

**Overconfidence, Corporate Governance,
and Global CEO Turnover**

by

Hyung-Suk Choi
College of Business Administration
Hongik University
Seoul, Republic of Korea
Phone: (822) 320-1749
Email: hyungsuk.choi@hongik.ac.kr

Stephen P. Ferris
Department of Finance
Robert J. Trulaske, Sr. College of Business
University of Missouri
Phone: (573) 882-9905
Email: ferriss@missouri.edu

Narayanan Jayaraman
College of Management
Georgia Institute of Technology
Atlanta, GA 30332-0520
Tel: 404-894-4389
Email: narayanan.jayaraman@mgt.gatech.edu

Sanjiv Sabherwal
Department of Finance and Real Estate
University of Texas at Arlington
Arlington, TX 76019
Phone: 817-272-5520
Email: sabherwal@uta.edu

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Abstract

Using a large sample of global firms, we find that overconfident CEOs face significantly greater hazards of forced turnovers than non-overconfident CEOs face. We show that the effect of overconfidence on CEO turnover is distinct from the effects of CEO characteristics, firm performance, and governance. We observe that there is a universal preference for overconfident CEOs and that overconfident CEOs are disproportionately followed by other overconfident CEOs regardless of whether they are terminated or otherwise removed from office. We also find that for firms with stronger corporate governance, the market adjusted stock return performance is significantly higher following a forced turnover. Overall, we conclude from our analysis that forced turnover of overconfident CEOs is a global phenomenon and provide support to the model presented by Goel and Thakor (2008).

Keywords: overconfidence, CEO turnover, corporate governance, culture.

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Overconfidence, Corporate Governance, and Global CEO Turnover

1. Introduction

Recent theoretical research by Goel and Thakor (2008) predicts that overconfident CEOs should have a higher likelihood of forced turnover. Because overconfident CEOs will overestimate their own skills and information acquisition abilities, they will overinvest in projects that reduce firm value. This behavior by CEOs will prod boards of directors to remove such individuals and seek a new CEO that will maximize firm value. Campbell, Johnson, Rutherford, and Stanley (2009) empirically test this model for a large cross-section of U.S. firms and provide evidence in support of Goel and Thakor. But given important differences in national cultures, legal systems, and corporate governance practices reported by such researchers as La Porta et al. (1998, 1999, 2000), Stulz and Williamson (2003), Doidge, Karolyi, and Stulz (2007) and Aggarwal, Erel, Stulz, and Williamson (2009), it is not clear whether the Goel and Thakor model holds in the global marketplace.

The extensive cross cultural literature of psychology (e.g, Teigen,, Brun and Slovic, 1988; Goszczynska, Tyszka and Slovic, 1991; Whitcomb, Onkal, Curley and Benson, 1995; Weber and Hess, 2000) documents the presence of a national culture effect on how individuals select among choices and the degree of overconfidence that they bring to those decision. Consequently, we hypothesize that overconfidence among CEOs will vary internationally. National culture involves such dimensions as language, religion, and legal heritage and can be expected to influence the behavior of senior executives. Consequently, national culture has important implications regarding the extent to which overconfidence can explain the forced departure of corporate CEOs. Thus the fundamental research question posed in this study is whether

overconfident CEOs globally are more likely to be terminated than their less confident peers or is such turnover essentially a U.S. phenomenon?

But the practice of disciplining CEOs through involuntary turnover is influenced by the level of shareholder protection and the quality of the corporate governance. Defond and Hung (2004) is one of the first studies to analyze this relation and provide convincing evidence that strong law enforcement significantly reinforces the inverse relation between CEO turnover and poor performance. Defond and Hung, however, use country level proxies for their measure of corporate governance and consequently are unable to capture variation in corporate governance across firms *within* the same country. Their proxies imply a homogeneity in corporate governance within a country that does not exist in practice¹. Consequently, in this study, we use firm level governance data that permits a more careful control for the ability of governance to influence the turnover decision.

We show that CEO overconfidence is a significant determinant of global CEO turnover, even after controlling for the determinants of turnover established in the prior literature. We find that overconfident CEOs face a significantly greater hazard of forced turnovers than non-overconfident CEOs. These results hold after controlling for CEO age, firm stock return performance, and the firm's governance. We establish that the effect of overconfidence on CEO turnover is distinct from CEO characteristics, firm performance, and governance.

We also examine the nature of firm performance following a forced turnover. We discover that for firms with stronger corporate governance, the market-adjusted stock return is significantly higher following the forced removal of a CEO. However, for firms with weak

¹ We observe examples of such variation even within the United States. Although the US has a single, common law based legal and governance system, the firm level governance index of Gompers, Ishii, Metrick (2003) demonstrates considerable cross-sectional variability, with distinct patterns in corporate behavior in the high and low scoring index firm subsamples.

corporate governance, market-adjusted performance improves only when an overconfident CEO is replaced by a non-overconfident CEO.

The findings in this study advance the literature in two different ways. First, our results extend the growing literature on the effect of overconfidence on CEO corporate decision-making and firm values. Malmendier and Tate (2005, 2008) provide evidence on the implications of CEO overconfidence for corporate investments and acquisition decisions. More directly, we extend the evidence supporting forced turnover of CEOs of the U.S. firms in Campbell et al. (2009) to a global context. Our findings also provide international evidence consistent with the predictions of Goel and Thakor (2008).

Further, we add to a small, but growing literature that examines international CEO turnover. Although there has been extensive research regarding CEO turnover in the United States, few studies examine this issue internationally.² Of the studies that do focus on global CEO turnover, most tend to focus on a single country. For example, Kaplan (1994a) examines German firms while Kaplan (1994b) and Kang and Shivdasani (1995) study Japanese firms. More recently, Dahya, McConnell, and Travlos (2002) provide evidence on turnover among U.K. firms and Volpin (2002) focuses on Italian firms. We contribute to the literature by investigating the patterns and determinants of CEO turnover in a more comprehensive set of global firms, spanning a variety of countries. This approach allows us to better understand the relation between CEO turnover and national cultures, legal systems, and corporate governance mechanisms.

The remainder of this study is organized as follows. Section 2 contains a discussion of how cultural variations in decision-making can potentially produce international differences in

² Among the many studies that examine CEO turnover in the U.S. are Warner, Watts, and Wruck (1988), Huson, Parrino, and Starks (2001), Lehn and Zhao (2006), Parrino (1997), Weisbach (1998, 2005).

the incidence and behavior of overconfident CEOs. Section 3 describes our sample and accompanying methodology. Section 4 presents and discusses our empirical findings. We provide a brief summary and interpretation of our results in Section 5.

2. Country Cultural Effects on Managerial Overconfidence

Both the cross-cultural psychology and finance literatures suggest important reasons why the overconfidence among CEOs and other senior executives might vary internationally. More specifically, these literatures collectively imply that differences in national cultures generate varying levels of overconfidence. Hence the findings regarding the decision-making of overconfident U.S. CEOs might not apply with equal veracity to their international counterparts.

Weber and Hsee (2000) contend that national cultures generate critical differences in four areas of judgment and decision making. These areas, in turn, shape the extent to which individuals can be characterized as overconfident. Studies such as Phillips and Wright (1977), Wright and Phillips (1980), Pollock and Chen (1986) and Yates (1982, 1990) show that there are trans-cultural differences in probabilistic thinking and the quality of probability judgments which are critical components of assessing business opportunities. Douglas and Wildavsky (1982) examine the influence of culture on both the perception of risk and its acceptability. They conclude that cultural differences in attitudes toward risk can be explained in terms of their contribution to maintaining a particular way of life. Slovic (1997) suggests that cultural differences in trust in institutions are likely to explain national differences in perceived risk. Weber and Hsee (1998) examine differences in risk preferences and conclude that members of collectivist cultures can afford to take more risk because their social networks protect them against catastrophic outcomes. Weber, Tada and Blasi (1999) construct a taxonomy of

qualitatively different methods by which individuals arrive at decisions with varying mixes of the analytical and intuitive. Extensive work (e.g, Von Winterfeldt and Edwards, 1986; Simon, 1990; Shafir, Simonson and Tversky, 1993; Damasio, 1993; Goldstein and Weber, 1995). documents significant cultural differences in the selection of the primary decision making approach.

Stulz and Williamson (2003) describe two ways in which national culture can influence business decision making. National values which help to shape executive decision-making are themselves influenced by the country's culture. Coffee (2001) argues that it is difference in cultural values that explains why the private benefits from control vary across countries. They also note that differences in culture account for variation in institutions across countries. Institutions which can be defined as the rules of the game in a country are developed in path dependent and highly localized processes. La Porta et al (1997) discuss how various country institutions produce differences in capital market development, market transparency, ability to enforce contracts, and the extent of state intervention in business. These factors will, in turn, affect how CEOs decide and the confidence they have in their decision-making ability.

3. Data and Methodology

Fortune magazine provides an annual ranking of the 500 largest companies of the world based on revenue. We begin our sample construction by compiling these annual lists over the years 2000-2006. From these annual lists, we create a dataset of all non-financial firms that appear at least once in this list and the countries in which a firm is headquartered. Because of the political issues associated with discipline of CEOs in state-owned enterprises, we eliminate such firms from our sample.

For a firm in our dataset, we include all the CEOs of the firm during our sample period. During the years when a firm is not in the *Fortune* Global 500 list or is in the list during 2000-03 when CEO information was not included in the list, the names of the CEOs are hand collected from a variety of sources. The biographical data of all the CEOs such as the date of birth, birthplace, nationality, gender, education, and tenure with a firm are also hand collected from a variety of sources such as *Mergent Online*, individual corporate web sites, financial statements, and other online sources.

The legal regime for countries is obtained from the classification taxonomy constructed by La Porta et al. (1998). Primary religions and languages of countries are drawn from Stulz and Williamson (2003) while national culture dimensions are those developed by Hofstede (2001). We consider a country to be above average on a particular dimension of culture if it has a Hofstede score above the median score for all the countries in the world on that dimension.

We obtain firm level accounting data from the *Compustat Global* and *Compustat North America* databases. We measure the size of a firm as the log of assets at the beginning of the year. We measure the accounting rate of return as EBIT divided by the total assets. We convert accounting data other than ratios to US\$ using the exchange rates obtained from the *Compustat Global* database. Items measured at a specific time, such as assets, are converted from local currency to US\$ based on the exchange rate at that time. Items measured over a year, such as sales, are converted from local currency to US\$ based on the 12-month average exchange rate over that year.

The stock market performance of the firm is market-adjusted. The market returns for each country are proxied by the MSCI country index. All the stock market data is obtained from *Datastream*. The corporate governance data is taken from RiskMetrics Group's *Corporate*

Governance Quotient (CGQ) dataset. The construction and measure of the corporate governance data are discussed in greater detail in the next section.

Our measure of overconfidence is based on how the market perceives the confidence level of a CEO (Malmendier and Tate, 2008). Our proxy for market perception is based on the *Factiva* database, which includes articles from major newspapers, magazines and trade publications from around the world. For each CEO of a firm, we record the number of articles related to the firm in Factiva during 1996-2006 that refer to the CEO using the terms (a) “confident” or “confidence,” (b) “optimistic” or “optimism,” (c) “not confident,” (d) “not optimistic,” and (e) “reliable,” “cautious,” “conservative,” “practical,” “frugal,” or “steady.” We then compare the number of articles that portray a CEO as confident and optimistic to the number of articles that portray him as not confident, not optimistic, reliable, cautious, conservative, practical, frugal, or steady. That is, we classify a CEO as overconfident if $a + b > c + d + e$. We do not classify a CEO as overconfident or not overconfident if we do not find any articles related to the firm that mention the CEO.

We adopt the following strategy to decide whether the turnover of the CEO is forced or voluntary. We review the news releases surrounding our sample of turnover announcements. We categorize the turnover as voluntary if any one of the following reasons is stated: a) the CEO retired; b) the CEO was an interim CEO and this was known from the start of his/her tenure; c) the company was acquired by another company; d) the CEO continued on as chairman; or e) the CEO resigned to become CEO of another company. We categorize the turnover as “forced” if any of the following is mentioned surrounding the turnover announcement: a) accounting/financial scandal; b) poor performance of the firm; c) management conflicts; or d)

rumors that the CEO was removed by the board. In the following section, we present our empirical findings.

4. Empirical Findings

3.1 Sample Characteristics

Table 1 presents a series of descriptive panels regarding the 361 CEO turnovers that serve as the sample of this study. Using the criteria discussed in the immediately preceding section, we classify 106 (29.4%) of our turnovers as forced while the remaining 255 (70.6%) turnovers are assigned as other (i.e., retirements and voluntary resignations). Panel A of Table 1 provides a distribution of our sample turnovers by industry. Most of the turnovers occur in the manufacturing industry (39.9%) followed by finance (20.5%) and transportation (16.9%). The fewest turnovers occur in technology (4.7%) and services (3.3%). The greatest frequency of forced turnovers, however, occur in services (41.7%), followed by trade (35.8%) and finance (28.4%).

Panel B contains a distribution of turnovers by year. We observe that the total number of turnovers are fairly uniformly distributed across the seven years of our sample. The fewest number occur in 2000, the first year of our sample period. The greatest number are observed in 2005, when there are 71 turnovers, representing 19.7% of our sample. The largest number of forced turnovers occurs in 2002 with 29, followed by 19 in years 2003 and 2005.

We construct a geographical distribution of our sample in panel C where we identify the continent or country where our sample turnovers occur. Not surprisingly, we obtain nearly half of our sample (48.8%) from the U.S. Europe and the U.K. combined contribute almost a third (30.5%) of the sample. The fewest number of turnovers occur in the Americas less the U.S. and account for only 3.9% of our sample. Clearly, our sample is largely drawn from the developed

markets of the U.S., U.K., and Europe. Similarly, the largest number of forced turnovers occurs in the USA with 49, representing 46.2% of the sample followed by Europe less the U.K. with 28 and accounting for 26.4% of the total turnover sample.

We examine the influence of legal regime on the incidence of CEO turnover in panel D. We find that nearly two-thirds of our sample turnovers occur in common law countries, reflecting the strong presence of U.S. and the U.K. firms in our sample. Among the civil law countries, the highest percentage of turnovers occur within the German civil law regime, while the fewest are in the Scandinavian civil law countries. Seventy (66%) of the forced turnovers occur within the common law countries compared to only 36 (34%) in the civil law countries. This results suggests that executive disciplining is a more frequent phenomenon in firms headquartered in common law countries.

Panel E introduces the Hofstede cultural dimensions into our analysis of the international turnover. These dimensions have been used in a number of finance studies (Kwok and Tadesse, 2006; Gleason et al., 2000; Sekely and Collins, 1988; Datta and Puia, 1995; Chakrabarti et al., 2009; Kirkman et al., 2006) since their creation by Hofstede in 1980. These measures consist of five different dimensions of a country's culture. The power distance index captures the extent to which less powerful members of organizations and institutions within a country both accept and expect that power is distributed unequally. Individualism measures the extent to which individuals are integrated into groups within a country. Masculinity refers to the distribution of roles between genders. The uncertainty avoidance measure addresses a society's tolerance for uncertainty and ambiguity. It indicates the extent to which that country's culture programs its members to feel comfortable or not in unstructured situations. The last of the Hofstede

dimensions is long-term orientation and focuses on the relative culture importance of thrift, perseverance, tradition and satisfaction of social obligations.

We observe in panel E that the incidence of turnover is broadly consistent with the underlying traits and behaviors associated with each of these cultural dimensions. We find that turnover is higher in those nations with a low power distance, indicating that subordinates are less accepting of an unequal power sharing. That is, CEOs are more likely to leave a firm located in a country where subordinates require greater equality in the distribution of power. Likewise, turnover is greater when the national culture deemphasizes the long-term and focuses on the more immediate. Turnover is also more frequently observed when the cultural tolerance for uncertainty is low. High levels of masculinity and individualism are associated with greater CEO removal. These traits imply an aggressiveness and a willingness to make difficult decisions that are often required when removing a CEO, especially an overconfident individual.

The last panel in Table 1 contains our examination of corporate governance and its influence on the rates of CEO turnover. Using the two indices of corporate governance developed by Aggarwal et al (2009), we find in Panel F a suggestion that turnover is weakly associated with corporate governance.³ Specifically, we observe that for firms with weak governance as measured by their presence in the bottom quartile of either the GOV44 or GOV7 index, there is less total turnover of CEOs when compared to firms in the top governance quartile. Similar results occur for the percentage of forced turnovers relative to other turnover. The results, however are not monotonic across quartiles. Our findings suggest that weak corporate

³ Aggarwal et al. (2009) develop an additive corporate governance index using 44 attributes provided in the data supplied by CGQ. The 44 attributes cover four broad sub-categories: 1) *Board* (25 attributes), 2) *Audit* (three attributes), 3) *Anti-takeover* (six attributes), and 4) *Compensation and Ownership* (10 attributes). If a firm satisfies all 44 governance attributes GOV44 index would be equal to 100%. They also construct an alternative governance index (GOV7) based on seven individual governance attributes. These seven attributes are: Board Independence, Chairman/CEO separation, Board Structure, Audit Committee Independence, Auditor Ratification, and Stock Classes.

governance reduces the incidence with which boards might remove CEOs, but that average or strong governance provides approximately equivalent CEO disciplining.

Table 2 provides summary financial characteristics for our sample firms. Given that our firms are drawn from the Global 500 list, it is not surprising that they are large, with an average asset value in excess of \$88 billion and a market equity capitalization of \$48 billion. Our sample firms appear profitable with a mean accounting return of 8.1%. The accounting return for the set of firms that had forced CEO departures is not statistically different from those firms with voluntary or normal departures. However, the mean stock market return in the year prior to turnover is significantly lower for the firms that had forced departures (-3.8%) as compared to firms with voluntary departures (7.4%). When we measure the returns over the entire tenure of the CEO, the mean return of firms where the CEOs were forced out was 1.2%. This is lower than that for firms with voluntary departures which had a return of 17.9%.

3.2 The international distribution of CEO overconfidence

Having established that there is variation across countries in the pattern of CEO turnover and the use of forced termination, it is now useful to investigate how overconfidence might explain these patterns. We begin our analysis of overconfidence by examining its international distribution.

In a series of panels contained in Table 3, we present the distribution of turnovers stratified by the CEO's overconfidence status across a variety of subsamples. Panel A provides our results for the aggregate sample. We find that overconfident CEOs are more frequently forced out than non-overconfident CEOs. Indeed, the overconfident CEOs are forced out nearly four times as frequently as the non-overconfident individuals. Similarly, we observe that overconfident CEOs more frequently leave their positions voluntarily or due to retirement than

non-overconfident CEOs. We conclude that overconfident CEOs experience greater turnover than their non-overconfident counterparts regardless of whether their termination is forced or otherwise.

We analyze the role that legal regime exerts on the turnover of overconfident CEOs in panel B. Legal regime establishes the framework under which corporate governance and boards operate. Legal regimes that provide minority or external shareholders with greater authority or legal rights, might be expected to develop boards that are more willing to discipline CEOs through removal. We observe that civil law countries, in aggregate, tend to forcibly remove overconfident CEOs only slightly more often (28.3% vs 25.0%) than their non-over-confident peers. Because of the small sample size it is difficult to draw any firm conclusion regarding the forced turnover among the various sub-civil law regimes.

The effect of legal regime on the removal of overconfident CEO is most pronounced in the common law countries. Such a result is consistent with the greater rights and protections afforded external shareholders in these countries as reported by La Porta et al (1997). One third of overconfident CEOs of companies headquartered in common law countries are forcibly terminated from their positions compared to only 21.1% for non-overconfident CEOs. The difference in these percentages is statistically significant.

In Panel C we examine the role that various aspects of national culture exert on CEO turnover. We find that the power distance is inversely related to the likelihood that an overconfident CEO is terminated. Power distance captures the extent to which a society is willing to accept an unequal distribution of power, thus it is not surprising that overconfident CEOs operating in such countries are more frequently removed. Uncertainty avoidance reflects the extent to which a culture seeks to eliminate ambiguity from its affairs. Our results show that

there is more frequent termination of overconfident CEOs in these countries, suggesting that such removals might be done in an effort to gain greater certainty in the firm's activities. This is consistent with the popular perception that overconfident CEOs are more aggressive and risk taking than their less confident counterparts. We further observe that cultures with a high degree of individualism and masculinity are associated with a more frequent removal of overconfident CEOs. Our findings suggest that these two cultural characteristics which foster the emergence of overconfident CEOs are also related to their removal from leadership roles. We conjecture that the corporate boards operating in these countries are also characterized by a high level of individualism and masculinity and hence are not reluctant to challenge CEOs, regardless of their overconfidence. Finally, we determine that long-term orientation is inversely related to a greater incidence of CEO turnover. We view these findings as consistent with the proposition that cultures emphasizing near term results are more likely to remove their CEOs in an effort to realize their immediate objectives. We conclude from Panel C that there are important national differences as captured by legal regime associated with the termination of overconfident CEOs.

We examine the role of corporate governance in explaining CEO turnover in panel D. We employ both the forty-four (GOV44) and seven (GOV7) item indices developed by Aggarwal et al (2009) to measure a firm's governance. More specifically, we stratify our sample firms into quartiles based on these indices and classify the top quartile as strong governance while firms located in the bottom quartile are viewed to have weak governance.

The top set of comparisons in panel D use the more comprehensive GOV44 index to examine the effect of governance on the removal of overconfident CEOs. We observe that there are more overconfident CEOs within the weaker governance portfolio. But overconfident CEOs are forced removed more frequently by firms located in the weak governance portfolio. The

difference in the percentage of overconfident CEOs forcibly terminated, however, is not statistically significant across governance quartiles. We observe similar results when we use GOV7 to measure firm corporate governance quality. We conclude from panel D that the global practice of forcibly removing overconfident CEOs occurs regardless of the quality of the firms internal governance.

3.3 CEO succession and overconfidence

The issue of executive succession has been widely examined by such researchers as Davidson et al (1990), Parrino (1997) and Huson et al (2004), but not from the perspective of overconfidence. An interesting issue then becomes whether an overconfident CEO removed from office is succeeded by another overconfident CEO or do boards tend to hire less confident successors. Success in the implementation of corporate strategic objectives is often a function of how well the firm executes its human resource cycle and selects the right successor. A new CEO will introduce considerable changes in organizational strategy and structures that can significantly impact subsequent firm performance.

To examine this issue more fully, we present a set of transition matrices in Table 4 based on the overconfidence status of the terminated CEO and the successor. Panel A contains our findings for the aggregate sample. We observe that overconfident CEOs are usually followed by overconfident CEOs, regardless of the circumstances under which they left their position. This result appears to be inconsistent with the findings of Campbell et al (2009) that boards remove overconfident CEOs and hire a less confident CEOs in an effort to maximize share value. When non-overconfident CEOs are forced out, we find that they too, tend to be followed by overconfident CEOs. It is only when non-overconfident CEOs leave voluntarily or due to retirement that the successor is less likely to be overconfident. These findings suggest that boards

have a preference for hiring overconfident CEOs, regardless of the overconfidence of the previous incumbent or the circumstances of his removal.

In panel B we examine the extent to which the preference for an overconfidence CEO is a global phenomenon and not driven by the behavior of US firms. We find that even for non US firms, overconfident CEOs are generally succeeded by overconfident CEOs, regardless of the manner in which they exit the firm. Comparable to the aggregate sample, we find that non-overconfident CEOs who are forcibly terminated, are also followed by overconfident CEOs. We conclude from our examination of CEO succession that the desire for overconfident CEOs is a global preference and not driven solely by U.S. practices. Indeed, the evidence suggests that the selection of overconfident successors might be even more widespread globally than in the U.S.

We continue our investigation of the global popularity of overconfident CEOs by examining their appointment pattern across legal regimes. That is, to what extent do differences in the set of legal rights provided to shareholders influence the kind of CEO chosen to follow an overconfident CEO. Campbell et al (2009), for instance, argue that overconfident CEOs are often replaced by more modest CEOs in an effort to enhance share prices. In panel C, we find again that overconfident CEOs are disproportionately succeeded by other overconfident CEOs, irrespective of how their appointments are terminated. Firms in both common and civil law regimes more frequently appoint overconfident CEOs to follow previous overconfident CEOs.

We conclude our analysis of CEO succession by examining the effect that corporate governance might exert on the successor that is chosen. Goel and Thakor (2008) argue that corporate boards acting in the best interest of shareholders will terminate CEOs with excessive overconfidence. Although we do not explicitly construct a measure of excessive overconfidence, our findings for overconfidence are suggestive. We find that governance does not appear to have

much of an effect on the preference for overconfident CEOs. Firms in the bottom quartile of the Agarwal et al (2009) GOV44 index appoint overconfident successors to overconfident CEO significantly more often than they do non-overconfident individuals. We observe similar behavior for firms with strong governance as measured by their inclusion in the top quartile of GOV44 values. These findings continue to show the strong global preference for overconfident CEOs even while controlling for the quality of the firm's governance.

3.3 Multivariate analysis of overconfidence and CEO turnover

In this section we introduce our multivariate analysis of overconfidence and the turnover of CEOs while controlling for other determinants of turnover suggested in both the existing literature and the research questions posed in this study. Given the nature of our data and analysis, we use the Cox semi-parametric proportional hazard model to provide this analysis.⁴ Table 5 contains our empirical findings. The dependent variable is a binary indicator variable which equals one for forced turnover, and zero otherwise. The control variables include the CEO's age, market performance of the firm, the Hofstede cultural measures, firm size, and the Agarwal et al (2009) GOV44 index. This choice of control variables allow us to introduce into the analysis important CEO demographic, firm, and country level factors.

We show in Table 5, across all five of our model specifications, that overconfident CEOs face significantly greater turnover hazards than their non-overconfident counterparts. All overconfidence coefficients are positive and significant with p-values of 0.069 or smaller. Depending on the model, the coefficients imply that an overconfident CEO faces a 87% to 128%

⁴ Campbell et al (2009) note several advantages of this approach over the more common logistic and multinomial logistic models used in the literature. First, they note that the Cox model controls for the fact that a CEO can be at risk of turnover in a given year and yet not be removed during that year. They also note advantages that the Cox model has in using the time-series of information of a CEO in estimating the hazard of forced turnover that the individual faces. Finally, this approach is distribution free and requires no assumptions regarding the nature and shape of the underlying data.

greater probability of forced turnover than a non-overconfident CEO does. The average probability over the five models is 114%.

In Model 1, we examine the explanatory power of various national characteristics on the likelihood of forced CEO turnover. We note that Christianity as the primary religion positively influences the likelihood of forced CEO turnover. As expected, the market-adjusted stock performance is negative and statistically significant. Goel and Thakor (2008) predict that forced turnovers are more likely to occur within firms having stronger corporate governance. We divide our sample firms into strong and weak governance portfolios based on the median value of the Agarwal et al (2009) Governance44 index. We then construct a binary indicator variable, Strong Governance, with a value of one for firms assigned to the strong governance portfolio and zero otherwise. We find that the coefficient for the Strong Governance indicator variable is positive and statistically significant. This result implies that the probability of forced CEO turnover is positively related to strength of the corporate governance and is consistent with Goel and Thakor (2008).

We examine the influence of Hofstede's five cultural dimensions in Model 2. We find that both power distance and long-term orientation are inversely related to the probability of forced turnover. These results suggest that CEOs operating in countries whose cultures emphasize a longer term orientation tend to have less forced CEO turnover. The coefficients for market performance and firm governance maintain both the sign and statistical significance exhibited in model 1. In Model 3, we introduce the effect of shareholder legal rights by adding a common law indicator variable. We find that the coefficient for this legal regime indicator is not statistically significant. However, the corporate governance variable, GOV44, continues to remain significantly positive.

One can potentially argue that since approximately half of the sample consists of CEO turnovers within U.S. firms, that our findings are driven by the behavior of U.S. firms. To test for such a possibility, we introduce a U.S. slope and intercept indicator variable in model 4. Because strong corporate governance most commonly occurs within US firms, we construct an interactive indicator variable, Strong Governance*Non US, to introduce a possible slope effect of non-US firms into our multivariate analysis. We find that both the non-U.S. intercept and slope indicator variables are statistically insignificant while the overconfidence variable continues to remain significantly positive. These findings confirm our earlier conclusion that the empirical results are not due to the U.S. firms contained in the sample. Finally, in Model 5, we control for the legal origin of the country while also including the non-US binary variable and find that the results are qualitatively similar to those obtained in the four other models. We conclude from the results of these five models, that overconfident CEOs face a significantly greater hazard of turnover and that this increased risk is global in scope. Overconfident CEOs are terminated more frequently worldwide, not just in the U.S.

Similar to Campbell et al. (2009), we conduct two additional tests to eliminate the possibility that our results are driven by some other aspect of CEOs or their performance. First, we exclude all non-turnover observations from the regressions so that we can compare only forced turnovers to voluntary turnovers. If turnovers of CEOs with overconfidence are voluntary, the overconfidence dummy variable should have no power to distinguish between voluntary and forced turnovers. Table 6 presents the results of such an analysis. The dependent variable equals one for forced turnovers and zero for voluntary turnover. The coefficients on the overconfidence indicator variable are positive across all five model specifications and generally statistically significant. In Models 2, 3, and 5, the p-values are less than 10%. In the remaining two models,

the coefficient just miss conventional statistical significance with p-values of 12% or less. Additionally, the hazard ratios are relatively high in all the five models, implying that the relative probabilities of forced turnover versus voluntary turnover for overconfident CEOs are economically large. The control variables in these regressions have the expected signs and many of them are statistically significant.

The second method we use to eliminate the possibility that the misclassification of forced turnovers is the primary reason for our empirical results is to exclude all forced turnovers. The findings from this analysis are presented in Table 7. This examination compares only voluntary turnovers to non-turnovers. In these specifications, the binary dependent variable assumes a value of one for voluntary turnover and zero otherwise. For none of the model specifications in Table 7 do we observe that overconfident CEOs are more likely to voluntarily turnover when compared to non-overconfident CEOs.

We conclude from our findings in Tables 6 and 7, that our measures of overconfidence are specifically related to forced turnovers in general. Moreover, by explicitly incorporating a non-US indicator variable in our set of model specifications, we also demonstrate that our findings are not due to a dominant U.S. effect. Rather, the effect is global in nature.

5. Post-turnover Performance

Recently, various researchers have examined firm performance following CEO turnover. Huson, Malatesta, and Parrino (2004) show that firms experiencing a CEO succession exhibit an increase in return on assets over the three years following turnover. More recently, Dezso (2007) presents evidence that firms with entrenched CEOs exhibit significantly poorer performance in the year prior to the forced turnover, and experience significantly larger performance

improvement during the three years following the forced turnovers. Both of these studies, however, are limited to U.S. firms. Given important differences in national cultures, legal systems, and corporate governance practices, it is not clear that these post-turnover performance results hold globally. Consequently, we examine corporate performance changes following CEO turnover for our global sample in Tables 8 and 9.

In Table 8, we focus on stock-market based performance measures and report the changes in the cumulative market adjusted returns for the period beginning one year prior to the turnover to one year following. We present the results separately for “forced” and “voluntary” turnovers. Given our earlier findings that the probability of forced turnover is positively related to the strength of corporate governance, we further decompose our results in two groups based on the strength of the firm’s corporate governance. We present our findings for the aggregate sample in Panel A.

The results in Panel A suggest that there is significant improvement in the market-adjusted performance of firms enjoying strong corporate governance regardless of the overconfidence status of both the incumbent and successor. Our results suggest that for firms with strong corporate governance, the boards seem to take prompt action in forcing the removal of poorly performing CEOs. For those firms, however, with weaker corporate governance, improvement in market-adjusted performance only occurs when an overconfident CEO is replaced by a non-overconfident CEO.

In Panel B of the same table, we present our results for performance changes surrounding voluntary turnovers. Interestingly, we find that for firms with weak corporate governance, if overconfident CEOs succeed overconfident CEO, there is a 10.3% improvement in the performance. This is significantly higher than when they are succeeded by non overconfident

CEOs. The performance improvement is even higher at 21.6% when the overconfident CEO succeeds non-overconfident CEO following a voluntary turnover.

In Table 9, we focus our attention on accounting based performance changes following CEO replacement. We measure accounting as the earnings before the interest and taxes divided by the average total assets. As in Table 8, we present the accounting performance changes results separately for forced and voluntary turnovers. The results in Panel A indicate that for firms with strong corporate governance that there is a 1.5% improvement in accounting performance when non overconfident CEO is succeeded by a non overconfident CEO. However, for weaker governance firms performance changes are more dramatic when non overconfident CEOs are succeeded by overconfident CEOs. As one would normally expect, there are no significant improvements in accounting performance following voluntary turnovers.

Overall, we conclude that for firms with stronger corporate governance, the market adjusted performance is significantly higher following a forced turnover. For firms with weaker corporate governance, there are significant performance improvements both in market-adjusted and accounting measures when a non-overconfident CEO is replaced by an overconfident CEO.

6. Conclusion

This study provides a exploratory overview of the global incidence of overconfidence by CEOs while explicitly testing the international validity of the Goel and Thakor (2008) model of executive turnover.

We find that overconfident CEOs face significantly greater hazards of forced turnovers than non-overconfident CEOs face. We are able to demonstrate these results after controlling for CEO age, firm stock return performance, and corporate governance. The effect of overconfidence on CEO turnover is distinct and different from CEO characteristics, firm

performance, and governance. Thus our paper provides complementary evidence to that provided by Campbell et al. (2009) for the U.S. firms.

We also find that for firms with stronger corporate governance, the market adjusted performance is significantly higher following a forced turnover. For firms with weaker corporate governance, there are significant performance improvements both in market-adjusted and accounting measures when a non-overconfident CEO is replaced by an overconfident CEO,

We conclude from our analysis that forced turnover of overconfident CEOs is a global phenomenon. Our findings provide support to the model presented by Goel and Thakor (2008). More generally, our analysis underscores the importance of including behavioral considerations in understanding major corporate decisions.

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Table 1: Distribution of CEO turnovers

This table presents the distribution of the 361 CEO turnovers studied in this paper. Forced refers to the involuntary turnovers. Other refers to all turnovers which are not forced. Hence it includes both retirements and voluntary resignations. Panel A reports the number of observations and the proportion (in parentheses) in each industry. We report the proportion to the entire sample size in the first column and the proportion to the sub-total in the second and the third column. Panel B reports the number of observations and the proportion (in parentheses) in each year. Panel C reports the number of observations and the proportion (in parentheses) in each sample country. Panel D reports the number of observations and the proportion (in parentheses) based on the legal regime. *t*-statistics from the equality tests for the proportion of the forced turnovers across the legal regime is reported. ***, **, * represent the statistical significance at 1%, 5%, and 10% level, respectively. Panel E reports the number of observations and the proportion (in parentheses) based on the Hofstede measures. *t*-statistics from the equality tests for the proportion of the forced turnovers based on the measure is reported. ***, **, * represent the statistical significance at 1%, 5%, and 10% level, respectively. Panel F reports the number of observations and the proportion (in parentheses) based on the governance measure.

A. Turnover by industry

Industry	Total Turnover	Forced	Other
Finance	74 (20.5%)	21 (28.4%)	53 (71.6%)
Manufacturing	144 (39.9%)	39 (27.1%)	105 (72.9%)
Service	12 (3.3%)	5 (41.7%)	7 (58.3%)
Technology	17 (4.7%)	5 (29.4%)	12 (70.6%)
Trade	53 (14.7%)	19 (35.8%)	34 (64.2%)
Transportation	61 (16.9%)	17 (27.9%)	44 (72.1%)
All	361 (100.0%)	106 (29.4%)	255 (70.6%)

B. Distribution over time

Year	Total Turnover	Forced	Other
2000	26 (7.2%)	10 (38.5%)	16 (61.5%)
2001	36 (10.0%)	8 (22.2%)	28 (77.8%)
2002	64 (17.7%)	29 (45.3%)	35 (54.7%)
2003	54 (15.0%)	19 (35.2%)	35 (64.8%)
2004	56 (15.5%)	10 (17.9%)	46 (82.1%)
2005	71 (19.7%)	19 (26.8%)	52 (73.2%)
2006	54 (15.0%)	11 (20.4%)	43 (79.6%)

C. Distribution by Country/Continent

Year	Total Turnover	Forced	Other
USA	176 (48.8%)	49 (27.8%)	127 (72.2%)
Americas other than USA	14 (3.9%)	4 (28.6%)	10 (71.4%)
UK	30 (8.3%)	13 (43.3%)	17 (56.7%)
Europe other than UK	66 (18.3%)	28 (42.4%)	38 (57.6%)
Japan	50 (13.9%)	3 (6.0%)	47 (94.0%)
Asia other than Japan	25 (6.9%)	9 (36.0%)	16 (64.0%)

D. *Distribution by legal regime*

Legal Origin		Total Turnover	Forced	Other
Civil	French	41 (11.4%)	14 (34.1%)	27 (65.9%)
	German	81 (22.4%)	19 (23.5%)	62 (76.5%)
	Scandinavian	6 (1.7%)	3 (50.0%)	3 (50.0%)
All Civil		128 (35.5%)	36 (10.0%)	92 (25.5%)
Common		233 (64.5%)	70 (30.0%)	163 (70.0%)
Difference between Civil and Common				
<i>t</i> -stat		-0.38		

E. *Distribution by Hofstede measures*

Measure	Tier	Sub-total	Forced	Other
Power distance	High	37 (10.2%)	12 (32.4%)	25 (67.6%)
	Low	324 (89.8%)	94 (29.0%)	230 (71.0%)
	<i>t</i> -stat	0.43		
Uncertainty avoidance	High	85 (23.5%)	19 (22.4%)	66 (77.6%)
	Low	276 (76.5%)	87 (31.5%)	189 (68.5%)
	<i>t</i> -stat	-1.61		
Individualism	High	352 (97.5%)	101 (28.7%)	251 (71.3%)
	Low	9 (2.5%)	5 (55.6%)	4 (44.4%)
	<i>t</i> -stat	-1.74 *		
Masculinity	High	310 (85.9%)	92 (29.7%)	218 (70.3%)
	Low	51 (14.1%)	14 (27.5%)	37 (72.5%)
	<i>t</i> -stat	0.32		
Long term orientation	High	67 (18.6%)	9 (13.4%)	58 (86.6%)
	Low	294 (81.4%)	97 (33.0%)	197 (67.0%)
	<i>t</i> -stat	-3.2 ***		

F. *Distribution by Governance*

Governance Measure	Sub-total	Forced	Other
<i>Governance (44)</i>			
(Low)			
First	77 (25.0%)	17 (22.1%)	60 (77.9%)
Second	72 (23.4%)	27 (37.5%)	45 (62.5%)
Third	76 (24.7%)	22 (28.9%)	54 (71.1%)
(High) quartile	83 (26.9%)	25 (30.1%)	58 (69.9%)
<i>Governance (7)</i>			
(Low) quartile			
First	68 (22.1%)	11 (16.2%)	57 (83.8%)
Second quartile	36 (11.7%)	14 (38.9%)	22 (61.1%)
Third quartile	81 (26.3%)	26 (32.1%)	55 (67.9%)
(High) quartile	123 (39.9%)	40 (32.5%)	83 (67.5%)

Table 2: Sample Profile

This table presents the descriptive statistics for the 287 CEO turnovers studied in this paper. Forced refers to the involuntary turnovers. Other refers to all turnovers which are not forced. Hence it includes both retirements and voluntary resignations. Variables are collected from the COMPUSTAT global database as of the time of the CEO turnover by matching the calendar year and month. The accounting rate of return is measured as the EBIT divided by the average total asset as of the year of and one year prior to the turnover. *t*-statistics and *p*-values for the test that the mean is equal for forced and other turnovers are reported in the last column.

Variable		Total	Forced	Other	<i>t</i> -stat (<i>p</i> -value)
Total asset (MM\$)	mean	88,813	131,045	70,661	-2.575
	(median)	(25,105)	(29,948)	(22,162)	(0.010)
Market value of equity (MMS)	mean	48,079	37,387	52,527	0.405
	(median)	(14,934)	(20,257)	(13,550)	(0.686)
Total debt / total asset	mean	69.9%	69.0%	70.3%	0.603
	(median)	(70.9%)	(66.6%)	(71.4%)	(0.547)
Market to book ratio	mean	387.0%	287.8%	428.3%	0.735
	(median)	(201.4%)	(190.7%)	(205.8%)	(0.463)
Fixed asset / total asset	mean	60.8%	61.6%	60.5%	-0.478
	(median)	(60.0%)	(63.3%)	(59.4%)	(0.633)
Current ratio	mean	125.5%	124.5%	126.0%	0.226
	(median)	(115.7%)	(112.8%)	(117.4%)	(0.821)
Accounting rate of return	mean	8.1%	7.3%	8.4%	1.178
	(median)	(6.4%)	(6.4%)	(6.4%)	(0.240)
Return in year prior to turnover	mean	4.1%	-3.8%	7.4%	2.285
	(median)	(1.1%)	(-6.9%)	(2.9%)	(0.023)
Return two years prior to turnover	mean	5.6%	5.8%	5.5%	-0.080
	(median)	(2.1%)	(4.2%)	(1.9%)	(0.937)
Annualized Return over tenure of CEO	mean	13.0%	1.2%	17.9%	1.907
	(median)	(3.2%)	(-5.6%)	(5.6%)	(0.057)

Table 3: Distribution of turnover by OC measures

This table presents the distribution of turnovers of 357 CEOs who are identified as overconfident or not. Other refers to all turnovers which are not forced. Forced refers to the involuntary turnovers. Other refers to all turnovers which are not forced. Hence it includes both retirements and voluntary resignations. OC refers to overconfident CEOs and NOC refers to CEOs who are not overconfident. in the last column *t*-statistics for the equality tests are reported. ***, **, * represent the statistical significance at 1%, 5%, and 10% level, respectively.

A. *Aggregate sample*

CEO type	Forced	Other
OC	82 (31.9%)	175 (68.1%)
Non OC	22 (22.0%)	78 (78.0%)
<i>t</i> -stat	1.85*	

B. *By legal regime*

Legal Regime	CEO type	Forced	Other
Civil	OC	17 (28.3%)	43 (71.7%)
	Non OC	10 (25.0%)	30 (75.0%)
	<i>t</i> -stat	0.81	
French	OC	7 (30.4%)	16 (69.6%)
	Non OC	3 (50.0%)	3 (50.0%)
German	OC	8 (24.2%)	25 (75.8%)
	Non OC	6 (18.8%)	26 (81.3%)
Scandinavian	OC	2 (50.0%)	2 (50.0%)
	Non OC	1 (50.0%)	1 (50.0%)
Common	OC	48 (33.1%)	97 (66.9%)
	Non OC	8 (21.1%)	30 (78.9%)
	<i>t</i> -stat	1.66*	

C. By Hofstede measure

Measure	Tier	CEO type	Forced	Other
Power Distance	High	OC	5 (21.7%)	18 (78.3%)
		Non OC	6 (54.5%)	5 (45.5%)
		<i>t</i> -stat	-1.96*	
	Low	OC	77 (32.9%)	157 (67.1%)
		Non OC	16 (18.0%)	73 (82.0%)
		<i>t</i> -stat	2.66***	
Uncertainty avoidance	High	OC	7 (16.7%)	35 (83.3%)
		Non OC	10 (25.6%)	29 (74.4%)
		<i>t</i> -stat	-0.98	
	Low	OC	75 (34.9%)	140 (65.1%)
		Non OC	12 (19.7%)	49 (80.3%)
		<i>t</i> -stat	2.26**	
Individualism	High	OC	82 (32.2%)	173 (67.8%)
		Non OC	17 (18.1%)	77 (81.9%)
		<i>t</i> -stat	2.59***	
	Low	OC	0 (0.0%)	2 (100.0%)
		Non OC	5 (83.3%)	1 (16.7%)
		<i>t</i> -stat	-2.74**	
Masculinity	High	OC	75 (33.6%)	148 (66.4%)
		Non OC	16 (18.6%)	70 (81.4%)
		<i>t</i> -stat	2.61***	
	Low	OC	7 (20.6%)	27 (79.4%)
		Non OC	6 (42.9%)	8 (57.1%)
		<i>t</i> -stat	-1.59	
Long term orientation	High	OC	1 (3.3%)	29 (96.7%)
		Non OC	7 (20.0%)	28 (80.0%)
		<i>t</i> -stat	-2.07**	
	Low	OC	81 (35.7%)	146 (64.3%)
		Non OC	15 (23.1%)	50 (76.9%)
		<i>t</i> -stat	1.9*	

D. *By Governance score*

Measure	Tier	CEO type	Forced	Other
Governance (44)	Top quartile	OC	9 (23.1%)	30 (76.9%)
		Non OC	6 (16.7%)	30 (83.3%)
		<i>t</i> -stat	0.68	
	Bottom quartile	OC	23 (35.4%)	42 (64.6%)
		Non OC	2 (11.1%)	16 (88.9%)
		<i>t</i> -stat	2.00**	
Governance (7)	Top quartile	OC	5 (14.3%)	30 (85.7%)
		Non OC	4 (12.9%)	27 (87.1%)
		<i>t</i> -stat	0.15	
	Bottom quartile	OC	34 (34.0%)	66 (66.0%)
		Non OC	6	17
		<i>t</i> -stat	0.72	

Table 4: Transition Matrix

This table presents the distribution of 263 CEO turnovers depending upon whether the incumbent CEO or the successor is overconfident or not. Forced refers to the involuntary turnovers. Other refers to all turnovers which are not forced. Hence it includes both retirements and voluntary resignations. OC refers to overconfident CEOs and NOC refers to CEOs who are not overconfident. In the last column *t*-statistics for the equality tests are reported. ***, **, * represent the statistical significance at 1%, 5%, and 10% level, respectively.

A. *Aggregate sample*

Incumbent		OC Successor	Non OC Successor	Test statistic
OC (Forced)	obs	67	10	9.60 ***
	(pct)	(87.0%)	(13.0%)	
OC (Other)	obs	81	35	4.63 ***
	(pct)	(69.8%)	(30.2%)	
NOC (Forced)	obs	14	5	2.28 **
	(pct)	(73.7%)	(26.3%)	
NOC (Other)	obs	26	25	0.14
	(pct)	(51.0%)	(49.0%)	

B. *USA vs. Non-USA*

Country	Incumbent		OC Successor	Non OC Successor	Test stastic
USA	OC (Forced)	obs	32	6	5.71 ***
		(pct)	(84.2%)	(15.8%)	
	OC (Other)	obs	42	22	2.61 **
		(pct)	(65.6%)	(34.4%)	
	NOC (Forced)	obs	6	3	1.00
		(pct)	(66.7%)	(33.3%)	
	NOC (Other)	obs	11	12	-0.19
		(pct)	(47.8%)	(52.2%)	
Non-USA	OC (Forced)	obs	35	4	8.08 ***
		(pct)	(89.7%)	(10.3%)	
	OC (Other)	obs	39	13	4.12 ***
		(pct)	(75.0%)	(25.0%)	
	NOC (Forced)	obs	8	2	2.25 *
		(pct)	(80.0%)	(20.0%)	
	NOC (Other)	obs	15	13	0.37
		(pct)	(53.6%)	(46.4%)	

C. Distribution by legal regime

Legal Origin	Incumbent		OC Successor	Non OC Successor	Test stastic
Civil	OC (Forced)	obs	17	3	4.27 ***
		(pct)	(85.0%)	(15.0%)	
	OC (Other)	obs	22	8	2.84 ***
		(pct)	(73.3%)	(26.7%)	
	NOC (Forced)	obs	7	2	1.89 *
		(pct)	(77.8%)	(22.2%)	
	NOC (Other)	obs	13	10	0.62
		(pct)	(56.5%)	(43.5%)	
Common	OC (Forced)	obs	50	7	8.60 ***
		(pct)	(87.7%)	(12.3%)	
	OC (Other)	obs	59	27	3.70 ***
		(pct)	(68.6%)	(31.4%)	
	NOC (Forced)	obs	7	3	1.31
		(pct)	(70.0%)	(30.0%)	
	NOC (Other)	obs	13	15	-0.36
		(pct)	(46.4%)	(53.6%)	

D. Distribution by Governance(44)

Governance(44)	Incumbent		OC Successor	Non OC Successor	Test stastic
Low	OC (Forced)	obs	26	3	6.89 ***
		(pct)	(89.7%)	(10.3%)	
	OC (Other)	obs	30	10	3.61 ***
		(pct)	(75.0%)	(25.0%)	
	NOC (Forced)	obs	4	1	1.50
		(pct)	(80.0%)	(20.0%)	
	NOC (Other)	obs	12	14	-0.38
		(pct)	(46.2%)	(53.8%)	
High	OC (Forced)	obs	34	7	5.53 ***
		(pct)	(82.9%)	(17.1%)	
	OC (Other)	obs	45	21	3.15 ***
		(pct)	(68.2%)	(31.8%)	
	NOC (Forced)	obs	6	1	2.50 **
		(pct)	(85.7%)	(14.3%)	
	NOC (Other)	obs	12	8	0.89
		(pct)	(60.0%)	(40.0%)	

Table 5: Cox Proportional Hazard Model for Forced Turnover

Cox Proportional Hazards models are estimated using a sample of 677 CEOs at the Global Fortune 500 firms over the period 2000 through 2006 to analyze the hazard of forced turnover. Overconfidence measure is an indicator variable for the overconfident CEO. Market performance is the one year excess return of the company's stock prior to the CEO turnover. Legal dummy for common law is an indicator variable for common law countries. Age is the age of CEO as of turnover. Five Hofstede measures are also examined: power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation. Firm size is the market value of the equity of the company at the beginning of the CEO turnover year. Strong governance dummy takes a value of one if Governance (44) for the firm is greater than the median Governance (44) where Governance (44) is the governance index used by Aggarwal et al. Non-US is an indicator variable for firms outside of the US. The results reported include the coefficient of each independent variable and the associated p-values in parentheses.

Variable	Model1		Model2		Model3		Model4		Model5			
	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio
Overconfidence measure	0.626	(0.069)	1.870	0.823	(0.032)	2.277	0.799	(0.039)	2.223	0.778	(0.044)	2.177
Age as of turnover				-0.034	(0.049)	0.966	-0.035	(0.047)	0.966	-0.033	(0.063)	0.968
Legal dummy for common law				-2.041	(0.041)	0.130	-1.918	(0.057)	0.147	-1.951	(0.051)	0.142
High power distance dummy				9.622	(0.989)	15,093	9.528	(0.989)	13,737	9.725	(0.988)	16,736
High individualism dummy				0.613	(0.330)	1.846	0.757	(0.249)	2.132	0.702	(0.265)	2.017
High Masculinity dummy				1.266	(0.045)	3.547	1.107	(0.102)	3.026	1.175	(0.068)	3.240
High uncertainty avoidance dummy				-2.875	(0.002)	0.056	-2.881	(0.002)	0.056	-2.882	(0.002)	0.056
High long-term orientation dummy												
Religion dummy	1.697	(0.024)	5.458									
Language dummy	0.237	(0.480)	1.268									
Market performance	-0.009	(0.033)	0.991	-0.009	(0.035)	0.991	-0.009	(0.034)	0.991	-0.009	(0.044)	0.991
Firm size	-0.005	(0.952)	0.995	0.007	(0.932)	1.007	0.0004	(0.996)	1.000	-0.001	(0.990)	0.999
Strong governance dummy	0.535	(0.068)	1.708	0.623	(0.020)	1.864	0.529	(0.089)	1.698	0.470	(0.342)	1.600
Non-US										0.397	(0.300)	1.487
Strong governance * Non-US										-0.090	(0.889)	0.914
Overall Chi-square	24.113	(0.001)		35.750	(0.000)		36.137	(0.000)		37.107	(0.000)	
Number of forced turnovers	79			72			72			72		
Number of censored observations	552			533			533			533		

Table 6: Cox Proportional Hazard Model for Forced Turnover vs. Voluntary Turnover

Cox Proportional Hazards models are estimated using a sample of 300 CEO turnovers from the Global Fortune 500 firms over the period 2000 through 2006 to analyze the hazard of forced turnover. Overconfidence measure is an indicator variable for the overconfident CEO. Market performance is the one year excess return of the company's stock prior to the CEO turnover. Legal dummy for common law is the indicator variable for common law countries. Age is the age of CEO as of turnover. Five Hofstede measures are also examined: power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation. Firm size is the market value of the equity of the company at the beginning of the CEO turnover year. Strong governance dummy takes a value of one if Governance (44) for the firm is greater than the median Governance(44) where Governance (44) is the governance index used by Aggarwal et al. Non-US is an indicator variable for firms outside of the US. The results reported include the coefficient of each independent variable and the associated p-values in parentheses.

Variable	Model1		Model2		Model3		Model4		Model5			
	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio
Overconfidence measure	0.542	(0.120)	1.720	0.696	(0.087)	2.006	0.722	(0.077)	2.058	0.651	(0.112)	1.918
Age as of turnover				-0.060	(0.000)	0.941	-0.059	(0.000)	0.943	-0.061	(0.000)	0.941
Legal dummy for common law				-2.244	(0.044)	0.106	-1.859	(0.095)	0.156	-2.195	(0.050)	0.111
High power distance dummy				10.060	(0.986)	23.392	9.946	(0.987)	20.872	10.147	(0.986)	25.527
High individualism dummy				0.561	(0.429)	1.752	1.027	(0.164)	2.791	0.668	(0.352)	1.951
High Masculinity dummy				1.643	(0.014)	5.169	1.197	(0.090)	3.309	1.539	(0.023)	4.662
High uncertainty avoidance dummy				-3.230	(0.001)	0.040	-3.286	(0.000)	0.037	-3.250	(0.000)	0.039
High long-term orientation dummy												
Religion dummy	2.102	(0.005)	8.182									
Language dummy	-0.072	(0.831)	0.930									
Market performance	-0.008	(0.041)	0.992	-0.007	(0.092)	0.993	-0.007	(0.101)	0.993	-0.007	(0.109)	0.993
Firm size	0.045	(0.596)	1.046	0.066	(0.473)	1.068	0.0202	(0.830)	1.020	0.044	(0.638)	1.045
Strong governance dummy	0.547	(0.065)	1.728	0.788	(0.004)	2.199	0.575	(0.067)	1.777	0.626	(0.206)	1.870
Non-US										0.675	(0.082)	1.964
Strong governance * Non-US										-0.272	(0.671)	0.762
Overall Chi-square	28.544	(0.000)		52.533	(0.000)		55.201	(0.000)		55.811	(0.000)	
Number of forced turnovers	79			72			72			72		72
Number of censored observations	200			194			194			194		194

Table 7: Cox Proportional Hazard Model for Voluntary Turnover vs. Non-turnover

Cox Proportional Hazards models are estimated using a sample of 594 CEOs at the Global Fortune 500 firms over the period 2000 through 2006 to analyze the hazard of voluntary turnover. Overconfidence measure is an indicator variable for the overconfident CEO. Market performance is the one year excess return of the company's stock prior to the CEO turnover. Legal dummy for common law is the indicator variable for common law countries. Age is the age of CEO as of turnover. Five Hofstede measures are also examined: power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation. Firm size is the market value of the equity of the company at the beginning of the CEO turnover year. Strong governance dummy takes a value of one if Governance (44) for the firm is greater than the median Governance(44) where Governance (44) is the governance index used by Aggarwal et al. Non-US is an indicator variable for firms outside of the US. The results reported include the coefficient of each independent variable and the associated p-values in parentheses.

Variable	Model1		Model2		Model3		Model4		Model5						
	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio	Coeff.	p-value	Hazard ratio			
Overconfidence measure	0.056	(0.733)	1.058	0.093	(0.588)	1.097	0.131	(0.442)	1.140	0.090	(0.600)	1.095	0.119	(0.491)	1.126
Age as of turnover				0.015	(0.190)	1.015	0.015	(0.165)	1.016	0.015	(0.198)	1.015	0.018	(0.120)	1.018
Legal dummy for common law				-1.597	(0.038)	0.203	-2.553	(0.005)	0.078	-1.611	(0.039)	0.200	1.498	(0.009)	4.473
High power distance dummy				-1.851	(0.130)	0	-1.541	(0.208)	0	-1.876	(0.128)	0	-1.289	(0.298)	0
High individualism dummy				-0.417	(0.261)	0.659	-1.379	(0.021)	0.252	-0.432	(0.272)	0.649	-1.378	(0.021)	0.252
High Masculinity dummy				0.673	(0.276)	1.960	1.624	(0.035)	5.072	0.695	(0.275)	2.004	1.600	(0.038)	4.953
High uncertainty avoidance dummy				0.010	(0.986)	1.010	0.017	(0.977)	1.018	0.012	(0.984)	1.012	0.010	(0.987)	1.010
High long-term orientation dummy															
Religion dummy	-0.998	(0.000)	0.369												
Language dummy	0.566	(0.042)	1.761												
Market performance	0.000	(0.935)	1.000	0.001	(0.805)	1.001	0.001	(0.751)	1.001	0.001	(0.780)	1.001	0.001	(0.725)	1.001
Firm size	-0.169	(0.000)	0.845	-0.164	(0.001)	0.849	0.1587	(0.001)	0.853	-0.163	(0.001)	0.849	-0.161	(0.001)	0.851
Strong governance dummy	0.315	(0.166)	1.370	-0.007	(0.976)	0.993	0.301	(0.204)	1.351	0.052	(0.882)	1.054	0.054	(0.879)	1.055
Non-US										0.056	(0.844)	1.058	0.135	(0.635)	1.145
Strong governance * Non-US										-0.130	(0.794)	0.878	0.378	(0.466)	1.459
Overall Chi-square	33.056	(0.000)		34.535	(0.000)		41.735	(0.000)		34.606	(0.001)		43.282	(0.000)	
Number of forced turnovers	200			194			194			194			194		
Number of censored observations	352			339			339			339			339		

Table 8: Market based performance changes following CEO replacement

This table reports the changes in the cumulative market adjusted return between one year before and after the CEO turnover. Panel A reports the results for the forced turnovers and Panel B reports the results for the voluntary turnovers including retirements. The market returns for each country is obtained from the MSCI country index. *t*-statistics for the equality tests are also reported. ***, **, * represent the statistical significance at 1%, 5%, and 10% level, respectively.

A. Aggregate Sample

Type	Successor Incumbent	Strong governance			Weak governance		
		OC	Non OC	Test statistic	OC	Non OC	Test statistic
Forced	OC	19.8%	10.7%	0.29	-2.0%	12.1%	-0.49
	(t-stat)	(1.43)	(0.8)		(-0.23)	(1.12)	
	Non OC	5.6%	35.3%	-0.32	-10.2%	-35.0%	0.43
	(t-stat)	(0.16)	NA		(-0.35)	(-2.5)	
	Test statistic	0.40	-0.65		0.36	2.71*	
Voluntary	OC	2.1%	59.5%	-1.36	10.3%	-35.1%	2.56**
	(t-stat)	(0.25)	(1.00)		(1.29)	(-1.81*)	
	Non OC	-7.5%	-15.3%	0.31	21.6%	1.4%	0.94
	(t-stat)	(-0.6)	(-0.61)		(1.04)	(0.18)	
	Test statistic	0.57	0.66		-0.62	-1.84*	

B. US

Type	Successor Incumbent	Strong governance			Weak governance		
		OC	Non OC	Test statistic	OC	Non OC	Test statistic
Forced	OC	29.1%	16.2%	0.39	-12.9%	NA	NA
	(t-stat)	(1.77*)	(1.13)		(-0.7)	NA	
	Non OC	20.5%	35.3%	-0.13	-82.2%	NA	NA
	(t-stat)	(0.40)	NA		(-0.96)	NA	
	Test statistic	0.19	-0.50		1.34	NA	
Voluntary	OC	-0.6%	62.9%	-1.35	9.9%	-16.9%	2.56**
	(t-stat)	(-0.06)	(1.01)		(0.17)	NA	
	Non OC	-5.4%	-15.3%	0.37	-14.7%	27.6%	-0.76
	(t-stat)	(-0.37)	(-0.61)		NA	(1.00)	
	Test statistic	0.24	0.67		0.19	-1.84*	

C. Non-US

Type	Successor Incumbent	Strong governance			Weak governance		
		OC	Non OC	Test statistic	OC	Non OC	Test statistic
Forced	OC	-1.5%	-22.4%	0.25	1.1%	12.1%	-0.37
	(t-stat)	(-0.06)	NA		(0.11)	(1.12)	
	Non OC	-24.3%	NA	NA	18.5%	-35.0%	1.79
	(t-stat)	(-0.67)	NA		(1.07)	(-2.5)	
	Test statistic	0.37	NA		-0.73	2.71*	
Voluntary	OC	17.3%	-8.0%	NA	10.4%	-36.8%	2.56**
	(t-stat)	(2.06*)	NA		(1.61)	(-1.73)	
	Non OC	-19.7%	NA	NA	24.6%	-5.7%	1.26
	(t-stat)	(-2.54)	NA		(1.11)	(-0.94)	
	Test statistic	2.20	NA		-0.84	-1.84*	

Table 9: Accounting based performance changes following CEO replacement

This table reports the changes in the accounting rate of return (ARR) which is defined as the earning before the interest and taxes divided by the average total assets between one year before and after the CEO turnover. Panel A reports the results for the forced turnovers and Panel B reports the results for the voluntary turnovers including retirements. *t*-statistics for the equality tests are also reported. ***, **, * represent the statistical significance at 1%, 5%, and 10% level, respectively.

A. Aggregate Sample

Type	Successor Incumbent	Strong governance			Weak governance		
		OC	Non OC	Test statistic	OC	Non OC	Test statistic
Forced	OC	-0.1%	0.0%	-0.44	-0.9%	-0.6%	-0.25
	(t-stat)	<i>(-0.84)</i>	<i>(0.04)</i>		<i>(-2.39**)</i>	<i>(-4.07)</i>	
	Non OC	-0.6%	1.5%	-1.50	0.4%	-0.7%	1.78
	(t-stat)	<i>(-0.9)</i>	<i>NA</i>		<i>(1.31)</i>	<i>(-1.14)</i>	
	Test statistic	1.01	-2.69		-1.92	2.71*	
Voluntary	OC	-0.9%	-1.5%	1.18	-0.5%	-0.3%	-0.37
	(t-stat)	<i>(-3.17***)</i>	<i>(-2.91***)</i>		<i>(-1.99*)</i>	<i>(-2.55**)</i>	
	Non OC	-1.1%	-0.7%	-0.72	-0.2%	-0.3%	-0.29
	(t-stat)	<i>(-3.62***)</i>	<i>(-1.54)</i>		<i>(-0.46)</i>	<i>(-0.36)</i>	
	Test statistic	0.45	-0.83		-0.51	-1.84*	

B. US

Type	Successor Incumbent	Strong governance			Weak governance		
		OC	Non OC	Test statistic	OC	Non OC	Test statistic
Forced	OC	0.01%	-0.1%	0.40	-1.6%	-0.4%	-0.36
	(t-stat)	<i>(0.07)</i>	<i>(-0.54)</i>		<i>(-1.3)</i>	<i>NA</i>	
	Non OC	-0.6%	1.5%	-1.50	<i>NA</i>	0.1%	<i>NA</i>
	(t-stat)	<i>(-0.9)</i>	<i>NA</i>		<i>NA</i>	<i>NA</i>	
	Test statistic	1.32	-3.17		<i>NA</i>	<i>NA</i>	
Voluntary	OC	-0.9%	-1.5%	0.94	0.1%	-0.7%	3.79*
	(t-stat)	<i>(-3.14***)</i>	<i>(-2.91***)</i>		<i>(1.02)</i>	<i>NA</i>	
	Non OC	-1.1%	-0.7%	-0.73	-4.5%	0.2%	-8.25**
	(t-stat)	<i>(-3.42***)</i>	<i>(-1.54)</i>		<i>NA</i>	<i>(0.55)</i>	
	Test statistic	0.27	-0.83		21.37***	-1.53	

C. Non-US

Type	Successor Incumbent	Strong governance			Weak governance		
		OC	Non OC	Test statistic	OC	Non OC	Test statistic
Forced	OC	-0.5%	0.7%	NA	-0.6%	-0.7%	0.05
	(t-stat)	(-1.48)	NA		(-2.26**)	NA	
	Non OC	NA	NA	NA	0.5%	-1.1%	2.14*
	(t-stat)	NA	NA		(1.31)	(-1.43)	
	Test statistic	-1.72	NA		-2.22**	0.31	
Voluntary	OC	-0.2%	NA	NA	-0.6%	-0.3%	-0.62
	(t-stat)	(-0.57)	NA		(-2.08*)	(-2.03*)	
	Non OC	-0.8%	NA	NA	0.2%	-0.2%	0.60
	(t-stat)	NA	NA		(0.42)	(-0.84)	
	Test statistic	0.58	NA		-1.56	0.77	