)	(1.36)	(6.14)	(5.63)	(4.55)
(Return on assets)$_{t-1}$	-0.382***	-0.593***	-0.607**	-0.610***	-0.744***	-1.209***
	(-2.64)	(-3.57)	(-2.47)	(-3.41)	(-3.45)	(-3.51)
(Stock return volatility over 5 years)$_t$	4.459***	4.651***	4.112***	2.058***	2.254***	1.425
	(6.95)	(6.00)	(3.60)	(3.11)	(2.79)	(1.23)
Log(CEO tenure)$_t$	-0.0357***	-0.0110	-0.00525	0.0807***	0.111***	0.135***
	(-2.71)	(-0.75)	(-0.27)	(5.79)	(7.21)	(6.38)
(External hire indicator)$_t$	0.103***	0.120***	0.131***	0.00764	0.0185	0.00531
	(4.01)	(3.88)	(2.99)	(0.28)	(0.57)	(0.12)
(CEO & Chairman indicator)$_t$	0.164***	0.153***	0.163***	0.170***	0.174***	0.218***
	(6.22)	(5.13)	(4.02)	(6.02)	(5.52)	(5.21)
MBA degree indicator	0.0639**	0.0571**	0.0502	0.0620**	0.0406	0.0617
	(2.57)	(2.07)	(1.28)	(2.20)	(1.31)	(1.45)
Female indicator	-0.0272	-0.0593	-0.158	-0.0153	-0.00317	-0.103
	(-0.24)	(-0.42)	(-0.74)	(-0.13)	(-0.02)	(-0.48)
Constant	3.736***	3.655***	3.550***	3.265***	3.139***	3.066***
	(35.92)	(32.62)	(25.58)	(30.44)	(26.67)	(20.28)
Year dummies	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes
No. of obs.	13195	9989	4673	13285	10054	4700
Adj. R^2	0.515	0.523	0.566	0.493	0.503	0.533
Data‡	***Full sample***	***Subsample 1***	***Subsample 2***	***Full sample***	***Subsample 1***	***Subsample 2***

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports results from LSDV regressions with year and industry dummies. The current (lagged) firm size control is *Market capitalization*. Columns 1 and 4, 2 and 5, and 3 and 6, correspond to regressions on the full sample, Subsample 1 and Subsample 2, respectively. The dependent variables are log(TDC1) (columns 1-3) and log(TDC2) (columns 4-6). The main regressor variable is *Top Ten*, an indicator variable that equals one if the individual started his/her career in one of the following firms: Arthur Andersen, AT&T, DuPont, Ford, General Electric, General Motors, IBM, McKinsey, Procter&Gamble, Texas Instruments (Schoar and Zuo, 2012, p. 9). The remaining controls correspond to those in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.7: "Reduced-form" regressions with macroeconomic conditions at the start of the first job or at graduation as the main explanatory variables (full sample‡), **with *Market capitalization* as the control for firm size**

	Log(Total compensation 1)$_t$										Log(Total compensation 2)$_t$									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(Recession year indicator)$_{t-k}$°	0.00361					-0.0963***					0.00913					-0.0580				
	(0.11)					(-2.85)					(0.27)					(-1.60)				
(Recession indicator)$_{t-k}$		0.0410					-0.0265					0.00769					-0.0420			
		(1.22)					(-0.75)					(0.22)					(-1.08)			
(US unemployment rate, 12-m. avg.)$_{t-k}$			0.000856					-0.00677					-0.00244					-0.0160		
			(0.11)					(-0.75)					(-0.29)					(-1.56)		
(Investment-grade-bond yield spread)$_{t-k}$				0.00954					0.0239					-0.00962					-0.0351	
				(0.38)					(0.75)					(-0.37)					(-1.02)	
(S&P 500 return, 1-yr)$_{t-k}$					0.00731					-0.104					0.0567					-0.0898
					(0.09)					(-1.26)					(0.69)					(-0.99)
Log(Market capitalization)$_{t-1}$	0.461***	0.460***	0.460***	0.461***	0.459***	0.453***	0.453***	0.453***	0.453***	0.452***	0.430***	0.430***	0.429***	0.430***	0.428***	0.427***	0.427***	0.426***	0.427***	0.425***
	(46.35)	(45.75)	(46.27)	(46.35)	(45.89)	(42.24)	(41.98)	(41.96)	(42.03)	(42.01)	(39.60)	(39.33)	(39.17)	(39.37)	(38.99)	(35.61)	(35.49)	(35.37)	(35.54)	(35.35)
(Market to book)$_{t-1}$	-0.0864***	-0.0860***	-0.0869***	-0.0866***	-0.0859***	-0.0710***	-0.0716***	-0.0708***	-0.0714***	-0.0716***	-0.0717***	-0.0718***	-0.0720***	-0.0717***	-0.0707***	-0.0641***	-0.0648***	-0.0624***	-0.0639***	-0.0638***
	(-5.80)	(-5.80)	(-5.84)	(-5.83)	(-5.77)	(-4.56)	(-4.54)	(-4.49)	(-4.54)	(-4.52)	(-4.37)	(-4.38)	(-4.39)	(-4.38)	(-4.31)	(-3.59)	(-3.61)	(-3.47)	(-3.55)	(-3.53)
(Stock return)$_t$	4.038***	4.042***	4.006***	4.039***	3.990***	4.363***	4.346***	4.328***	4.344***	4.339***	6.624***	6.624***	6.586***	6.623***	6.561***	7.180***	7.169***	7.201***	7.178***	7.228***
	(14.44)	(14.42)	(14.30)	(14.45)	(14.19)	(15.36)	(15.30)	(15.14)	(15.27)	(15.17)	(21.65)	(21.66)	(21.49)	(21.64)	(21.33)	(20.27)	(20.24)	(20.36)	(20.25)	(20.34)
(Stock return)$_{t-1}$	2.182***	2.187***	2.189***	2.181***	2.182***	2.501***	2.507***	2.481***	2.506***	2.493***	5.028***	5.029***	5.037***	5.028***	5.009***	5.580***	5.586***	5.574***	5.580***	5.614***
	(8.40)	(8.42)	(8.41)	(8.40)	(8.37)	(8.85)	(8.82)	(8.70)	(8.83)	(8.71)	(15.83)	(15.81)	(15.83)	(15.83)	(15.71)	(15.98)	(15.96)	(15.88)	(15.94)	(15.95)
(Return on assets)$_t$	0.178	0.176	0.189	0.178	0.206	0.0333	0.0308	0.0492	0.0318	0.0420	1.079***	1.079***	1.096***	1.080***	1.113***	0.929***	0.926***	0.936***	0.928***	0.922***
	(1.20)	(1.19)	(1.27)	(1.20)	(1.38)	(0.19)	(0.18)	(0.29)	(0.19)	(0.24)	(6.06)	(6.05)	(6.12)	(6.05)	(6.19)	(4.43)	(4.40)	(4.44)	(4.42)	(4.35)
(Return on assets)$_{t-1}$	-0.414***	-0.412***	-0.423***	-0.414***	-0.432***	-0.328**	-0.328**	-0.336**	-0.324*	-0.328*	-0.676***	-0.675***	-0.690***	-0.674***	-0.696***	-0.616***	-0.616***	-0.614***	-0.619***	-0.623***
	(-2.87)	(-2.85)	(-2.92)	(-2.87)	(-2.97)	(-1.98)	(-1.97)	(-2.00)	(-1.94)	(-1.96)	(-3.87)	(-3.87)	(-3.95)	(-3.87)	(-3.97)	(-3.07)	(-3.07)	(-3.05)	(-3.08)	(-3.09)
(Stock return volatility over 5 years)$_t$	4.468***	4.458***	4.371***	4.458***	4.265***	3.865***	3.897***	3.966***	3.852***	3.860***	1.850***	1.848***	1.745***	1.861***	1.701**	1.330*	1.367*	1.419*	1.374*	1.286
	(6.84)	(6.83)	(6.72)	(6.81)	(6.56)	(5.05)	(5.06)	(5.13)	(5.03)	(5.08)	(2.74)	(2.74)	(2.59)	(2.75)	(2.52)	(1.68)	(1.73)	(1.79)	(1.74)	(1.64)
Log(CEO tenure)$_t$	-0.0487***	-0.0492***	-0.0474***	-0.0482***	-0.0480***	-0.0408***	-0.0419***	-0.0436***	-0.0404***	-0.0400**	0.0689***	0.0688***	0.0696***	0.0684***	0.0705***	0.0773***	0.0772***	0.0729***	0.0733***	0.0785***
	(-3.74)	(-3.78)	(-3.58)	(-3.70)	(-3.68)	(-2.73)	(-2.80)	(-2.85)	(-2.66)	(-2.57)	(5.08)	(5.08)	(5.05)	(5.04)	(5.12)	(4.86)	(4.87)	(4.47)	(4.52)	(4.75)
(External hire indicator)$_t$	0.0998***	0.0995***	0.0966***	0.0998***	0.0912***	0.0704**	0.0694**	0.0659**	0.0698**	0.0641**	0.00235	0.00241	-0.000808	0.00251	-0.00495	-0.0145	-0.0153	-0.0193	-0.0149	-0.0193
	(3.86)	(3.85)	(3.74)	(3.86)	(3.58)	(2.41)	(2.38)	(2.25)	(2.39)	(2.20)	(0.09)	(0.09)	(-0.03)	(0.09)	(-0.18)	(-0.47)	(-0.50)	(-0.63)	(-0.49)	(-0.63)
(CEO & Chairman indicator)$_t$	0.169***	0.169***	0.172***	0.169***	0.168***	0.171***	0.172***	0.173***	0.175***	0.179***	0.170***	0.170***	0.173***	0.170***	0.171***	0.179***	0.179***	0.181***	0.179***	0.186***
	(6.47)	(6.45)	(6.58)	(6.47)	(6.42)	(5.77)	(5.79)	(5.79)	(5.83)	(5.98)	(6.13)	(6.12)	(6.22)	(6.11)	(6.13)	(5.59)	(5.57)	(5.61)	(5.56)	(5.74)
MBA degree indicator	0.0750***	0.0752***	0.0766***	0.0746***	0.0787***	0.0527*	0.0534*	0.0587**	0.0522*	0.0538*	0.0707**	0.0704**	0.0727**	0.0706**	0.0732**	0.0512*	0.0511*	0.0591*	0.0545*	0.0540*
	(2.99)	(3.00)	(3.05)	(2.97)	(3.14)	(1.93)	(1.95)	(2.15)	(1.91)	(1.95)	(2.49)	(2.47)	(2.55)	(2.48)	(2.57)	(1.66)	(1.65)	(1.91)	(1.77)	(1.73)
Female indicator	-0.0216	-0.0177	-0.0235	-0.0225	-0.0233	0.0684	0.0657	0.0674	0.0620	0.0621	-0.00710	-0.00595	-0.00657	-0.00561	-0.0111	0.0559	0.0552	0.0592	0.0575	0.0529
	(-0.19)	(-0.15)	(-0.21)	(-0.20)	(-0.20)	(0.78)	(0.77)	(0.80)	(0.73)	(0.74)	(-0.06)	(-0.05)	(-0.06)	(-0.05)	(-0.09)	(0.53)	(0.53)	(0.57)	(0.55)	(0.51)
Constant	3.730***	3.733***	3.725***	3.721***	3.751***	3.833***	3.763***	3.775***	3.736***	3.752***	3.290***	3.297***	3.322***	3.310***	3.310***	3.337***	3.296***	3.360***	3.329***	3.286***
	(34.43)	(36.05)	(32.06)	(34.78)	(35.89)	(33.19)	(34.01)	(31.19)	(32.64)	(33.73)	(29.76)	(30.99)	(27.33)	(29.76)	(30.77)	(26.77)	(27.46)	(25.40)	(26.43)	(27.59)
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
No. of obs.	13766	13766	13689	13766	13609	10580	10580	10508	10580	10412	13861	13861	13782	13861	13698	10643	10643	10570	10643	10471
Adj. R^2	0.510	0.511	0.510	0.511	0.511	0.521	0.520	0.521	0.520	0.521	0.487	0.487	0.487	0.487	0.487	0.491	0.491	0.493	0.491	0.493
Initial conditions at *t-k* refer to:	**macro conditions at the time of the first job**					**macro conditions at the time of graduation**					**macro conditions at the time of the first job**					**macro conditions at the time of graduation**				

‡: Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.
°: Variable defined as in Schoar and Zuo (2012).

The table reports full-sample results from LSDV regressions with year and industry dummies, with *Market capitalization* as the lagged firm size control. These are "reduced form" regressions since five of the variables that we used earlier as excluded instruments (see IV regressions in Tables 3 and 4) now appear directly in the main equation. Schoar and Zuo (2012)'s recession year indicator, our recession indicator, the US unemployment rate, the investment-grade-bond yield spread and the S&P 500 volatility are included to capture macroeconomic conditions at the time (*t-k*) of the first job - the first job as it appears in our data (columns 1-5 and 11-15), and at the time of graduation (columns 6-10 and 16-20). Since we do not have graduation information on all individuals, the number of observations in the regressions with macroeconomic conditions at the time of graduation is lower. The remaining controls correspond to those in Table 3.2. The dependent variables are log(TDC1) (columns 1-10) and log(TDC2) (columns 11-20). For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.8: Regressions on *First CEO Compensation*

Panel A: Cross-section regressions

	First Log(Total compensation 1)$_t$						**First Log(Total compensation 2)$_t$**					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Log(Market capitalization)$_{t-k}$	0.0418***			0.0414***			0.0292**			0.0294**		
	(4.39)			(3.88)			(2.96)			(2.51)		
Log(Total assets)$_{t-k}$		0.0340***			0.0285***			0.0240***			0.0213*	
		(3.65)			(2.70)			(2.58)			(1.90)	
(Top ten)$_{t-k}$			0.270***			0.229***			0.0987			0.0546
			(4.01)			(3.23)			(1.40)			(0.73)
Log(Market capitalization)$_{t-1}$	0.437***		0.429***	0.432***		0.421***	0.388***		0.385***	0.377***		0.377***
	(31.88)		(35.45)	(27.40)		(29.63)	(29.28)		(31.85)	(24.20)		(26.07)
Log(Total assets)$_{t-1}$		0.374***			0.374***			0.344***			0.342***	
		(27.80)			(23.78)			(25.74)			(21.60)	
(Market to book)$_{t-1}$	-0.0156	0.162***	-0.0132	-0.0172	0.173***	-0.00183	-0.0448***	0.124***	-0.0329**	-0.0494**	0.125***	-0.0297
	(-1.02)	(10.89)	(-0.96)	(-0.82)	(8.73)	(-0.09)	(-2.76)	(7.69)	(-2.17)	(-2.28)	(5.94)	(-1.40)
(Stock return)$_t$	2.485***	1.993***	2.423***	2.400***	2.339***	2.682***	4.727***	4.282***	4.667***	5.412***	5.058***	5.333***
	(4.46)	(3.75)	(4.66)	(3.15)	(3.17)	(3.70)	(8.50)	(8.21)	(8.97)	(7.53)	(7.24)	(7.66)
(Stock return)$_{t-1}$	-0.0758	0.355	-0.257	-0.989	-0.477	-0.976*	4.145***	4.034***	3.464***	4.383***	4.299***	3.815***
	(-0.15)	(0.77)	(-0.57)	(-1.59)	(-0.79)	(-1.68)	(8.03)	(8.27)	(6.99)	(6.67)	(6.73)	(5.86)
(Return on assets)$_t$	0.598*	0.630**	0.525*	0.887**	0.992**	0.820*	1.408***	1.485***	1.414***	1.550***	1.774***	1.665***
	(1.85)	(2.07)	(1.71)	(2.04)	(2.32)	(1.93)	(4.21)	(4.72)	(4.47)	(3.34)	(3.94)	(3.69)
(Return on assets)$_{t-1}$	-0.664**	-0.00393	-0.468	-0.978**	-0.367	-0.826**	-1.123***	-0.637**	-1.081***	-1.381***	-0.884**	-1.359***
	(-2.15)	(-0.01)	(-1.61)	(-2.40)	(-0.92)	(-2.11)	(-3.47)	(-2.13)	(-3.59)	(-3.11)	(-2.09)	(-3.23)
(Stock return volatility over 5 years)$_t$	7.774***	7.588***	7.625***	7.480***	8.127***	8.618***	3.940***	4.204***	4.258***	3.897***	4.516***	4.979***
	(8.28)	(8.30)	(8.55)	(6.34)	(7.25)	(7.91)	(4.34)	(4.84)	(4.96)	(3.30)	(3.93)	(4.36)
Log(CEO tenure)$_t$	-0.0454***	-0.0613***	-0.0757***	-0.0475**	-0.0766***	-0.0836***	0.0495***	0.0459***	0.0302**	0.0539**	0.0349*	0.0248
	(-2.60)	(-3.78)	(-5.07)	(-2.32)	(-4.05)	(-4.80)	(2.82)	(2.95)	(2.04)	(2.53)	(1.90)	(1.41)
(External hire indicator)$_t$	0.210***	0.216***	0.237***	0.310***	0.305***	0.317***	0.0774**	0.0778**	0.0957***	0.134***	0.146***	0.163***
	(5.66)	(6.13)	(7.30)	(6.68)	(6.87)	(7.66)	(2.05)	(2.23)	(2.91)	(2.74)	(3.22)	(3.82)
(CEO & Chairman indicator)$_t$	0.0199	-0.0103	0.0149	-0.00848	-0.0233	0.00767	0.0214	-0.0151	0.0152	-0.0259	-0.0392	-0.00597
	(0.55)	(-0.29)	(0.44)	(-0.20)	(-0.57)	(0.20)	(0.57)	(-0.43)	(0.44)	(-0.57)	(-0.93)	(-0.14)
MBA degree indicator	0.0628*	0.0802**	0.0967***	0.0766*	0.102***	0.120***	0.0593*	0.0737**	0.0880***	0.0374	0.0613	0.0743*
	(1.92)	(2.50)	(3.18)	(1.87)	(2.59)	(3.17)	(1.74)	(2.26)	(2.77)	(0.88)	(1.56)	(1.93)
Female indicator	0.0283	0.0857	0.0760	-0.0346	0.0415	0.00922	0.101	0.142	0.131	0.103	0.149	0.123
	(0.29)	(0.85)	(0.81)	(-0.26)	(0.31)	(0.07)	(1.02)	(1.49)	(1.39)	(0.88)	(1.29)	(1.08)
Constant	4.091***	4.190***	4.428***	4.154***	4.221***	4.446***	4.009***	3.952***	4.196***	4.136***	4.005***	4.253***
	(34.48)	(32.96)	(41.73)	(28.69)	(26.64)	(35.22)	(34.50)	(31.90)	(38.88)	(29.00)	(26.43)	(32.30)
No. of obs.	2397	2933	2944	1560	1920	1929	2432	2987	3000	1581	1958	1968
Adj. R^2	0.423	0.359	0.394	0.442	0.382	0.414	0.370	0.329	0.346	0.361	0.326	0.339
Data[‡]	**Subsample CS**			**Subsample CS1**			**Subsample CS**			**Subsample CS1**		

(continued)

Table 3.8 ***(continued)***

Panel B: "Reduced-form" regressions

	First Log(Total compensation 1)$_t$										First Log(Total compensation 2)$_t$									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(Recession year indicator)$_{t-k}$°	-0.00731					-0.122***					0.00927					-0.0449				
	(-0.19)					(-3.02)					(0.24)					(-1.02)				
(Recession indicator)$_{t-k}$		0.00269					-0.0515					-0.0192					0.000312			
		(0.06)					(-1.29)					(-0.46)					(0.01)			
(US unemployment rate, 12-m. avg.)$_{t-k}$			0.0249***					0.0335***					0.0312***					0.0173		
			(2.79)					(3.06)					(3.20)					(1.45)		
(Investment-grade-bond yield spread)$_{t-k}$				0.105***					0.123***					0.0979***					0.122***	
				(3.42)					(3.55)					(3.11)					(3.41)	
(S&P 500 return, 1-yr)$_{t-k}$					0.0690					-0.0135					-0.00793					-0.196*
					(0.73)					(-0.13)					(-0.08)					(-1.89)
Log(Market capitalization)$_{t-1}$	0.436***	0.436***	0.438***	0.438***	0.436***	0.445***	0.445***	0.442***	0.442***	0.444***	0.395***	0.395***	0.396***	0.397***	0.394***	0.400***	0.400***	0.400***	0.398***	0.400***
	(35.83)	(35.66)	(35.93)	(36.18)	(35.45)	(33.29)	(33.15)	(32.98)	(32.98)	(32.67)	(33.01)	(32.95)	(33.13)	(33.34)	(32.67)	(30.06)	(29.99)	(29.96)	(29.87)	(29.67)
(Market to book)$_{t-1}$	-0.0186	-0.0186	-0.0196	-0.0196	-0.0194	-0.0135	-0.0129	-0.0131	-0.0130	-0.0133	-0.0395***	-0.0397***	-0.0408***	-0.0404***	-0.0410***	-0.0459***	-0.0456***	-0.0497***	-0.0459***	-0.0521***
	(-1.38)	(-1.38)	(-1.46)	(-1.46)	(-1.43)	(-0.87)	(-0.82)	(-0.83)	(-0.83)	(-0.84)	(-2.61)	(-2.62)	(-2.70)	(-2.67)	(-2.70)	(-2.72)	(-2.70)	(-2.93)	(-2.72)	(-3.07)
(Stock return)$_t$	2.343***	2.347***	2.297***	2.314***	2.326***	2.401***	2.407***	2.315***	2.361***	2.333***	4.689***	4.684***	4.638***	4.655***	4.656***	5.390***	5.394***	5.379***	5.342***	5.476***
	(4.64)	(4.64)	(4.53)	(4.58)	(4.59)	(3.97)	(3.98)	(3.84)	(3.92)	(3.83)	(9.41)	(9.38)	(9.29)	(9.34)	(9.29)	(8.83)	(8.82)	(8.76)	(8.77)	(8.92)
(Stock return)$_{t-1}$	-0.163	-0.161	-0.113	-0.155	-0.129	-0.0734	-0.0164	-0.0281	0.00336	0.0598	3.590***	3.590***	3.655***	3.595***	3.628***	4.123***	4.139***	4.215***	4.176***	4.412***
	(-0.37)	(-0.36)	(-0.25)	(-0.35)	(-0.29)	(-0.14)	(-0.03)	(-0.05)	(0.01)	(0.11)	(7.37)	(7.37)	(7.46)	(7.37)	(7.42)	(7.26)	(7.28)	(7.40)	(7.34)	(7.77)
(Return on assets)$_t$	0.624**	0.623**	0.616**	0.635**	0.652**	0.508	0.503	0.508	0.504	0.556	1.498***	1.499***	1.508***	1.512***	1.549***	1.557***	1.553***	1.545***	1.561***	1.532***
	(2.04)	(2.03)	(2.03)	(2.08)	(2.16)	(1.41)	(1.40)	(1.44)	(1.40)	(1.55)	(4.81)	(4.80)	(4.87)	(4.85)	(5.01)	(4.28)	(4.27)	(4.30)	(4.32)	(4.26)
(Return on assets)$_{t-1}$	-0.594**	-0.593**	-0.587**	-0.621**	-0.596**	-0.582*	-0.583*	-0.556*	-0.573*	-0.565*	-1.167***	-1.166***	-1.178***	-1.194***	-1.199***	-1.214***	-1.209***	-1.214***	-1.210***	-1.190***
	(-2.07)	(-2.07)	(-2.07)	(-2.17)	(-2.09)	(-1.75)	(-1.75)	(-1.70)	(-1.72)	(-1.70)	(-3.98)	(-3.98)	(-4.04)	(-4.08)	(-4.10)	(-3.60)	(-3.58)	(-3.63)	(-3.62)	(-3.53)
(Stock return volatility over 5 years)$_t$	7.766***	7.766***	7.628***	7.581***	7.849***	7.987***	8.072***	7.910***	7.713***	8.172***	4.462***	4.463***	4.269***	4.289***	4.607***	3.723***	3.747***	3.690***	3.413***	3.852***
	(8.77)	(8.77)	(8.52)	(8.54)	(8.81)	(8.13)	(8.19)	(7.96)	(7.82)	(8.22)	(5.25)	(5.26)	(4.99)	(5.03)	(5.40)	(3.71)	(3.73)	(3.65)	(3.38)	(3.80)
Log(CEO tenure)$_t$	-0.0895***	-0.0895***	-0.0861***	-0.0854***	-0.0888***	-0.0988***	-0.100***	-0.0948***	-0.0924***	-0.0966***	0.0233*	0.0232*	0.0269*	0.0272*	0.0233	0.0188	0.0181	0.0216	0.0261	0.0224
	(-6.27)	(-6.26)	(-5.93)	(-5.96)	(-6.12)	(-6.18)	(-6.26)	(-5.78)	(-5.67)	(-5.84)	(1.65)	(1.65)	(1.88)	(1.92)	(1.62)	(1.16)	(1.12)	(1.31)	(1.58)	(1.33)
(External hire indicator)$_t$	0.243***	0.243***	0.242***	0.239***	0.244***	0.230***	0.227***	0.230***	0.229***	0.237***	0.0794**	0.0799**	0.0770**	0.0759**	0.0766**	0.0742**	0.0737**	0.0727**	0.0743**	0.0776**
	(7.70)	(7.68)	(7.63)	(7.57)	(7.69)	(6.35)	(6.30)	(6.36)	(6.37)	(6.48)	(2.49)	(2.50)	(2.41)	(2.38)	(2.39)	(2.05)	(2.04)	(2.02)	(2.06)	(2.12)
(CEO & Chairman indicator)$_t$	0.0272	0.0273	0.0359	0.0321	0.0301	0.0591	0.0591	0.0729**	0.0740**	0.0660*	0.0236	0.0240	0.0348	0.0280	0.0270	0.0584	0.0585	0.0614	0.0733*	0.0575
	(0.82)	(0.82)	(1.08)	(0.97)	(0.90)	(1.61)	(1.60)	(1.96)	(1.99)	(1.78)	(0.69)	(0.71)	(1.01)	(0.82)	(0.79)	(1.49)	(1.50)	(1.57)	(1.87)	(1.46)
MBA degree indicator	0.114***	0.114***	0.114***	0.113***	0.116***	0.122***	0.122***	0.120***	0.118***	0.123***	0.0967***	0.0961***	0.0971***	0.0949***	0.0995***	0.0960***	0.0963***	0.0947***	0.0905**	0.0933***
	(3.75)	(3.77)	(3.77)	(3.73)	(3.80)	(3.57)	(3.55)	(3.50)	(3.44)	(3.54)	(3.06)	(3.05)	(3.08)	(3.02)	(3.14)	(2.72)	(2.73)	(2.68)	(2.58)	(2.63)
Female indicator	0.0845	0.0850	0.0679	0.0704	0.0797	0.154	0.156	0.139	0.152	0.152	0.144	0.142	0.123	0.130	0.143	0.236**	0.238**	0.230*	0.231*	0.237**
	(0.90)	(0.91)	(0.73)	(0.75)	(0.85)	(1.48)	(1.50)	(1.32)	(1.41)	(1.45)	(1.52)	(1.50)	(1.28)	(1.37)	(1.51)	(2.01)	(2.02)	(1.94)	(1.95)	(2.01)
Constant	4.434***	4.427***	4.258***	4.296***	4.417***	4.482***	4.397***	4.200***	4.262***	4.368***	4.143***	4.152***	3.943***	4.028***	4.152***	4.171***	4.137***	4.043***	4.012***	4.142***
	(39.80)	(41.44)	(35.29)	(38.34)	(40.83)	(34.97)	(35.88)	(30.24)	(33.37)	(35.17)	(37.22)	(39.11)	(31.25)	(36.04)	(38.65)	(33.00)	(34.09)	(29.32)	(31.73)	(33.65)
No. of obs.	3122	3122	3103	3122	3084	2253	2253	2235	2253	2202	3182	3182	3161	3182	3141	2294	2294	2275	2294	2239
Adj. R^2	0.383	0.383	0.384	0.386	0.383	0.409	0.407	0.410	0.410	0.407	0.346	0.346	0.347	0.348	0.346	0.363	0.362	0.365	0.366	0.367
Initial conditions at *t-k* refer to:	**macro conditions at the time of the first job**					**macro conditions at the time of graduation**					**macro conditions at the time of the first job**					**macro conditions at the time of graduation**				

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to subsamples.
°: Variable defined as in Schoar and Zuo (2012).

Panel A reports results from cross-section regressions on Subsample CS (columns 1-3 and 7-9) and Subsample CS1 (Columns 4-6 and 10-12). These are obtained from the full sample by selecting only the observations corresponding to the individuals' first year as CEO. The dependent variable is thus *First CEO Compensation*, measured by log(TDC1) (Columns 1-6) and log(TDC2) (Columns 7-12). The main explanatory variables are, as before, *First Market Capitalization* (Columns 1, 4, 7 and 10), *First Total Assets* (Columns 2, 5, 8 and 11), and *Top Ten* (Columns 3, 6, 9 and 12). The remaining controls correspond to those in Table 3.2. For a more detailed description of the controls, see Table 3.A2 in Appendix 3.2.
In Panel B, we report results from cross-section regressions with market capitalization as the lagged firm size control. These are the cross-section version of the "reduced-form"regressions in Table 3.7 in that we select only those observations at time *t* that correspond to the individuals' first year as a CEO. Schoar and Zuo (2012)'s recession year indicator, our recession indicator, the US unemployment rate, the investment-grade bond yield spread and the S&P 500 volatility are included to capture macroeconomic conditions at the time (*t-k*) of the first job (Columns 1-5 and 11-15), and at the time of graduation (Columns 6-10 and 16-20). Since we do not have graduation information on all individuals, the number of observations in regressions with macroeconomic conditions at the time of graduation is lower. The dependent variables are log(TDC1) (Columns 1-10) and log(TDC2) (Columns 11-20) in the first year as CEO. Market capitalization is the lagged firm size control. The remaining controls correspond to those in Table 3.2 and are described in detail in Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.9: Alternative regressions on *First CEO Compensation*

	First Log(Total compensation 1)$_t$				First Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(Recession year indicator)$_{t-k}$	-0.0823	-0.0133			-0.0495	0.0109		
	(-1.24)	(-0.22)			(-0.74)	(0.18)		
(Top ten)$_{t-k}$			0.610***	0.299***			0.324***	0.0318
			(5.59)	(2.93)			(3.13)	(0.33)
Log(Total assets)$_t$		0.288***		0.288***		0.253***		0.253***
		(6.95)		(6.93)		(6.21)		(6.17)
Log(Sales)$_t$		0.0728*		0.0678*		0.0741*		0.0736*
		(1.84)		(1.71)		(1.89)		(1.87)
(Return on assets)$_t$		0.394**		0.406**		1.408***		1.409***
		(1.99)		(2.07)		(7.03)		(7.04)
Constant	6.770***	4.232***	6.717***	4.256***	6.794***	4.258***	6.761***	4.273***
	(20.98)	(14.15)	(21.51)	(14.31)	(23.82)	(16.34)	(24.38)	(16.59)
Decade dummies	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes
No. of obs.	2857	2857	2857	2857	2912	2912	2912	2912
Adj. R^2	0.039	0.264	0.049	0.267	0.015	0.227	0.018	0.227

The table reports results from cross-section regressions on Subsample CS. Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the subsamples.
We replicate the regressions in Tables IV and Panel B of Table V in Schoar and Zuo (2012). The dependent variable is *First CEO Compensation*, measured by log(TDC1) (Columns 1-4) and log(TDC2) (Columns 5-8). The main explanatory variables are the *Recession year indicator* and the *Top ten* indicator. In the even-numbered columns, controls for firm size and performance are included, following the original specifications. Schoar and Zuo (2012) control for decade and industry time-invariant effects. "Decade" is the decade in which the CEO was born and the "industry", identified according to the first SIC digit, corresponds to the industry in which the individual started his/her career. In the cross-section regressions, the *Recession year indicator* is not instrumented with year of birth plus average age at the start of the first job (in Schoar and Zuo's sample, the average age is 24, in our sample, it is 30). Table 3.A2 in Appendix 3.2 contains a detailed description of the variables.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors are in parentheses.

Table 3.10: Cross-section OLS regressions for selected years with *First Market Capitalization* as the main explanatory variable

Panel A: Full sample[‡]

	Log(Total compensation 1)$_t$			**Log(Total compensation 2)$_t$**		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}$	0.0256	0.0259*	0.00158	0.0207	-0.00473	0.0104
	(0.99)	(2.02)	(0.12)	(0.86)	(-0.41)	(0.80)
Log(Market capitalization)$_{t-1}$	0.349***	0.456***	0.442***	0.345***	0.420***	0.408***
	(11.35)	(25.41)	(23.78)	(8.34)	(14.78)	(18.22)
(Market to book)$_{t-1}$	-0.0616	-0.0746**	-0.0793**	-0.0590	-0.0124	-0.123**
	(-1.61)	(-2.44)	(-2.71)	(-1.52)	(-0.34)	(-2.68)
(Stock return)$_t$	6.041***	3.519***	4.214***	5.614***	5.982***	8.973***
	(3.91)	(3.45)	(3.42)	(3.77)	(4.24)	(10.53)
(Stock return)$_{t-1}$	5.927**	2.434**	1.517	6.511**	5.148***	6.077***
	(2.97)	(2.39)	(1.36)	(2.85)	(5.58)	(4.63)
(Return on assets)$_t$	-1.376	-0.259	0.827	-0.162	1.219*	2.273**
	(-1.66)	(-0.43)	(0.85)	(-0.18)	(2.02)	(2.47)
(Return on assets)$_{t-1}$	1.146	0.0293	-0.0545	0.816	-1.640***	-0.719**
	(1.80)	(0.06)	(-0.07)	(1.38)	(-3.30)	(-2.60)
(Stock return volatility over 5 years)$_t$	5.872	7.619***	5.841***	0.980	7.683***	3.733
	(1.28)	(5.35)	(3.82)	(0.25)	(4.63)	(1.45)
Log(CEO tenure)$_t$	0.0374	0.00993	-0.0339	0.117***	0.0666**	0.116***
	(0.94)	(0.40)	(-0.75)	(3.72)	(2.58)	(3.34)
(External hire indicator)$_t$	0.0817	0.141**	0.0648	0.0661	0.0553	-0.0258
	(0.73)	(2.83)	(1.48)	(0.92)	(1.11)	(-0.48)
(CEO & Chairman indicator)$_t$	0.163***	0.152**	0.220***	0.0296	0.123*	0.220***
	(3.24)	(2.48)	(6.44)	(0.34)	(2.16)	(4.85)
MBA degree indicator	0.144***	0.0780	0.101*	0.0613	0.0942	0.0297
	(3.45)	(1.29)	(2.15)	(0.91)	(1.23)	(0.48)
Female indicator	-1.021***	0.0165	-0.0738	0.179	0.0184	-0.145
	(-9.39)	(0.10)	(-0.56)	(0.26)	(0.10)	(-0.85)
Constant	4.308***	4.085***	4.507***	3.956***	3.933***	4.079***
	(12.66)	(20.29)	(15.10)	(13.18)	(17.35)	(16.77)
No. of obs.	490	822	994	492	821	999
Adj. R^2	0.452	0.460	0.486	0.434	0.434	0.450
Year (t)	**1995**	**2000**	**2005**	**1995**	**2000**	**2005**

(continued)

Table 3.10 *(continued)*

Panel B: Subsample 2‡

	Log(Total compensation 1)$_t$			Log(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}$	0.00549	0.0642**	-0.00988	-0.0156	0.0111	-0.00110
	(0.23)	(3.16)	(-0.95)	(-0.35)	(0.46)	(-0.08)
Log(Market capitalization)$_{t-1}$	0.332***	0.445***	0.448***	0.336***	0.399***	0.422***
	(12.10)	(26.81)	(22.58)	(5.15)	(7.31)	(21.07)
(Market to book)$_{t-1}$	-0.283***	-0.0799*	-0.0567	-0.192**	0.00741	-0.126**
	(-5.11)	(-2.01)	(-1.28)	(-2.86)	(0.23)	(-2.78)
(Stock return)$_t$	4.322*	3.212	4.904***	4.739*	6.408***	8.635***
	(1.93)	(1.80)	(4.08)	(2.11)	(3.79)	(5.88)
(Stock return)$_{t-1}$	10.80	3.510**	3.359*	10.14**	5.684***	8.314**
	(1.74)	(2.56)	(1.98)	(2.26)	(5.56)	(3.08)
(Return on assets)$_t$	-1.668	1.224	-0.259	1.718	3.926***	2.059*
	(-0.99)	(0.68)	(-0.25)	(0.74)	(3.69)	(1.95)
(Return on assets)$_{t-1}$	3.001	-1.100	0.716	0.462	-4.852***	-0.619
	(1.71)	(-0.59)	(0.79)	(0.28)	(-6.79)	(-0.99)
(Stock return volatility over 5 years)$_t$	11.71*	3.759*	6.369***	9.263	9.153***	6.001**
	(1.82)	(2.06)	(3.26)	(1.36)	(3.63)	(3.05)
Log(CEO tenure)$_t$	-0.0431	0.0769	-0.0661	-0.0580	0.127	0.149***
	(-0.40)	(1.06)	(-1.17)	(-0.86)	(1.43)	(3.37)
(External hire indicator)$_t$	0.0472	0.122*	0.0984	0.0296	0.158	0.00684
	(0.22)	(1.88)	(1.64)	(0.19)	(1.70)	(0.08)
(CEO & Chairman indicator)$_t$	0.136	0.129	0.182***	0.191	0.171	0.293***
	(0.65)	(1.40)	(6.07)	(0.79)	(1.27)	(4.12)
MBA degree indicator	0.0807	-0.0377	0.0348	0.0871	0.0578	-0.0405
	(0.97)	(-0.79)	(0.56)	(0.88)	(0.55)	(-0.56)
Female indicator	-1.137***	-0.114	-0.192	0.102	-0.209*	-0.115
	(-8.64)	(-0.44)	(-1.12)	(0.16)	(-1.90)	(-0.49)
Constant	4.976***	3.853***	4.668***	4.598***	3.716***	3.843***
	(9.63)	(10.08)	(12.85)	(12.28)	(6.43)	(16.17)
No. of obs.	130	271	382	130	271	382
Adj. R^2	0.454	0.511	0.537	0.381	0.499	0.504
Year (t)	**1995**	**2000**	**2005**	**1995**	**2000**	**2005**

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports results from a robustness check with cross-section regressions for years 1995, 2000 and 2005. For each of the three years, the cross-sections were selected from the full sample (Panel A) and Subsample 2 (Panel B). The average age of individuals at the start of the first job in these cross sections is between 35 and 37 years. The average difference between the current date (1995/2000/2005) and the start date of the first job is between 17 and 19 years.
The dependent variables are log(TDC1) (columns 1-3) and log(TDC2) (columns 4-6). The explanatory variable of interest is *First Market Capitalization*. The remaining controls correspond to those used in our benchmark specifications in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the industry level (using the Fama-French 12 industry classification) are in parentheses.

Table 3.11: Instrumental variable regressions using a set of employment-related excluded instruments, with *First Market Capitalization* as the instrumented variable (full sample‡)

	Log(Total compensation 1)$_t$			Log(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}^{\Delta}$	-0.235	-0.277	-0.267	-0.153	-0.209	-0.194
	(-1.09)	(-1.18)	(-1.06)	(-0.77)	(-0.99)	(-0.85)
Log(Market capitalization)$_{t-1}$	0.584***	0.577***	0.582***	0.527***	0.513***	0.516***
	(5.47)	(5.24)	(4.94)	(5.33)	(5.16)	(4.85)
(Market to book)$_{t-1}$	-0.0633***	-0.0636***	-0.0876***	-0.0641***	-0.0604***	-0.0756***
	(-3.53)	(-3.54)	(-4.43)	(-3.66)	(-3.55)	(-4.05)
(Stock return)$_t$	3.390***	3.770***	3.930***	6.399***	6.728***	6.846***
	(9.96)	(10.36)	(10.65)	(18.60)	(18.01)	(18.39)
(Stock return)$_{t-1}$	0.850	0.862	1.297*	4.281***	4.326***	4.636***
	(1.40)	(1.23)	(1.80)	(7.45)	(6.64)	(6.96)
(Return on assets)$_t$	0.311	0.555***	0.393*	1.074***	1.303***	1.171***
	(1.58)	(2.58)	(1.74)	(4.97)	(5.82)	(5.07)
(Return on assets)$_{t-1}$	-0.818**	-0.759**	-0.832**	-0.947**	-0.734**	-0.794**
	(-2.08)	(-1.96)	(-2.03)	(-2.49)	(-1.99)	(-2.03)
(Stock return volatility over 5 years)$_t$	7.494***	6.234***	4.885***	3.900***	3.074***	2.236**
	(7.53)	(6.26)	(5.11)	(4.07)	(3.28)	(2.49)
Log(CEO tenure)$_t$	-0.141	-0.190	-0.187	0.0455	-0.0319	-0.0258
	(-1.20)	(-1.41)	(-1.31)	(0.42)	(-0.26)	(-0.20)
External hire indicator	0.330	0.358	0.366	0.163	0.206	0.204
	(1.59)	(1.60)	(1.50)	(0.85)	(1.02)	(0.93)
(CEO & Chairman indicator)$_t$	0.127***	0.200***	0.206***	0.0807**	0.197***	0.199***
	(3.16)	(3.97)	(4.14)	(2.11)	(4.24)	(4.34)
MBA degree indicator	0.140***	0.125**	0.114**	0.125***	0.108**	0.101**
	(2.90)	(2.55)	(2.26)	(2.75)	(2.36)	(2.15)
Female indicator	0.266	0.204	0.171	0.233	0.147	0.119
	(1.09)	(0.83)	(0.68)	(1.05)	(0.66)	(0.52)
Year dummies		yes	yes		yes	yes
Industry dummies			yes			yes
No. of obs.	11001	11001	11001	11066	11066	11066
R^2 (centered)	0.2919	0.2329	0.2550	0.3656	0.3323	0.3495
Overidentification test of all instruments - Hansen J stat. (p-val)	1.506	1.892	0.676	0.361	0.365	0.055
	(0.4709)	(0.3883)	(0.7133)	(0.8350)	(0.8332)	(0.9730)
Endogeneity test of endogenous regressor	2.219	2.681	2.237	0.956	1.384	1.053
	(0.1364)	(0.1016)	(0.1347)	(0.3282)	(0.2395)	(0.3047)
First stage	Log(Market capitalization)$_{t-k}$					
(US employment rate, 12-m. avg.)$_{t-k}$	0.0487	0.0466	0.0401	0.0487*	0.0467	0.0403
	(1.64)	(1.58)	(1.38)	(1.65)	(1.59)	(1.39)
(US annual employment growth rate)$_{t-k}$	-7.8049	-5.3627	-5.9457	-8.6392	-6.1381	-6.6076
	(-0.31)	(-0.22)	(-0.24)	(-0.35)	(-0.25)	(-0.27)
(US employment rate, 12-m. avg.)*(US annual employment growth rate)$_{t-k}$	0.0892	0.0627	0.0689	0.0981	0.0710	0.0760
	(0.33)	(0.23)	(0.26)	(0.36)	(0.27)	(0.28)
R^2 (centered)	0.2629	0.2571	0.2502	0.2630	0.2571	0.2503
Weak identification test[1]: Cragg-Donald Wald F statistic/	9.97	9.20	7.45	9.96	9.22	7.50
Kleibergen-Paap Wald rk F statistic	1.26	1.16	0.95	1.27	1.17	0.96

‡: Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.
Δ: instrumented variable
[1]The Stock-Yogo (2005) weak identification critical values (valid for Cragg-Donald F statistic and i.i.d. errors) for 1 endogenous variable and 3 excluded instruments are as follows:

5% maximal IV relative bias	13.91	10% maximal IV size	22.30
10% maximal IV relative bias	9.08	15% maximal IV size	12.83
20% maximal IV relative bias	6.46	20% maximal IV size	9.54
30% maximal IV relative bias	5.39	25% maximal IV size	7.80

The table reports results from a robustness check for IV regressions on the full sample. As before, we employ pooled 2SLS estimation (Columns 1 and 4), estimation with year dummies (Columns 2 and 5) and with year and industry dummies (Columns 3 and 6). The data does not support fixed effects 2SLS estimation. The regressions use different a set of excluded instrument inspired in findings of Kwon et al. (2010): the macroeconomic conditions are proxied for by the employment rate, the employment growth rate and their interaction term. The explanatory variable of interest - the instrumented variable - is *First Market Capitalization*. The dependent variables are log(TDC1) (Columns 1-3) and log(TDC2) (Columns 4-6). The remaining controls (included instruments) correspond to the benchmark specification in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
In addition to the coefficient estimates, second-stage-regression R^2 and the number of observations, we also include results from overidentification and endogeneity tests. These test results as well as the first-stage test results are important indicators for intrument validity and strength, and may reveal large inefficiencies in 2SLS estimation.
The lower section of the table refers to first-stage results. It contains selected coefficent estimates (for the excluded instruments only, omitting the included instruments' coefficent estimates) and results from tests for weak identification.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Table 3.12: Weak-instrument robust estimation for IV regressions with *First Market Capitalization* as the instrumented variable (full sample‡)

Panel A: Regressions using a set of financial-markets-related excluded instruments

	Log(Total compensation 1)$_t$			**Log(Total compensation 2)$_t$**		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}^{\Delta}$	0.0113	-0.495***	-0.435***	0.196***	-0.564***	-0.483***
	(0.21)	(-4.01)	(-4.01)	(2.91)	(-4.05)	(-3.99)
Log(Market capitalization)$_{t-1}$	0.462***	0.680***	0.661***	0.353***	0.681***	0.652***
	(16.53)	(11.57)	(12.89)	(10.32)	(10.26)	(11.37)
(Market to book)$_{t-1}$	-0.0520***	-0.0718***	-0.0945***	-0.0484***	-0.0734***	-0.0870***
	(-7.47)	(-6.67)	(-8.85)	(-5.73)	(-6.15)	(-7.42)
(Stock return)$_t$	3.258***	3.868***	4.012***	6.201***	6.898***	6.991***
	(13.67)	(10.23)	(11.46)	(21.40)	(16.39)	(18.07)
(Stock return)$_{t-1}$	1.445***	0.284	0.872**	5.090***	3.417***	3.924***
	(5.44)	(0.58)	(2.01)	(15.95)	(6.37)	(8.28)
(Return on assets)$_t$	0.274*	0.623***	0.459**	1.040***	1.396***	1.272***
	(1.75)	(2.61)	(2.06)	(5.47)	(5.27)	(5.19)
(Return on assets)$_{t-1}$	-0.414**	-1.076***	-1.078***	-0.386*	-1.238***	-1.210***
	(-2.33)	(-3.68)	(-4.05)	(-1.79)	(-3.82)	(-4.13)
(Stock return volatility over 5 years)$_t$	6.844***	6.664***	5.140***	2.950***	3.797***	2.689***
	(16.16)	(10.12)	(8.27)	(5.71)	(5.16)	(3.91)
Log(CEO tenure)$_t$	-0.00717	-0.315***	-0.282***	0.236***	-0.235***	-0.189***
	(-0.23)	(-4.39)	(-4.54)	(6.20)	(-2.91)	(-2.72)
External hire indicator	0.0970*	0.564***	0.524***	-0.167**	0.540***	0.477***
	(1.79)	(4.77)	(5.01)	(-2.53)	(4.05)	(4.09)
(CEO & Chairman indicator)$_t$	0.107***	0.231***	0.229***	0.0544***	0.247***	0.237***
	(6.49)	(7.75)	(8.58)	(2.72)	(7.46)	(8.07)
MBA degree indicator	0.106***	0.152***	0.137***	0.0759***	0.153***	0.140***
	(6.18)	(5.55)	(5.35)	(3.65)	(4.96)	(4.94)
Female indicator	0.0686	0.363***	0.293***	-0.0424	0.400***	0.326***
	(0.99)	(3.02)	(2.71)	(-0.50)	(3.01)	(2.75)
Constant	4.116***	6.079***	5.932***	2.699***	5.900***	5.602***
	(16.38)	(9.84)	(10.89)	(8.80)	(8.69)	(9.48)
Year dummies		yes	yes		yes	yes
Industry dummies			yes			yes
No. of obs.	11001	11001	11001	11066	11066	11066
Adj. R^2	0.470	-0.175	0.001	0.363	-0.182	0.009
LIML estimate of Log(Market capitalization)$_{t-k}^{\Delta}$	0.0092	-0.5554	-0.4731	0.1965	-0.5639	-0.4906
Conditional LR confidence set	[-0.1129,0.1287]	[-0.9705,-0.3383]	[-0.8065,-0.2842]	[0.0688,0.3467]	[-0.9638,-0.3418]	[-0.8299,-0.2896]
(p-val.)	(0.8748)	(0.0000)	(0.0000)	(0.0025)	(0.0000)	(0.0000)
Selected first-stage diagnostics						
F-statistics on excluded instruments	21.99	9.58	10.87	21.99	9.58	10.87
(p-val.)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Adj. R^2	0.265	0.270	0.278	0.265	0.270	0.278

(continued)

Table 3.12 ***(continued)***

Panel B: Regressions using a set of proxies for macroeconomic conditions as excluded instruments

	Log(Total compensation 1)$_t$			**Log(Total compensation 2)$_t$**		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}^{\Delta}$	-0.182***	-0.262***	-0.246***	0.0149	-0.0831	-0.0646
	(-3.22)	(-4.18)	(-4.09)	(0.25)	(-1.38)	(-1.10)
Log(Market capitalization)$_{t-1}$	0.558***	0.570***	0.573***	0.443***	0.454***	0.455***
	(19.44)	(18.90)	(19.84)	(14.77)	(15.64)	(16.13)
(Market to book)$_{t-1}$	-0.0609***	-0.0630***	-0.0867***	-0.0565***	-0.0557***	-0.0705***
	(-8.01)	(-8.03)	(-10.53)	(-7.13)	(-7.39)	(-8.77)
(Stock return)$_t$	3.361***	3.763***	3.920***	6.304***	6.668***	6.781***
	(12.81)	(12.99)	(13.92)	(22.99)	(23.89)	(24.56)
(Stock return)$_{t-1}$	0.978***	0.901***	1.350***	4.671***	4.648***	4.953***
	(3.40)	(2.78)	(4.34)	(15.73)	(15.04)	(16.39)
(Return on assets)$_t$	0.303*	0.550***	0.385**	1.058***	1.270***	1.125***
	(1.75)	(3.01)	(2.16)	(5.87)	(7.23)	(6.44)
(Return on assets)$_{t-1}$	-0.731***	-0.737***	-0.802***	-0.677***	-0.555***	-0.608***
	(-3.79)	(-3.69)	(-4.13)	(-3.38)	(-2.90)	(-3.21)
(Stock return volatility over 5 years)$_t$	7.355***	6.205***	4.853***	3.443***	2.818***	2.034***
	(15.89)	(12.72)	(9.83)	(7.11)	(5.99)	(4.20)
Log(CEO tenure)$_t$	-0.113***	-0.181***	-0.176***	0.137***	0.0401	0.0469
	(-3.51)	(-4.90)	(-4.99)	(4.10)	(1.13)	(1.37)
External hire indicator	0.280***	0.345***	0.346***	0.00386	0.0876	0.0816
	(5.01)	(5.62)	(5.82)	(0.07)	(1.49)	(1.41)
(CEO & Chairman indicator)$_t$	0.122***	0.198***	0.203***	0.0680***	0.180***	0.182***
	(6.75)	(9.60)	(10.26)	(3.60)	(9.10)	(9.41)
MBA degree indicator	0.132***	0.123***	0.112***	0.101***	0.0922***	0.0839***
	(7.13)	(6.43)	(5.91)	(5.22)	(4.98)	(4.53)
Female indicator	0.224***	0.194**	0.156**	0.100	0.0575	0.0273
	(3.01)	(2.53)	(2.10)	(1.30)	(0.79)	(0.38)
Constant	4.977***	4.946***	5.016***	3.504***	3.614***	3.618***
	(19.26)	(15.21)	(15.96)	(13.02)	(11.91)	(12.16)
Year dummies		yes	yes		yes	yes
Industry dummies			yes			yes
No. of obs.	11001	11001	11001	11066	11066	11066
Adj. R^2	0.356	0.301	0.346	0.428	0.473	0.488
LIML estimate of Log(Market capitalization)$_{t-k}^{\Delta}$	-0.1854	-0.2745	-0.2521	0.0147	-0.0840	-0.0655
Conditional LR confidence set (p-val.)	[-0.3137,-0.0801] (0.0004)	[-0.4264,-0.1593] (0.0000)	[-0.3943,-0.1423] (0.0000)	[-0.1080,0.1369] (0.8094)	[-0.2132,0.0346] (0.1642)	[-0.1909,0.0517] (0.2712)
Selected first-stage diagnostics						
F-statistics on excluded instruments	26.39	23.63	24.06	26.39	23.63	24.06
(p-val.)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Adj. R^2	0.266	0.273	0.280	0.266	0.273	0.280

(continued)

Table 3.12 *(continued)*

Panel C: Regressions using a set of employment-related excluded instruments

	Log(Total compensation 1)$_t$			Log(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Market capitalization)$_{t-k}^{\Delta}$	-0.235**	-0.277***	-0.267**	-0.153	-0.209**	-0.194*
	(-2.46)	(-2.74)	(-2.44)	(-1.53)	(-2.04)	(-1.73)
Log(Market capitalization)$_{t-1}$	0.584***	0.577***	0.582***	0.527***	0.513***	0.516***
	(12.19)	(12.02)	(11.26)	(10.43)	(10.50)	(9.75)
(Market to book)$_{t-1}$	-0.0633***	-0.0636***	-0.0876***	-0.0641***	-0.0604***	-0.0756***
	(-7.29)	(-7.48)	(-9.52)	(-7.06)	(-7.02)	(-8.10)
(Stock return)$_t$	3.390***	3.770***	3.930***	6.399***	6.728***	6.846***
	(12.19)	(12.72)	(13.49)	(21.88)	(22.32)	(22.96)
(Stock return)$_{t-1}$	0.850**	0.862**	1.297***	4.281***	4.326***	4.636***
	(2.42)	(2.22)	(3.30)	(11.81)	(11.12)	(11.74)
(Return on assets)$_t$	0.311*	0.555***	0.393**	1.074***	1.303***	1.171***
	(1.71)	(2.96)	(2.11)	(5.65)	(6.88)	(6.19)
(Return on assets)$_{t-1}$	-0.818***	-0.759***	-0.832***	-0.947***	-0.734***	-0.794***
	(-3.46)	(-3.26)	(-3.48)	(-3.84)	(-3.13)	(-3.28)
(Stock return volatility over 5 years)$_t$	7.494***	6.234***	4.885***	3.900***	3.074***	2.236***
	(14.29)	(12.02)	(9.34)	(7.04)	(5.81)	(4.17)
Log(CEO tenure)$_t$	-0.141***	-0.190***	-0.187***	0.0455	-0.0319	-0.0258
	(-2.67)	(-3.25)	(-3.00)	(0.82)	(-0.54)	(-0.40)
External hire indicator	0.330***	0.358***	0.366***	0.163*	0.206**	0.204*
	(3.59)	(3.71)	(3.47)	(1.68)	(2.10)	(1.90)
(CEO & Chairman indicator)$_t$	0.127***	0.200***	0.206***	0.0807***	0.197***	0.199***
	(6.36)	(8.44)	(8.74)	(3.89)	(8.25)	(8.30)
MBA degree indicator	0.140***	0.125***	0.114***	0.125***	0.108***	0.101***
	(6.33)	(5.75)	(5.02)	(5.37)	(4.86)	(4.33)
Female indicator	0.266***	0.204**	0.171*	0.233**	0.147	0.119
	(2.70)	(2.12)	(1.70)	(2.27)	(1.52)	(1.18)
Constant	5.213***	5.017***	5.118***	4.251***	4.213***	4.230***
	(12.13)	(9.96)	(9.38)	(9.42)	(8.43)	(7.80)
Year dummies		yes	yes		yes	yes
Industry dummies			yes			yes
No. of obs.	11001	11001	11001	11066	11066	11066
Adj. R^2	0.291	0.279	0.316	0.365	0.395	0.418
LIML estimate of Log(Market capitalization)$_{t-k}^{\Delta}$	-0.3093	-0.4022	-0.3172	-0.1601	-0.2214	-0.1959
Conditional LR confidence set (p-val.)	[-0.6477,-0.1125] (0.0013)	[-0.8441,-0.1817] (0.0001)	[-0.7114,-0.1078] (0.0021)	[-0.4176,0.0371] (0.1113)	[-0.5024,-0.02444] (0.0275)	[-0.5033,0.0186] (0.0732)
Selected first-stage diagnostics						
F-statistics on excluded instruments	10.09	9.39	7.61	10.09	9.39	7.61
(p-val.)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Adj. R^2	0.262	0.270	0.277	0.262	0.270	0.277

‡: Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.
Δ: instrumented variable

The table reports results from weak-instrument-robust IV estimation using the full sample and three different sets of excluded instrument. In Panel A, the exluded instruments are the S&P 500 volume change, the S&P 500 return and the S&P 500 volatility; in Panel B, these are the recession indicator, the investment-grade bond yield spread and the unemployment rate, and in Panel C, the employment rate, the employment growth rate and their interaction term. As before, we employ pooled 2SLS estimation (Columns 1 and 4), estimation with year dummies (Columns 2 and 5) and with year and industry dummies (Columns 3 and 6). The data does not support fixed effects 2SLS estimation. The dependent variables are log(TDC1) (Columns 1-3) and log(TDC2) (Columns 4-6). The instrumented variable is *First Market Capitalization.* The remaining controls (included instruments) correspond to our benchmark specification in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in the Appendix 3.2.
The coeffcient estimate on *First Market Capitalization* due to normal approximation is reported in the first row of each panel. The bold-bordered sections of the panels contain the LIML estimates of the coefficient on *First Market Capitalization,* and the conditional likelihood ratio (CLR) confidence sets for the coeffcient estimates on *First Market Capitalization* according to Moreira (2003) and Mikusheva (2010) with the corresponding p-values. The validity of the latter estimation is conditional on *First Market Capitalization* being the only endogenous variable in the regression.
The bottom section of the table reports the basic first-stage diagnostics: F-test results for the joint significance of the excluded instruments and the first-stage adjusted R^2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors are in parentheses.

Appendix 3.1

Table 3.A1: Summary of conditions applied to the full sample and subsamples

Data	Max. no. of obs	**Conditions applied**			
		Non-financial firms	CEO present in firm for at least 3 years	Difference in years between	
				year of birth and start date of first job (age at career start)	current date and start date of first job
Pre-sample	13429	yes	no	any	any
Full sample	13378	yes	yes	any	any
Subsample 1	10111	yes	yes	any	≥ 10
Subsample 2	4710	yes	yes	≤ 30	≥ 10
Subsample CS	3048	yes	no	any	any
Subsample CS1	1990	yes	no	any	≥ 10

The table summarizes the conditions applied on the data. Throughout the paper we run regressions with three samples - the full sample, Subsample 1 and Subsample 2. Even in the full sample, several conditions are applied. Financial firms are excluded from the analysis. We also require the CEO to be present in the firm for at least three years. In Subsample 1, we require to follow the career of individuals in the sample for at least 10 years. The idea is to alliviate concerns that persistence in firm performance is driving the results.

Our individuals' first job is the first job that appears in the data and not necessarily the very first job of their careers. In Subsample 2 we thus add another condition to that applied in Subsample 1: individuals have to be no older than 30 years old when they start their first job. We attempt to capture the "real" beginning of our individuals careers. (If individuals start their careers in a public company, it is more likely that we have this data.)

Subsample CS refers to a cross section obtained from the pre-sample, i.e. the full sample *before* applying the conditon that the CEO be present in the firm for at least three years. For each individual, we select the observation with his first CEO year (the first CEO compensation).

Again, as in Subsample 1, to alliviate concerns that persistence in firm performance is driving the results in Subsample CS, we require the period between the current date and the start date to be at least 10 years, and obtain Subsample CS1.

Appendix 3.2

Table 3.A2: Variable definitions

Panel A: Response variables, main explanatory variables, firm-level controls

	Variable	Source	Data item identification in Source and operational measure (if applicable)	Definition
Dependent variables	CEO Compensation - Total compensation 1 • current (t), lagged (t-1) • first (t-k)	Compustat-Execucomp	Total Compensation [TDC1], in $ thousands	This compensation measure comprises Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black-Scholes), Long-Term Incentive Payouts, and All Other Total. In our analysis compensation is only considered after the individuals become CEOs; we do not control for pre-CEO compensation in any of the regressions.
	CEO Compensation - Total compensation 2 • current (t), lagged (t-1) • first (t-k)	Compustat-Execucomp	Total Compensation [TDC2], in $ thousands	This compensation measure comprises all items listed for TDC1 plus the Net Value of Stock Options Exercised. We only consider CEO compensation in our regressions; we do not control for pre-CEO compensation in any of the regressions.
Main explanatory variables / Firm-level controls	Market capitalization • current (t), lagged (t-1) • first (t-k)	Compustat	Common Shares Outstanding [CSHO, in millions] x Price Close - Annual - Fiscal [PRCC_F, in $], measured in $ millions	The market value of equity as a measure of firm size; we distinguish between the current/lagged market capitalization of the company for which the indivdual works as the CEO, and "first" market capitalization, i.e. the market capitalization of the individuals' first employer company, as a measure of initial placement success.
	Total assets • current (t), lagged (t-1) • first (t-k)	Compustat	Assets - Total [AT, in $ millions]	The total value of assets reported on the Balance Sheet, a measure of firm size. We distinguish between current/lagged total assets of the company for which the individual works as the CEO, and "first" total asset, i.e. the total assets of the individuals' first employer company, as a measure of initial placement success.
	Top ten *indicator*	Compustat (firm id through GVKEY)		A binary variable that equals one if the individual's first employer is one of the following companies: Arthur Andersen, AT&T, DuPont, Ford, General Electric, General Motors, IBM, McKinsey, Procter&Gamble, Texas Instruments. This definition is adopted from Schoar and Zuo (2012), p. 9.
	No. of employees - first (t-k)	Compustat	Number of Employees [EMP, in thousands]	The number of company workers as reported to shareholders; we do not report results for regressions with this alternative measure of firm size, we use it only to better describe the intitial job condititions of future CEOs.
	Sales - first (t-k)	Compustat	Sales/Turnover (Net) [SALE], in $ millions	Gross sales reduced by items such as discounts or customer credit; we do not report results for regressions with this alternative measure of firm size, we use it only to better describe the intitial job condititions of future CEOs.
Firm-level controls	Market to book - lagged (t-1)	Compustat	{(Common Shares Outstanding [CSHO, in millions]) x (Price Close - Annual - Fiscal [PRCC_F, in $]) + (Assets - Total [AT, in $ millions]) - (Common/Ordinary Equity - Total [CEQ, millions])}/(Assets - Total [AT, in $ millions])	The market value of assets over the book value of assets, a firm-level control in our compensation regressions
	Stock return • current (t) • lagged (t-1)	CRSP	Holding Period Return [RET from CRSP Monthly Stock], annualized	Stock returns incl. dividends
	Return on assets • current (t) • lagged (t-1)	Compustat	Earnings Before Interest [EBITDA, in $ millions]$_{(t)}$ / (Assets - Total [AT, in $ millions])$_{(t-1)}$	A measure of company profitability relative to its total assets
	(Stock return volatility over 5 years) - current (t)	CRSP		Standard deviations of stock returns over 5-year rolling windows (from t-4 to t)

(continued)

Table 3.A2 ***(continued)***

Panel B: CEO-level controls, excluded instruments

	Variable	Source	Data item identification in Source and operational measure (if applicable)	Definition
CEO-level controls	(CEO tenure)$_t$	BoardEx/ Compustat-Execucomp	[in months]	The number of months during which the individual held the office of CEO in the company
	(External hire *indicator*)$_t$	BoardEx/ Compustat-Execucomp		A binary variable that equals one if the CEO was hired coming from another company (as identified by GVKEY), thus excluding cases of internal promotion
	(CEO & Chairman *indicator*)$_t$	BoardEx/ Compustat-Execucomp		A binary variable that equals one if the CEO is at the same time the Chairman of the Board of Directors, zero otherwise; a proxy for CEO power
	MBA degree *indicator*	BoardEx		A binary variable that equals one if the CEO holds an MBA degree, zero otherwise; although individuals may obtian the degree well into their careers, we consider this a time invariant variable
	Female *indicator*	BoardEx/ Compustat-Execucomp		A binary variable that equals one if the CEO is a female, zero otherwise
Excluded instruments	(Recession *indicator*)$_{t-k}$	National Bureau for Economic Research (NBER)		A binary variable that equals one if the period (month and year) when the individual started his/her first job is identified by NBER as *recession* or *through*, zero otherwise, i.e. if the period is identified as *expansion* or *peak*
	(Recession year *indicator*)$_{t-k}$°	National Bureau for Economic Research		A binary variable used in Schoar and Zuo (2012) that equals one if the year in which the individual started his/her first job does not include the peak of a business cycle, zero otherwise
	(US unemployment rate, 12-month average)$_{t-k}$	U.S. Bureau for Labor Statistics	[%]	The average annual US unemployment rate for the one year period preceeding the time (month and year) when the individual started his/her first job or graduated
	(Investment-grade bond yield spread)$_{t-k}$	Federal Reserve	[%]	The difference between the highest and lowest quality investment-grade bond yield at the time (month and year) when the individual started his/her first job or graduated
	(S&P 500 volume, 1-year change)$_{t-k}$	CRSP	[%]	The volume change in the S&P 500 index for the one year period preceeding the time when the individual started his/her first job or graduated
	(S&P 500 average return over 1 year)$_{t-k}$	CRSP	[%]	The annualized return on the S&P 500 index for the one-year period preceeding the time (month and year) when the individual started his/her first job or graduated
	(S&P 500 st. deviation over 2 years)$_{t-k}$	CRSP	[%]	The annualized standard deviation of the S&P 500 index for the two-year period preceeding the time (month and year) when the individual started his/her first job or graduated
	(US employment rate, 12-month average)$_{t-k}$	U.S. Bureau for Labor Statistics	[%]	The average annual US employment rate (= 1 - unemployment rate) for the year when the individual started his/her first job or graduated
	(US employment annual growth rate)$_{t-k}$	U.S. Bureau for Labor Statistics	[%]	The change in the US employment rate for during the one year period preceeding the time when the individual started his/her first job or graduated

The table provides an overview of all variables in our dataset, their sources, their definitions or operational measures if applicable.

Appendix 3.3

Table 3.A3: Pairwise correlations for the potential right-hand-side variables (full sample[‡])

Panel A: All potential right-hand-side variables and firm-level controls

	Log(Market capitalization)$_{t-k}$[†]	Log(Total assets)$_{t-k}$[†]	Log(Market capitalization)$_{t-1}$[†]	Log(Total assets)$_{t-1}$[†]	(Market to book)$_{t-1}$[†]	(Stock return)$_{t}$[†]	(Stock return)$_{t-1}$[†]	(Return on assets)$_{t}$[†]	(Return on assets)$_{t-1}$[†]	(Stock return volatility over 5 years)$_{t}$[†]
Log(Market capitalization)$_{t-k}$[†]	1									
	11148									
Log(Total assets)$_{t-k}$[†]	0.881***	1								
	11126	13310								
Log(Market capitalization)$_{t-1}$[†]	0.359***	0.330***	1							
	11148	13310	13378							
Log(Total assets)$_{t-1}$[†]	0.350***	0.425***	0.854***	1						
	11148	13310	13378	13378						
(Market to book)$_{t-1}$[†]	0.0473***	-0.114***	0.283***	-0.164***	1					
	11148	13310	13378	13378	13378					
(Stock return)$_{t}$[†]	-0.0153	0.00433	-0.0456***	-0.00501	-0.0705***	1				
	11148	13310	13378	13378	13378	13378				
(Stock return)$_{t-1}$[†]	-0.0255**	-0.0166	0.135***	-0.0251**	0.280***	-0.0650***	1			
	11148	13310	13378	13378	13378	13378	13378			
(Return on assets)$_{t}$[†]	-0.00671	-0.0418***	0.259***	0.0328***	0.358***	0.212***	0.256***	1		
	11148	13310	13378	13378	13378	13378	13378	13378		
(Return on assets)$_{t-1}$[†]	-0.0138	-0.0567***	0.270***	0.0188*	0.393***	0.0471***	0.188***	0.828***	1	
	11148	13310	13378	13378	13378	13378	13378	13378	13378	
(Stock return volatility over 5 years)$_{t}$[†]	-0.0374***	-0.119***	-0.268***	-0.324***	0.163***	-0.0811***	-0.0624***	-0.262***	-0.244***	1
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
Log(CEO tenure)$_{t}$	-0.237***	-0.236***	-0.00872	-0.0471***	0.0411***	0.00507	0.0335***	0.0279**	0.0286***	0.0110
	11100	13254	13322	13322	13322	13322	13322	13322	13322	13322
(External hire indicator)$_{t}$	0.199***	0.186***	-0.0320***	-0.0567***	0.0472***	-0.00288	-0.00405	-0.0769***	-0.0756***	0.124***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
(CEO & Chairman indicator)$_{t}$	0.00603	0.0251**	0.162***	0.208***	-0.0445***	-0.000809	0.00200	0.0245**	0.0212*	-0.108***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
MBA degree indicator	0.0958***	0.117***	0.0781***	0.0763***	0.0119	0.00913	0.00502	0.0198*	0.0202*	-0.0358***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
Female indicator	0.0528***	0.0581***	-0.0430***	-0.0484***	-0.00282	-0.0187*	-0.0167	-0.00643	-0.00856	0.0307***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
(Recession indicator)$_{t-k}$	-0.0295**	-0.00717	0.0742***	0.0663***	0.00743	0.0000352	0.0000428	0.0452***	0.0424***	-0.0590***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
(Recession year indicator)$_{t-k}$	0.0547***	-0.0000246	-0.0243**	-0.0301***	0.0104	-0.00123	-0.00609	-0.00363	-0.000927	0.0288***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
(US unemployment rate, 12-month average)$_{t-k}$	-0.0634***	0.00932	-0.0583***	-0.0710***	0.0208*	-0.00333	0.000962	-0.00491	0.00197	0.0406***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
(Investment-grade bond yield spread)$_{t-k}$	-0.0849***	0.00871	-0.0166	-0.0312***	0.00953	-0.000638	0.00158	0.0489***	0.0475***	-0.0182*
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
(S&P 500 volume, 1-year change)$_{t-k}$[†]	0.00411	-0.00533	-0.0161	-0.0271**	0.00797	-0.00888	-0.00259	0.00339	0.00951	0.0157
	11148	13310	13375	13375	13375	13375	13375	13375	13375	13375
(S&P 500 average return over 1 year)$_{t-k}$[†]	0.00976	-0.00201	-0.0729***	-0.0651***	-0.0230**	-0.000602	-0.000187	-0.0359***	-0.0341***	0.0624***
	11148	13303	13368	13368	13368	13368	13368	13368	13368	13368
(S&P 500 st. deviation over 2 years)$_{t-k}$[†]	0.0733***	0.0496***	-0.126***	-0.139***	0.0122	-0.00698	-0.00628	-0.0934***	-0.0873***	0.159***
	11148	13299	13364	13364	13364	13364	13364	13364	13364	13364
(US employment rate, 12-month average)$_{t-k}$	0.0634***	-0.00932	0.0583***	0.0710***	-0.0208*	0.00333	-0.000962	0.00491	-0.00197	-0.0406***
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378
(US employment annual growth rate)$_{t-k}$	0.0379***	0.0288***	-0.0255**	-0.0128	-0.00628	-0.00233	0.00386	-0.0473***	-0.0423***	0.0238**
	11148	13310	13378	13378	13378	13378	13378	13378	13378	13378

(continued)

Table 3.A3 ***(continued)***

Panel B: CEO-level controls and excluded instruments

	Log(CEO tenure)$_t$	(External hire indicator)$_t$	(CEO & Chairman indicator)$_t$	MBA degree indicator	Female indicator	(Recession indicator)$_{t-k}$	(Recession year indicator)$_{t-k}$	(US unemp. rate, 12-m. avg.)$_{t-k}$	(Invest.-gr. bond yield spread)$_{t-k}$	(S&P 500 volume, 1-yr chng)$_{t-k}^{\dagger}$	(S&P 500 1-yr avg. ret.)$_{t-k}^{\dagger}$	(S&P 500 2-yr st. dev.)$_{t-k}^{\dagger}$	(US emp. rate, 12-m. avg.)$_{t-k}$	(US emp. annual growth rate)$_{t-k}$
Log(CEO tenure)$_t$	1													
	13322													
(External hire indicator)$_t$	0.149***	1												
	13322	13378												
(CEO & Chairman indicator)$_t$	0.323***	0.0542***	1											
	13322	13378	13378											
MBA degree indicator	-0.0267**	0.0709***	-0.000120	1										
	13322	13378	13378	13378										
Female indicator	-0.0535***	0.00989	-0.0270**	-0.00415	1									
	13322	13378	13378	13378	13378									
(Recession indicator)$_{t-k}$	0.0327***	-0.0280**	0.0543***	0.00496	-0.0319***	1								
	13322	13378	13378	13378	13378	13378								
(Recession year indicator)$_{t-k}$	-0.0365***	0.0264**	-0.0603***	-0.0693***	0.0194*	0.0454***	1							
	13322	13378	13378	13378	13378	13378	13378							
(US unemployment rate, 12-month average)$_{t-k}$	-0.0319***	-0.0152	-0.0514***	-0.0233**	0.0388***	-0.185***	0.195***	1						
	13322	13378	13378	13378	13378	13378	13378	13378						
(Investment-grade bond yield spread)$_{t-k}$	0.00970	-0.0288***	-0.000353	0.00640	0.0323***	0.245***	-0.106***	0.562***	1					
	13322	13378	13378	13378	13378	13378	13378	13378	13378					
(S&P 500 volume, 1-year change)$_{t-k}^{\dagger}$	-0.0176*	0.00242	-0.00825	0.00290	0.0389***	-0.160***	0.0887***	0.168***	0.181***	1				
	13319	13375	13375	13375	13375	13375	13375	13375	13375	13375				
(S&P 500 average return over 1 year)$_{t-k}^{\dagger}$	-0.0482***	0.0334***	-0.0435***	-0.00179	0.0554***	-0.587***	-0.0793***	0.267***	-0.0162	0.199***	1			
	13312	13368	13368	13368	13368	13368	13368	13368	13368	13368	13368			
(S&P 500 st. deviation over 2 years)$_{t-k}^{\dagger}$	-0.0803***	0.140***	-0.150***	-0.0458***	0.0371***	-0.135***	0.113***	-0.209***	-0.170***	0.0435***	0.247***	1		
	13308	13364	13364	13364	13364	13364	13364	13364	13364	13364	13364	13364		
(US employment rate, 12-month average)$_{t-k}$	0.0319***	0.0152	0.0514***	0.0233**	-0.0388***	0.185***	-0.195***	-1.000***	-0.562***	-0.168***	-0.267***	0.209***	1	
	13322	13378	13378	13378	13378	13378	13378	13378	13378	13375	13368	13364	13378	
(US employment annual growth rate)$_{t-k}$	-0.00433	0.0554***	-0.0356***	-0.0223**	-0.0331***	-0.300***	0.0390***	-0.0653***	-0.494***	-0.264***	0.0417***	0.107***	0.0653***	1
	13322	13378	13378	13378	13378	13378	13378	13378	13378	13375	13368	13364	13378	13378

†: Winsorized variables

‡ Table 3.A1 in the Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports pairwise correlation coefficients between potential right-hand-side variables and the respective number of observations. The computations involve the full sample.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01.
Note that these pairwise correlation coefficients (computed as Pearson product-moment correlation coefficients) are not entirely meaningful when involving a binary variable. Point-biserial correlation coefficents is more appropriate to be used with binary (indicator) variables.

Appendix 3.4

Table 3.A4: Pooled OLS, least square dummy variable and fixed effects regressions with *First Total Assets* as the main regressor

Panel A: Full sample regressions‡

	Log(Total compensation 1)$_t$				Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Total assets)$_{t-k}$	0.0240***	0.0118	0.0231***	0.0137	0.0198**	0.000864	0.0105	-0.0128
	(2.88)	(1.44)	(3.03)	(1.17)	(2.30)	(0.10)	(1.31)	(-1.03)
Log(Total assets)$_{t-1}$	0.422***	0.414***	0.436***	0.312***	0.413***	0.399***	0.418***	0.361***
	(33.94)	(33.40)	(36.57)	(11.11)	(31.87)	(31.37)	(33.38)	(12.97)
(Market to book)$_{t-1}$	0.157***	0.146***	0.105***	0.0985***	0.151***	0.137***	0.107***	0.141***
	(10.13)	(9.51)	(6.66)	(6.72)	(9.18)	(8.63)	(6.42)	(8.36)
(Stock return)$_t$	2.908***	3.380***	3.497***	2.925***	5.714***	6.172***	6.259***	5.781***
	(10.64)	(11.66)	(12.16)	(10.18)	(19.41)	(19.60)	(20.05)	(18.11)
(Stock return)$_{t-1}$	1.922***	2.101***	2.759***	1.965***	4.950***	5.167***	5.668***	4.417***
	(7.43)	(7.80)	(10.36)	(8.58)	(16.08)	(16.17)	(17.63)	(14.49)
(Return on assets)$_t$	0.459***	0.604***	0.413***	0.926***	1.302***	1.428***	1.276***	1.906***
	(2.94)	(3.90)	(2.76)	(5.43)	(6.98)	(7.89)	(7.13)	(9.83)
(Return on assets)$_{t-1}$	0.257*	0.312**	0.281**	0.426***	-0.164	0.0431	0.0120	0.0718
	(1.77)	(2.14)	(1.99)	(2.88)	(-0.92)	(0.25)	(0.07)	(0.39)
(Stock return volatility over 5 years)$_t$	6.934***	5.575***	3.506***	0.637	3.672***	2.717***	1.235*	-1.020
	(10.81)	(8.51)	(5.59)	(0.90)	(5.59)	(4.10)	(1.90)	(-1.33)
Log(CEO tenure)$_t$	0.0218	-0.00596	-0.00505	-0.00237	0.156***	0.104***	0.105***	0.125***
	(1.52)	(-0.42)	(-0.38)	(-0.18)	(10.58)	(7.26)	(7.66)	(9.19)
(External hire indicator)$_t$	0.101***	0.0907***	0.0982***	0.100***	0.0128	0.00817	0.0141	0.0226
	(3.35)	(3.13)	(3.74)	(2.78)	(0.40)	(0.27)	(0.50)	(0.58)
(CEO & Chairman indicator)$_t$	0.0528*	0.123***	0.130***	0.0492*	0.0162	0.131***	0.135***	0.0495*
	(1.91)	(4.48)	(5.08)	(1.95)	(0.54)	(4.58)	(4.92)	(1.73)
MBA degree indicator	0.101***	0.0748***	0.0450*	0.0360	0.0998***	0.0682**	0.0470	0.0253
	(3.51)	(2.66)	(1.78)	(1.19)	(3.15)	(2.25)	(1.64)	(0.66)
Female indicator	0.0934	0.00905	-0.0384	0.0348	0.142	0.0253	-0.0130	0.0238
	(0.91)	(0.09)	(-0.37)	(0.29)	(1.34)	(0.23)	(-0.12)	(0.21)
Constant	3.708***	3.232***	3.156***	4.140***	3.122***	2.831***	2.742***	3.236***
	(30.22)	(24.81)	(25.32)	(17.34)	(24.47)	(22.18)	(22.11)	(13.95)
Year dummies		yes	yes	yes		yes	yes	yes
Industry dummies			yes				yes	
Firm fixed effects				yes				yes
No. of obs.	13129	13129	13129	13129	13217	13217	13217	13217
Adj. R^2	0.429	0.472	0.516	0.704	0.406	0.477	0.499	0.662

(continued)

Table 3.A4 (*continued)*

Panel B: Subsample 1 regressions‡

	Log(Total compensation 1)$_t$				Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Total assets)$_{t-k}$	0.0225***	0.00807	0.0205**	0.00810	0.0235***	0.00178	0.0132	-0.00929
	(2.58)	(0.93)	(2.52)	(0.56)	(2.61)	(0.20)	(1.54)	(-0.64)
Log(Total assets)$_{t-1}$	0.421***	0.416***	0.434***	0.308***	0.412***	0.402***	0.418***	0.331***
	(33.38)	(33.49)	(36.55)	(8.76)	(31.08)	(31.44)	(33.50)	(9.81)
(Market to book)$_{t-1}$	0.173***	0.159***	0.121***	0.113***	0.167***	0.150***	0.120***	0.142***
	(12.38)	(11.44)	(8.26)	(7.12)	(10.73)	(10.06)	(7.51)	(7.23)
(Stock return)$_t$	3.077***	3.662***	3.804***	3.118***	6.224***	6.832***	6.942***	6.124***
	(10.76)	(12.30)	(12.98)	(10.13)	(18.64)	(19.22)	(19.82)	(16.27)
(Stock return)$_{t-1}$	1.985***	2.326***	2.956***	1.975***	5.271***	5.571***	6.062***	4.494***
	(6.69)	(7.48)	(9.69)	(7.08)	(15.30)	(15.59)	(17.07)	(12.65)
(Return on assets)$_t$	0.602***	0.745***	0.513***	1.197***	1.464***	1.565***	1.397***	2.273***
	(3.32)	(4.11)	(2.90)	(6.29)	(6.49)	(7.19)	(6.52)	(9.99)
(Return on assets)$_{t-1}$	0.0656	0.142	0.0825	0.284	-0.247	0.00706	-0.0470	0.0468
	(0.40)	(0.86)	(0.51)	(1.63)	(-1.16)	(0.03)	(-0.23)	(0.21)
(Stock return volatility over 5 years)$_t$	7.072***	5.492***	3.219***	0.610	3.990***	2.858***	1.058	-1.339
	(9.34)	(7.20)	(4.37)	(0.70)	(5.16)	(3.72)	(1.38)	(-1.44)
Log(CEO tenure)$_t$	0.0409**	0.0103	0.0164	0.0157	0.187***	0.131***	0.137***	0.150***
	(2.49)	(0.64)	(1.10)	(1.08)	(11.32)	(8.28)	(9.05)	(9.60)
(External hire indicator)$_t$	0.130***	0.116***	0.126***	0.100**	0.0378	0.0271	0.0320	0.00365
	(3.72)	(3.45)	(4.10)	(2.20)	(1.02)	(0.78)	(0.98)	(0.08)
(CEO & Chairman indicator)$_t$	0.0322	0.111***	0.116***	0.0241	0.000366	0.128***	0.131***	0.0482
	(1.04)	(3.61)	(4.00)	(0.80)	(0.01)	(4.03)	(4.30)	(1.44)
MBA degree indicator	0.0893***	0.0671**	0.0369	0.0139	0.0689**	0.0450	0.0235	-0.0206
	(2.82)	(2.20)	(1.34)	(0.42)	(2.00)	(1.38)	(0.76)	(-0.51)
Female indicator	0.0560	-0.0167	-0.0588	-0.0679	0.127	0.0255	-0.00693	0.0374
	(0.48)	(-0.14)	(-0.49)	(-0.60)	(1.07)	(0.21)	(-0.06)	(0.31)
Constant	3.641***	3.124***	3.064***	4.098***	2.955***	2.632***	2.558***	3.304***
	(27.25)	(22.95)	(23.69)	(13.48)	(21.90)	(19.49)	(19.63)	(11.53)
Year dummies		yes	yes	yes		yes	yes	yes
Industry dummies			yes				yes	
Firm fixed effects				yes				yes
No. of obs.	10163	10163	10163	10163	10228	10228	10228	10228
Adj. R^2	0.437	0.485	0.528	0.721	0.413	0.491	0.515	0.679

(continued)

Table 3.A4 (*continued)*

Panel C: Subsample 2 regressions‡

	Log(Total compensation 1)$_t$				Log(Total compensation 2)$_t$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(Total assets)$_{t-k}$	0.0383***	0.0175	0.0216*	0.00841	0.0348***	0.00280	0.00787	-0.00913
	(2.98)	(1.38)	(1.83)	(0.36)	(2.63)	(0.22)	(0.64)	(-0.30)
Log(Total assets)$_{t-1}$	0.426***	0.420***	0.434***	0.330***	0.406***	0.393***	0.405***	0.352***
	(22.43)	(22.54)	(24.36)	(7.36)	(20.74)	(20.62)	(21.92)	(6.79)
(Market to book)$_{t-1}$	0.166***	0.154***	0.110***	0.117***	0.152***	0.142***	0.109***	0.132***
	(8.33)	(7.72)	(5.43)	(5.40)	(6.82)	(6.62)	(4.81)	(4.39)
(Stock return)$_t$	2.984***	3.695***	3.787***	3.053***	6.444***	7.145***	7.246***	6.321***
	(7.09)	(8.40)	(8.79)	(6.41)	(12.87)	(13.55)	(14.02)	(11.37)
(Stock return)$_{t-1}$	1.693***	2.262***	2.926***	1.936***	5.745***	6.257***	6.783***	5.291***
	(4.09)	(5.20)	(6.80)	(4.70)	(11.47)	(12.19)	(13.24)	(9.46)
(Return on assets)$_t$	0.765***	0.829***	0.543**	1.085***	1.996***	1.885***	1.667***	2.373***
	(2.98)	(3.25)	(2.22)	(4.27)	(5.61)	(5.41)	(4.88)	(6.21)
(Return on assets)$_{t-1}$	0.0854	0.155	0.126	0.332	-0.760**	-0.504	-0.533	-0.214
	(0.34)	(0.62)	(0.52)	(1.34)	(-2.26)	(-1.49)	(-1.58)	(-0.59)
(Stock return volatility over 5 years)$_t$	7.267***	5.494***	3.003***	0.413	3.605***	2.330**	0.594	-1.926
	(6.32)	(4.72)	(2.70)	(0.37)	(3.17)	(2.04)	(0.52)	(-1.43)
Log(CEO tenure)$_t$	0.0354	0.00722	0.0127	0.00844	0.196***	0.142***	0.148***	0.158***
	(1.51)	(0.31)	(0.61)	(0.42)	(8.14)	(6.12)	(6.72)	(6.81)
(External hire indicator)$_t$	0.115**	0.111**	0.137***	0.190**	0.00219	0.00350	0.0233	0.0210
	(2.19)	(2.23)	(3.08)	(2.39)	(0.04)	(0.07)	(0.50)	(0.22)
(CEO & Chairman indicator)$_t$	0.0553	0.139***	0.136***	0.0579	0.0642	0.196***	0.191***	0.0950**
	(1.19)	(3.03)	(3.22)	(1.48)	(1.30)	(4.24)	(4.43)	(2.07)
MBA degree indicator	0.0284	0.0121	0.0252	-0.0268	0.0356	0.0311	0.0429	0.0176
	(0.61)	(0.27)	(0.61)	(-0.47)	(0.72)	(0.67)	(0.96)	(0.26)
Female indicator	-0.0673	-0.112	-0.153	0.0592	0.000725	-0.0478	-0.0809	0.291
	(-0.39)	(-0.61)	(-0.81)	(0.25)	(0.00)	(-0.25)	(-0.42)	(0.65)
Constant	3.530***	2.968***	3.018***	3.959***	2.890***	2.592***	2.580***	3.095***
	(17.96)	(15.51)	(17.05)	(9.65)	(14.35)	(13.31)	(13.94)	(6.47)
Year dummies		yes	yes	yes		yes	yes	yes
Industry dummies			yes				yes	
Firm fixed effects				yes				yes
No. of obs.	4657	4657	4657	4657	4683	4683	4683	4683
Adj. R^2	0.463	0.517	0.562	0.738	0.435	0.514	0.537	0.682

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports results from pooled OLS regressions (columns 1 and 5), LSDV regressions with year dummies (Columns 2 and 6) and with year and industry dummies (Columns 3 and 7), and with year and firm fixed effects (columns 4 and 8). The firm fixed effects model gives a separate constant term for each firm, the intercept ("Constant") included in Columns 4 and 8 is the average value of the fixed effects. Panels A, B and C report results from regression on the full sample, Subsample 1 and Subsample 2, respectively. The response variables are log(TDC1) (columns 1-4) and log(TDC2) (columns 5-8). The main regressor variable is *First Total Assets*, thus the control for current firm size is (lagged, log-transformed) total assets as well. The choice of the remaining determinants of CEO compensation follows Graham et al. (2012). For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Appendix 3.5

Table 3.A5: Least squares dummy variable regressions with *Top Ten* as the main explanatory variable, with *Total assets* as the control for firm size

	Log(Total compensation 1)$_t$			Log(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
(Top ten)$_{t-k}$	0.135**	0.120**	0.118*	0.0855	0.0599	0.0774
	(2.46)	(1.99)	(1.81)	(1.36)	(0.88)	(1.05)
Log(Total assets)$_{t-1}$	0.445***	0.442***	0.441***	0.422***	0.424***	0.408***
	(40.27)	(38.29)	(25.31)	(35.88)	(34.75)	(22.57)
(Market to book)$_{t-1}$	0.103***	0.121***	0.110***	0.105***	0.119***	0.109***
	(6.55)	(8.17)	(5.51)	(6.35)	(7.28)	(4.80)
(Stock return)$_t$	3.538***	3.897***	3.826***	6.286***	7.027***	7.262***
	(12.41)	(13.39)	(8.89)	(20.17)	(19.77)	(14.05)
(Stock return)$_{t-1}$	2.828***	2.977***	2.964***	5.717***	6.101***	6.804***
	(10.67)	(9.76)	(6.90)	(17.88)	(17.13)	(13.31)
(Return on assets)$_t$	0.383**	0.447**	0.513**	1.248***	1.391***	1.662***
	(2.53)	(2.46)	(2.09)	(6.94)	(6.32)	(4.91)
(Return on assets)$_{t-1}$	0.270*	0.0904	0.133	0.00517	-0.0858	-0.531
	(1.90)	(0.55)	(0.55)	(0.03)	(-0.40)	(-1.57)
(Stock return volatility over 5 years)$_t$	3.550***	3.607***	3.142***	1.283**	1.374*	0.693
	(5.63)	(4.74)	(2.81)	(1.97)	(1.74)	(0.61)
Log(CEO tenure)$_t$	-0.0220*	0.00202	0.00266	0.0945***	0.125***	0.143***
	(-1.66)	(0.14)	(0.13)	(6.81)	(8.22)	(6.73)
(External hire indicator)$_t$	0.114***	0.136***	0.152***	0.0185	0.0348	0.0259
	(4.48)	(4.42)	(3.42)	(0.68)	(1.07)	(0.56)
(CEO & Chairman indicator)$_t$	0.137***	0.122***	0.137***	0.142***	0.141***	0.190***
	(5.09)	(3.99)	(3.21)	(4.94)	(4.36)	(4.37)
MBA degree indicator	0.0502*	0.0396	0.0358	0.0490*	0.0233	0.0480
	(1.96)	(1.41)	(0.88)	(1.70)	(0.74)	(1.09)
Female indicator	-0.0159	-0.0405	-0.128	-0.00261	0.0184	-0.0705
	(-0.15)	(-0.32)	(-0.67)	(-0.02)	(0.15)	(-0.36)
Constant	3.275***	3.152***	3.106***	2.799***	2.623***	2.608***
	(26.58)	(25.37)	(18.92)	(23.21)	(20.75)	(15.09)
Year dummies	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes
No. of obs.	13195	9989	4673	13285	10054	4700
Adj. R^2	0.514	0.527	0.562	0.498	0.512	0.537
Data‡	***Full sample***	***Subsample 1***	***Subsample 2***	***Full sample***	***Subsample 1***	***Subsample 2***

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports results from LSDV regressions with year and industry dummies. The current (lagged) firm size control is *Total assets*. Columns 1 and 4, 2 and 5, and 3 and 6, correspond to regressions on the full sample, Subsample 1 and Subsample 2, respectively. The dependent variables are log(TDC1) (Columns 1-3) and log(TDC2) (Columns 4-6). The main regressor variable is *Top Ten*, an indicator variable that equals one if the individual started his/her career in one of the following firms: Arthur Andersen, AT&T, DuPont, Ford, General Electric, General Motors, IBM, McKinsey, Procter&Gamble, Texas Instruments (Schoar and Zuo, 2012, p. 9). The remaining controls correspond to those in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Appendix 3.6

Table 3.A6: "Reduced-form" regressions with macroeconomic conditions at the start of the first job or at graduation as the main explanatory variables (full sample‡), **with *Total assets* as the lagged control for firm size**

	Log(Total compensation 1)$_t$										Log(Total compensation 2)$_t$									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(Recession year indicator)$_{t-k}$°	-0.00911					-0.0991***					-0.00261					-0.0610*				
	(-0.29)					(-3.02)					(-0.08)					(-1.74)				
(Recession indicator)$_{t-k}$		0.0494					0.00448					0.0146					-0.0129			
		(1.47)					(0.13)					(0.42)					(-0.33)			
(US unemployment rate, 12-m. avg.)$_{t-k}$			0.00235					-0.00417					-0.000697					-0.0135		
			(0.31)					(-0.47)					(-0.09)					(-1.33)		
(Investment-grade-bond yield spread)$_{t-k}$				0.0183					0.0408					-0.000425					-0.0187	
				(0.73)					(1.29)					(-0.02)					(-0.55)	
(S&P 500 return, 1-yr)$_{t-k}$					-0.00254					-0.134					0.0494					-0.117
					(-0.03)					(-1.62)					(0.61)					(-1.31)
Log(Total assets)$_{t-1}$	0.453***	0.452***	0.452***	0.454***	0.451***	0.449***	0.449***	0.449***	0.449***	0.448***	0.427***	0.427***	0.425***	0.427***	0.425***	0.426***	0.426***	0.425***	0.426***	0.425***
	(40.31)	(39.78)	(39.85)	(40.05)	(39.66)	(38.88)	(38.60)	(38.50)	(38.69)	(38.58)	(35.85)	(35.54)	(35.26)	(35.46)	(35.22)	(33.81)	(33.67)	(33.53)	(33.68)	(33.52)
(Market to book)$_{t-1}$	0.0997***	0.0999***	0.0988***	0.0997***	0.0989***	0.111***	0.111***	0.111***	0.110***	0.110***	0.102***	0.102***	0.101***	0.102***	0.102***	0.107***	0.107***	0.108***	0.107***	0.107***
	(6.18)	(6.24)	(6.15)	(6.20)	(6.16)	(7.10)	(7.04)	(7.04)	(7.02)	(6.95)	(5.92)	(5.94)	(5.88)	(5.93)	(5.92)	(6.09)	(6.06)	(6.14)	(6.07)	(6.03)
(Stock return)$_t$	3.552***	3.558***	3.522***	3.553***	3.509***	3.876***	3.861***	3.839***	3.854***	3.857***	6.180***	6.182***	6.146***	6.181***	6.126***	6.734***	6.724***	6.754***	6.728***	6.789***
	(12.76)	(12.75)	(12.62)	(12.77)	(12.52)	(13.85)	(13.78)	(13.63)	(13.75)	(13.67)	(20.33)	(20.34)	(20.18)	(20.33)	(20.02)	(19.28)	(19.24)	(19.37)	(19.24)	(19.36)
(Stock return)$_{t-1}$	2.891***	2.896***	2.897***	2.891***	2.885***	3.159***	3.162***	3.148***	3.165***	3.163***	5.695***	5.697***	5.702***	5.695***	5.670***	6.203***	6.206***	6.206***	6.204***	6.247***
	(10.95)	(10.96)	(10.95)	(10.95)	(10.87)	(11.08)	(11.03)	(10.94)	(11.06)	(10.95)	(17.89)	(17.87)	(17.87)	(17.89)	(17.74)	(17.72)	(17.68)	(17.62)	(17.67)	(17.69)
(Return on assets)$_t$	0.355**	0.351**	0.364**	0.355**	0.381**	0.218	0.217	0.232	0.216	0.225	1.239***	1.238***	1.254***	1.239***	1.270***	1.096***	1.095***	1.101***	1.096***	1.086***
	(2.36)	(2.34)	(2.41)	(2.36)	(2.52)	(1.27)	(1.26)	(1.34)	(1.25)	(1.29)	(6.91)	(6.90)	(6.95)	(6.90)	(7.00)	(5.16)	(5.14)	(5.16)	(5.15)	(5.06)
(Return on assets)$_{t-1}$	0.246*	0.245*	0.236*	0.244*	0.224	0.299*	0.301*	0.291*	0.305*	0.300*	-0.0547	-0.0550	-0.0701	-0.0550	-0.0779	-0.0193	-0.0190	-0.0175	-0.0206	-0.0261
	(1.72)	(1.72)	(1.65)	(1.71)	(1.56)	(1.82)	(1.82)	(1.74)	(1.84)	(1.80)	(-0.32)	(-0.32)	(-0.41)	(-0.32)	(-0.45)	(-0.10)	(-0.09)	(-0.09)	(-0.10)	(-0.13)
(Stock return volatility over 5 years)$_t$	3.547***	3.537***	3.446***	3.527***	3.381***	3.146***	3.155***	3.225***	3.118***	3.132***	1.045	1.042	0.937	1.046	0.943	0.691	0.705	0.759	0.716	0.640
	(5.53)	(5.53)	(5.40)	(5.49)	(5.28)	(4.22)	(4.21)	(4.28)	(4.19)	(4.22)	(1.57)	(1.57)	(1.42)	(1.57)	(1.42)	(0.88)	(0.90)	(0.96)	(0.91)	(0.82)
Log(CEO tenure)$_t$	-0.0361***	-0.0367***	-0.0343***	-0.0351***	-0.0349***	-0.0285*	-0.0303**	-0.0305**	-0.0266*	-0.0282*	0.0816***	0.0814***	0.0827***	0.0815***	0.0837***	0.0897***	0.0889***	0.0859***	0.0870***	0.0902***
	(-2.76)	(-2.81)	(-2.59)	(-2.68)	(-2.66)	(-1.93)	(-2.04)	(-2.03)	(-1.77)	(-1.84)	(6.04)	(6.03)	(6.05)	(6.03)	(6.11)	(5.72)	(5.68)	(5.36)	(5.44)	(5.54)
(External hire indicator)$_t$	0.113***	0.112***	0.109***	0.113***	0.103***	0.0948***	0.0942***	0.0899***	0.0942***	0.0889***	0.0156	0.0155	0.0120	0.0156	0.00718	0.00967	0.00914	0.00444	0.00925	0.00532
	(4.40)	(4.38)	(4.27)	(4.39)	(4.09)	(3.29)	(3.27)	(3.12)	(3.26)	(3.09)	(0.58)	(0.57)	(0.44)	(0.58)	(0.27)	(0.32)	(0.30)	(0.15)	(0.30)	(0.17)
(CEO & Chairman indicator)$_t$	0.143***	0.142***	0.146***	0.143***	0.141***	0.140***	0.143***	0.143***	0.145***	0.149***	0.143***	0.143***	0.146***	0.143***	0.143***	0.148***	0.149***	0.150***	0.148***	0.155***
	(5.37)	(5.37)	(5.50)	(5.40)	(5.31)	(4.63)	(4.70)	(4.68)	(4.74)	(4.85)	(5.07)	(5.07)	(5.18)	(5.07)	(5.06)	(4.54)	(4.56)	(4.57)	(4.54)	(4.69)
MBA degree indicator	0.0606**	0.0614**	0.0631**	0.0604**	0.0651**	0.0355	0.0369	0.0412	0.0339	0.0370	0.0571**	0.0574**	0.0599**	0.0572**	0.0604**	0.0355	0.0360	0.0431	0.0376	0.0388
	(2.33)	(2.36)	(2.42)	(2.33)	(2.51)	(1.28)	(1.33)	(1.49)	(1.22)	(1.32)	(1.96)	(1.97)	(2.05)	(1.96)	(2.07)	(1.14)	(1.15)	(1.38)	(1.21)	(1.23)
Female indicator	-0.00958	-0.00555	-0.0128	-0.0120	-0.0114	0.0692	0.0652	0.0677	0.0609	0.0631	0.00606	0.00725	0.00511	0.00597	0.00188	0.0582	0.0562	0.0610	0.0578	0.0554
	(-0.09)	(-0.05)	(-0.12)	(-0.11)	(-0.11)	(0.79)	(0.77)	(0.80)	(0.71)	(0.74)	(0.05)	(0.06)	(0.05)	(0.05)	(0.02)	(0.56)	(0.55)	(0.60)	(0.56)	(0.54)
Constant	3.280***	3.274***	3.254***	3.249***	3.289***	3.352***	3.278***	3.282***	3.234***	3.272***	2.839***	2.837***	2.848***	2.838***	2.845***	2.862***	2.818***	2.873***	2.836***	2.812***
	(26.11)	(27.01)	(24.04)	(25.66)	(26.67)	(26.96)	(27.35)	(24.75)	(26.19)	(27.07)	(23.02)	(23.78)	(21.02)	(22.52)	(23.51)	(21.41)	(21.74)	(19.96)	(20.87)	(21.72)
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Industry dummies	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
No. of obs.	13766	13766	13689	13766	13609	10580	10580	10508	10580	10412	13861	13861	13782	13861	13698	10643	10643	10570	10643	10471
Adj. R^2	0.510	0.510	0.510	0.510	0.51	0.524	0.523	0.523	0.523	0.524	0.491	0.491	0.491	0.491	0.491	0.497	0.497	0.498	0.497	0.499
Initial conditions at *t-k* refer to:	**macro conditions at the time of the first job**					**macro conditions at the time of graduation**					**macro conditions at the time of the first job**					**macro conditions at the time of graduation**				

‡: Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.
°: Variable defined as in Schoar and Zuo (2012).

The table reports full-sample results from LSDV regressions with year and industry dummies, with *Total assets* as the lagged firm size control. These are "reduced form" regressions since five of the variables that we used earlier as excluded instruments (see IV regressions in Tables 3 and 4) now appear directly in the main equation. Schoar and Zuo (2012)'s recession year indicator, our recession indicator, the US unemployment rate, the investment-grade-bond yield spread and the S&P 500 volatility are included to capture macroeconomic conditions at the time (*t-k*) of the first job - the first job as it appears in our data (columns 1-5 and 11-15), and at the time of graduation (Columns 6-10 and 16-20). Since we do not have graduation information on all individuals, the number of observations in the regressions with macroeconomic conditions at the time of graduation is lower. The remaining controls correspond to those in Table 3.2. The dependent variables are log(TDC1) (Columns 1-10) and log(TDC2) (Columns 11-20). For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.
Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the firm level are in parentheses.

Appendix 3.7

Table 3.A7: Cross-section OLS regressions for selected years with *First Total Assets* as the main explanatory variable

Panel A: Full sample[‡]

	Log(Total compensation 1)$_t$			**Log(Total compensation 2)$_t$**		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Total assets)$_{t-k}$	0.00470	0.00846	0.000677	0.00321	-0.0209	0.0157**
	(0.23)	(0.61)	(0.06)	(0.18)	(-1.57)	(2.29)
Log(Total assets)$_{t-1}$	0.335***	0.456***	0.428***	0.346***	0.422***	0.400***
	(12.26)	(24.48)	(19.72)	(12.71)	(17.95)	(20.08)
(Market to book)$_{t-1}$	0.0877*	0.121**	0.120***	0.101**	0.162***	0.0731**
	(2.21)	(3.03)	(4.57)	(2.99)	(6.83)	(2.26)
(Stock return)$_t$	6.505***	3.513***	3.961***	5.178***	5.865***	8.790***
	(3.99)	(3.36)	(3.46)	(3.37)	(5.36)	(10.87)
(Stock return)$_{t-1}$	6.710***	4.064***	1.573	7.483***	6.643***	6.046***
	(4.50)	(3.53)	(1.35)	(5.51)	(8.10)	(4.87)
(Return on assets)$_t$	0.0191	-0.179	0.880	0.935	1.569**	2.298**
	(0.02)	(-0.21)	(0.96)	(0.88)	(2.24)	(2.48)
(Return on assets)$_{t-1}$	1.017	0.887	0.536	0.448	-1.082*	-0.290
	(1.71)	(1.29)	(0.79)	(0.63)	(-2.15)	(-0.72)
(Stock return volatility over 5 years)$_t$	6.706	6.418***	5.130***	4.781	6.768***	2.541
	(1.80)	(3.85)	(4.17)	(1.62)	(4.33)	(1.35)
Log(CEO tenure)$_t$	0.0588*	0.0201	-0.0113	0.136***	0.0942***	0.141***
	(1.93)	(0.78)	(-0.27)	(5.41)	(4.04)	(4.47)
(External hire indicator)$_t$	0.0554	0.166**	0.100**	0.00758	0.0738	-0.0100
	(0.58)	(2.96)	(2.94)	(0.17)	(1.32)	(-0.22)
(CEO & Chairman indicator)$_t$	0.141	0.154**	0.141***	0.0644	0.143***	0.135**
	(1.71)	(3.04)	(5.55)	(0.71)	(3.23)	(2.52)
MBA degree indicator	0.141**	0.0279	0.0846*	0.0767	0.0490	0.0244
	(2.33)	(0.55)	(1.88)	(1.09)	(0.67)	(0.44)
Female indicator	-0.894***	0.209	-0.0826	0.291	0.222	-0.125
	(-6.12)	(1.35)	(-0.64)	(0.47)	(1.23)	(-0.71)
Constant	3.959***	3.641***	4.167***	3.474***	3.424***	3.686***
	(18.34)	(34.52)	(15.10)	(17.10)	(26.45)	(18.28)
No. of obs.	682	940	1108	684	941	1113
Adj. R^2	0.420	0.447	0.477	0.421	0.432	0.456
Year (t)	**1995**	**2000**	**2005**	**1995**	**2000**	**2005**

(continued)

Table 3.A7 ***(continued)***

Panel B: Subsample 2‡

	Log(Total compensation 1)$_t$			Log(Total compensation 2)$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Total assets)$_{t-k}$	-0.00231	0.0339	-0.00330	-0.00764	-0.00795	0.00337
	(-0.11)	(1.36)	(-0.30)	(-0.25)	(-0.39)	(0.20)
Log(Total assets)$_{t-1}$	0.335***	0.461***	0.441***	0.367***	0.413***	0.409***
	(7.99)	(13.24)	(17.72)	(6.98)	(12.23)	(18.47)
(Market to book)$_{t-1}$	-0.0522	0.118**	0.139***	0.00143	0.181***	0.0615
	(-0.73)	(3.06)	(4.17)	(0.03)	(6.69)	(1.50)
(Stock return)$_t$	5.774*	3.164	4.890***	6.323**	6.880***	8.856***
	(2.08)	(1.73)	(3.53)	(2.99)	(3.94)	(6.59)
(Stock return)$_{t-1}$	10.70*	4.929***	2.567	10.60**	6.975***	7.800**
	(2.10)	(3.62)	(1.34)	(3.13)	(8.54)	(2.58)
(Return on assets)$_t$	1.352	0.831	-0.0645	3.132	3.664***	2.268**
	(0.85)	(0.54)	(-0.07)	(1.68)	(3.40)	(2.25)
(Return on assets)$_{t-1}$	1.202	-0.268	1.355*	-0.380	-4.274***	-0.0852
	(0.82)	(-0.16)	(1.94)	(-0.20)	(-6.20)	(-0.14)
(Stock return volatility over 5 years)$_t$	10.22**	3.752	5.945***	12.06**	8.350***	5.411**
	(2.36)	(1.66)	(3.35)	(2.41)	(3.83)	(3.14)
Log(CEO tenure)$_t$	0.0701	0.0768	-0.0481	0.110**	0.157*	0.156***
	(1.00)	(1.17)	(-0.81)	(2.78)	(1.99)	(3.61)
(External hire indicator)$_t$	-0.0539	0.166*	0.141*	-0.160	0.130	0.0546
	(-0.33)	(2.10)	(1.88)	(-1.45)	(1.44)	(0.57)
(CEO & Chairman indicator)$_t$	0.194	0.183	0.142**	0.190	0.211	0.238***
	(1.18)	(1.61)	(3.08)	(1.06)	(1.55)	(3.34)
MBA degree indicator	0.0876	-0.0776**	0.0387	0.0880	0.0270	-0.0211
	(1.46)	(-2.40)	(0.58)	(1.09)	(0.26)	(-0.30)
Female indicator	-0.897***	0.0797	-0.198	0.368	-0.0262	-0.109
	(-3.49)	(0.31)	(-1.53)	(0.70)	(-0.23)	(-0.61)
Constant	3.921***	3.407***	4.180***	3.210***	3.221***	3.481***
	(11.82)	(16.39)	(9.17)	(9.71)	(9.09)	(13.08)
No. of obs.	229	320	408	229	321	408
Adj. R^2	0.458	0.490	0.530	0.479	0.494	0.493
Year (t)	**1995**	**2000**	**2005**	**1995**	**2000**	**2005**

‡ Table 3.A1 in Appendix 3.1 summarizes the conditions applied to the full sample and subsamples.

The table reports results from a robustness check with cross-section regressions for years 1995, 2000 and 2005. For each of the three years, the cross-sections were selected from the full sample (Panel A) and Subsample 2 (Panel B). The average age of individuals at the start of the first job in these cross sections is between 35 and 37 years. The average difference between the current date (1995/2000/2005) and the start date of the first job is between 17 and 19 years.

The dependent variables are log(TDC1) (Columns 1-3) and log(TDC2) (Columns 4-6). The explanatory variable of interest is *First Total Assets*. The remaining controls correspond to those used in our benchmark specifications in Table 3.2. For a more detailed description of the variables, see Table 3.A2 in Appendix 3.2.

Statistical significance levels are indicated as follows: * p<0.10, ** p<0.05, *** p<0.01. Robust standard errors clustered at the industry level (using the Fama-French 12 industry classification) are in parentheses.