Product market competition and corporate governance: substitutes or complements? Evidence from CEO duality*

Haofei Zhang†

Abstract

This paper examines the phenomenon that firms in industries with high competition can benefit from good corporate governance. By analyzing the market reaction to CEO/chairman consolidation announcements, I find that the market reacts positively to consolidation events if the announcing firm has strong governance and is facing high product market competition. The benefit of CEO duality comes from the efficiency gain in the management, and is positively related to market competition. Only firms with strong governance can capture this benefit. Market reaction is negligible for firms with weak governance and for firms facing low competition. Overall, my results suggest that product market competition and corporate governance are complements for firms that want to gain managerial efficiency by granting the CEO additional power. A one-size-fits-all board structure is not appropriate for all firms. The board needs to carefully weigh the costs and benefits of CEO duality when making this decision.

Keywords: Corporate governance, Product market competition, CEO duality, Event study

*I would like to thank my adviser Jordi Mondria for his help. I would also like to thank my thesis committee members Peter Cziraki and Varouj Avazian for the comments and suggestions. All errors are my own.

†University of Toronto. Email: haofei.zhang@mail.utoronto.ca. Phone: (+1)6479982178. Address: Max Gluskin House, 150 St. George Street, 068, Toronto, Ontario M5S 3G7, Canada.

1 Introduction

The Sarbanes-Oxley Act (SOX), passed in 2002, and the Dodd-Frank Act, passed in 2010, tightened regulations for corporate governance. It is clear that corporate governance is important for companies. Economists often argue about how firms benefit from good governance. Gompers, Ishii and Metrick (2003), for example, find that a hedge portfolio that is long on firms with good governance and short on firms with weak governance earns a monthly abnormal return of 0.71%. Similarly, Core, Guay and Rusticus (2006) document that weak corporate governance contributes negatively to firm operating performance. Later, Giroud and Mueller (2011) extend this literature and argue that benefits from good governance only exist in industries with low levels of competition. Building on the theoretical framework that competition can mitigate the agency problem, economists conclude that market competition[1] and corporate governance are substitutes; firms in industries with lower competition are able to benefit more from good governance.

Does this mean that firms in competitive industries do not need good governance? The answer is a resounding no. In this paper, I show that firms in competitive industries can also benefit from good governance – that market competition and corporate governance can be complements under certain conditions. Firms may want to grant top management with greater power to gain managerial efficiency and effectiveness when facing challenges. Firms in more competitive industries have greater incentive to do so because they can benefit more from the efficiency gain under the higher competition. Supporting this, Li, Lu and Philips (2017) find that greater CEO power can benefit the firm in more competitive industries. In this paper, I study one typical event of firms increasing CEO power: granting the CEO the additional title of chairman. I analyze the stock market reaction to a hand-collected sample of 610 CEO/chairman consolidation announcements between 1992 to 2015 for 472 firms listed in the S&P 1500 Index. I measure market reaction by the cumulative abnormal return (CAR) of the firm's stock around the consolidation announcement. By analyzing the market reaction to these announcements, I find that in the event that firms grant their CEOs

[1] Throughout this paper, the term "market competition" refers to product market competition.

more power, competition and governance are complements. The benefit from CEO duality increases as the level of competition in the industry increases. However, I find that only firms with strong governance can capture this benefit from enhanced CEO power; firms with weak governance do not gain from CEO duality even if they are in competitive industries. Granting more power to the CEO in firms with weak governance may result in problems of agency since CEOs can pursue self interests using this increase in power and therefore may harm the company. I show that this increase in problems of agency created by CEO duality is large in competitive industries, and is small in non-competitive industries. As a result, the additional benefit of strong governance is high for firms in competitive industries, and is low in non-competitive industries. Overall, I show that for firms that want to gain efficiency in top management by granting the CEO more power, market competition and corporate governance act as complements. In this case, firms in competitive industries can also gain from good governance. This is my main contribution to the literature.

I also extend the literature on CEO duality. Existing literature has looked at market reaction to events of firms splitting CEO/chairman titles (Baliga et al., 1996; Brickley et al, 1997; Palmon & Wald, 2002; Dey et al., 2011). However, investigating the effect of splitting CEO and chairman roles has potential problems. Because this splitting of CEO and chairman roles often coincides with a CEO turnover event in most cases, it is hard to distinguish between the effect of deviating from CEO duality and the effect of CEO turnover. A positive market reaction may represent market optimism for a new CEO, instead of representing the benefit form removing the agency problem from CEO duality. Several papers look at market reaction to CEO/chairman consolidation events, but these studies only test the cumulative abnormal return itself; none of them analyze in further detail about costs and benefits of CEO duality (Brickley et al, 1997; Worrel, Nemec & Davidson, 1997). Combining the two big seemingly contradictory theories in the CEO duality literature, agency theory and stewardship theory, I argue that the benefit of CEO duality mainly comes from the efficiency gain in top management (as suggested by stewardship theory), and that the cost of CEO duality comes from the potential agency problem created by greater managerial power (as

suggested by agency theory). Consistent with this argument, I find that market reaction to CEO duality is positively related to market competition, and is positively (negatively) related to the existence of a strong (weak) governance. In addition, I isolate the effect of a Passing-the-Baton (PTB) process in which CEO duality can be expected.

In the robustness test, I address the firm self-selection problem in the event study by using the Heckman two-stage approach (Heckman, 1979). I use the local director supply pool, introduced by Knyazeva, Knyazeva and Masulis (2013), as the instrumental variable to satisfy the exclusion restriction. The estimation results after applying the Heckman two-stage process are the same as my baseline results.

In order to show that the complementarity between market competition and corporate governance is not driven by a sample selection problem, I replicate tests in Giroud and Mueller (2011). Using the firms in my CEO duality announcement event sample, I show that the abnormal return for the long-short hedge portfolio long on firms with good governance and short on firms with weak governance is small and insignificant in competitive industries, and is large and significant in non-competitive industries. This result is consistent with the finding in Giroud and Mueller (2011) that market competition and corporate governance are substitutes in general. As a result, I can rule out the possibility that my results are driven by the sample selection.

Overall, my findings complement the traditional argument that market competition and corporate governance are substitutes. The complementary relationship between competition and governance when firms combine CEO and chairman roles suggests that it is important for firms in competitive industries to have strong governance. Firms should only expect to gain from giving the CEO additional power when they are operating in competitive industries and have sufficient strong governance to capture the benefit. Board members need to carefully weigh the benefits and costs of CEO duality when considering to give the CEO an additional title of chairman. Finally, my study shows that a one-size-fits-all board structure (ie. having separate CEO and chairman) is not appropriate for all firms. Policy makers may find it useful when considering to have all firms separate their CEO and chairman roles.

The remainder of the paper is organized as follows. Section 2 describes the related literature and develops main hypothesis. Section 3 describes the data and variables used in this paper, as well as the event study methodology. I show my main empirical results in Section 4, including robustness tests. Section 5 concludes.

2 Related Literature and Main Hypothesis

This paper is related to the literature on market competition and corporate governance. It has been well documented in the literature that product market competition and corporate governance act as substitutes to firm value. This argument is built on the theoretical framework that CEOs in firms facing high levels of competition have a strong incentive to reduce managerial slack, as they may otherwise risk losing their current position. As a result, the need to monitor CEOs and the benefits from strong corporate governance are smaller for firms in more competitive industries. Using the passage of Business Combination (BC) Law as a natural experiment that weakens corporate governance, Giroud and Mueller (2010) show that firms in non-competitive industries experience a large drop in operating performance and a significant stock price decline after the law's passage, while firms in competitive industries are less affected. Furthermore, Giroud and Mueller (2011) construct a long-short portfolio that is long on firms with strong governance and short on firms with weak governance and analyze the abnormal return to the hedge portfolio in different competition environments. The authors find that the portfolio has significant positive abnormal return in non-competitive industries, and has insignificant return in competitive industries, which suggest that firms benefit from good governance only in non-competitive industries. Similar relationships are also found in the literature (Ammann, Oesch & Schmid (2013); Guadalupe and Wulf (2010); Chen, Harford & Lin (2015); Kim & Kim (2017); Gupta, Misra & Shi (2017)).

All of these existing literatures show that product market competition acts as a natural regulator to the manager agency problem, and therefore, is a substitute for strong corporate governance. This paper complements this argument and shows that market competition and

corporate governance can also be complements under certain conditions. When firms are facing challenges, it may be optimal for them to grant their top managers more power to enhance managerial efficiency. The benefit from this power concentration is greater for firms in more competitive industries, since they face greater challenges. Supporting this, Li, Lu and Phillips (2017) find that firms benefit from granting more power to CEOs in dynamic and competitive industries. One important aspect which is not mentioned by Li, Lu and Phillips (2017) is the role of corporate governance. Granting more power to the CEO has potential costs. CEOs may pursue self interests at the expense of shareholders when they are granted more power and are monitored less. This additional agency problem created by greater CEO power can be mitigated by the existence of strong corporate governance. As a result, firms with strong governance can better capture the greater benefit from concentrated managerial power in competitive industries, and competition and corporate governance can be complements under this condition. In this paper, I focus on one typical event in which market competition and corporate governance can be complements: the event of firms giving the CEO an additional title of chairman.

This paper also fits into the literature on CEO-chairman duality[2]. Existing literature on CEO duality give mixed results, with two dominating theories: agency theory and stewardship theory. Agency theory, perhaps the most accepted theory in corporate governance practice, suggests that CEOs will pursue private interests at the expense of shareholders (Fama and Jensen, 1983). The board of directors is responsible for monitoring the CEO, and in extreme cases, replacing the CEO. While the chairman sets the board agenda and serves as the bridge between the board and the management team, a CEO-chair is able to control the board agenda and may create information frictions between the board and management (McNulty & Pettigrew, 1999). In this view, agency theory suggests that CEO duality is undesirable, because it enhances the managerial entrenchment, weakens board oversight, and will negatively affect firm value (Jensen, 1993; Eisenhardt, 1989). On the other hand, as first introduced by Donaldson and Davis (1991), stewardship theory suggests

[2]see Krause, Semadeni and Cannella (2014) for a perfect literature review on CEO duality.

that CEO duality promotes unity of leadership, improves organizational effectiveness, and will lead better firm performance. In contrast to agency theory, stewardship theory takes non-financial factors into account. Satisfaction gains from reputation, respect, and social recognition encourage CEOs to enhance firm value and act as good stewards (Hendry and Kiel, 2004; Nicholson and Kiel, 2007). Supporting this theory, Donaldson and Davis (1991) find that the mean shareholder return is significantly greater for firms with CEO duality than for those without it in a multi-industry sample of 337 U.S. firms. Stewardship theory acknowledges the existence of trust between shareholders and management, which in turn minimizes the cost of monitoring and controlling management (Abdullah and Valentine, 2009). Overall, stewardship theory favors CEO duality and believes it will positively affect firm value.

This paper moves beyond the basic agency versus stewardship effect of CEO duality. I analyze market reactions to firm announcements of CEO/chairman title consolidation. As CEO duality is described as a "double-edged sword" (Finkelstein & D'Aveini, 1994), it is important to analyze the benefits and costs of CEO duality when studying market reactions to consolidation announcements. As suggested by the stewardship theory, the benefit from CEO duality mainly comes from the efficiency gain from having a single leader in the company, reduces communication and coordination costs among firm leaders, and reduce boardroom conflict. Also, a single powerful leader would improve responsiveness to external events, such as changes in market conditions, and facilitate accountability of decision making. This efficiency gain is greater in more dynamic and competitive industries in which firms need more direct leadership. Recently, Archarya, Gabarro and Volpin (2017) show another channel through which firms can gain from CEO duality. The authors find that firms use duality as a tool to compete for CEOs; firms with CEO duality are more likely to attract higher quality CEOs. Since this ability to attract better CEOs is more important in competitive industries, the benefit from CEO duality is positively related to the level of competition the firm is facing. Market reaction to the announcement should then be positively related to industry competitiveness.

At the same time, CEO duality has potential costs predicted by agency theory. It is well documented in the literature that weaker corporate governance is associated with greater problems of agency (Gomper et al., 2003; Core et al., 2006; Bebchuck et al., 2009; Giroud and Mueller, 2011). Cremers and Nair (2005) classify corporate governance into internal and external governance. Granting the CEO an additional title of chairman is a way to gain managerial efficiency at the cost of sacrificing internal governance, and will generate additional agency problem. This additional agency problem can be moderated by other factors that limit CEO entrenchment (other internal governance and external governance). Strong (weak) corporate governance can therefore decrease (increase) investor concern about the cost of CEO duality, and then be positively (negatively) related to market reactions to consolidation announcements.

In addition, while competition is positively related to the benefit of CEO duality (managerial efficiency gain), this benefit can only be captured by firms with strong governance. If a firm has weak governance, the CEO will have greater ability to pursue personal interests when granted more power, and the benefit of CEO duality may not be captured because of this agency problem. Also, because market competition can naturally mitigate problems of agency, the initial level of agency problems before the firm consolidates the CEO and chairman roles is lower in more competitive industries, and is higher in less competitive industries. After the consolidation event, the marginal effect of the additional agency problem created by CEO duality is then going to be higher in more competitive industries, and lower in less competitive industries. As a result, the additional benefit of good governance is going to be higher for firms in competitive industries. Overall, I claim that product market competition and corporate governance are complements when analyzing the effect of CEO duality.

Hypothesis 1: The market reaction to a CEO/chairman consolidation announcement is positively related to the level of market competition, and is positively (negatively) related to the existence of a strong (weak) governance. Market competition and corporate governance act as complements under this condition.

It is also important to account for the fact that CEO duality may be expected by

investors in some cases. Vancil (1987) and Brickley, Coles and Jarrell (1997) point out a special type of power transition in the top management team: the "passing-the-baton" (PTB) process. The initial move of the PTB process involves the former chair-CEO handing over the CEO title to the new CEO, but still holding onto the chairman position for a period of time. In this stage, the previously consolidated CEO-chairman role becomes separated. After a reasonable transition period, the chairman (formerly, the CEO-chairman) passes the chairman title over to the new CEO as well, completing the PTB process, and signifying a formal beginning of a new generation in the company. In this case, the firm reconsolidates the CEO and chairman roles. If a firm follows the PTB process, CEO duality is to be expected. If such is the case, combining the CEO and chairman roles will not change the firm's fundamentals; the firm will just return to its normal track. As a result, investors pay less attention to such an event, and the market reaction is expected to be close to 0. The effect of market competition and corporate governance on market reaction will then be neutralized by the PTB process.

Hypothesis 2: The passing-the-baton (PTB) process neutralizes the effects of market competition and corporate governance on the market reaction to the CEO/chairman consolidation announcement.

3 Data and Variables

3.1 Data collection and important measures

I begin by searching for all CEOs listed in the Execucomp database for S&P 1500 companies from 1992 to 2015. I use the sample of S&P 1500 companies because it covers more than 90% of the market capitalization of all U.S. stocks, and it excludes small firms that have little impact on the market. Based on the title reported for each CEO in the Execucomp, I identify a CEO as also serving as the chairman of the board if the title reported for that CEO includes "chairperson/chair/chairman/chairwoman"[3]. After determining the first year

[3]Additionally, I define the CEO as *NOT* holding a dual position if the "chairman" title reported is actually the chairman of some other entity.

in which such a CEO starts to hold a dual position, I search for the exact date on which the firm announced its decision to give its CEO the additional title of chairman within the Factiva news database. I download all accounting information, including firm size, sales, and location of headquarters from the Compustat database. Market information, such as stock return and trading volume, are from the CRSP database. Daily and monthly Fama-French factors are from Kenneth French's website. Analyst coverage is from the I/B/E/S database.

Firms may consolidate the CEO and chairman titles following a passing-the-baton (PTB) process pointed out by Vancil (1987) and Brickley, Coles and Jarrell (1997). I define a firm as following the PTB process if the outgoing chairman was also the former CEO of the firm, and at least one of the following criteria is met:

- in the consolidation announcement, the firm states that the duality is due to "the end of the transition period" or to "finish up the succession plan";
- in the CEO turnover announcement that shows the appointment of the current CEO, the firm states that the former chair-CEO will stay on chairman position for a transition period;
- the new chair-CEO has been in office as the CEO for less than 1 year at the time of the consolidation announcement.

Consistent with the literature, I exclude consolidation events that are related to M&A or spin-offs. In addition, I exclude events fill up the vacancy of the chairman position. I also exclude events where announcements are made during the annual shareholder meeting to avoid noise from the other important decisions made during the meeting. I am able to identify 610 CEO/chairman consolidation events, 412 of which are not following the PTB process.

The main measure for corporate governance in this paper is the Entrenchment index (E-index) introduced by Bebchuck, Cohen, and Ferrel (2009), which is constructed by adding a value of one for the existence of each of six governance provisions that limit shareholders'

rights and enhance managerial entrenchment[4]. E-index has a minimum value of 0, representing the most democratic governance, and a maximum value of 6, representing the most dictatorial governance. The E-index is available for the years 1993, 1995, 1998, 2000, 2002, 2004, 2006, and 2007 to 2015 during the sample period. Following the major literature (Bebchuck et al., 2009; Giroud & Mueller 2010, 2011), I use the E-index from the latest available years for intermediate years. The median of the E-index is 3 for the full event sample as well as the non-PTB sub-sample.

My main measure of the product market competition is the Herfindahl-Hirschman Index (HHI). The HHI is a well documented and widely used measure for market competition, and is defined as the sum of squared market shares in an industry:

$$HHI_{j,t} = \sum_{i=1}^{N_j} s_{ijt}^2$$

where s_{ijt} is the market share of firm i in industry j in year t. Market shares are computed as the fraction of firm sales to total industry sales. When calculating the HHI, I exclude firms for which sales are either missing or negative. A high value of HHI indicates a high degree of industry concentration, which means that the level of competition in the industry is low. To make the inference more straight forward, I multiply HHI by -1 to construct a reverse HHI (revHHI=HHI*-1) so that market competition is positively related to the revHHI measure. My benchmark classification of industries is based on 3-digit SIC codes. Industry classification using 3-digit SIC codes is a moderate partition while a 2-digit classification may be too broad and overestimate the competition, and a 4-digit SIC classification may be too narrow and underestimate the competition. I also use revHHIs based on 4-digit SIC codes as a robustness check. Other variables used in this paper are described in Appendix A.

[4]E-index covers 6 of 24 provisions introduced by Gompers, Ishii, and Metrick (2003), including staggered board, limitations on amending bylaws, limitations on amending the charter, supermajorities to approve a merge, golden parachutes, and poison pills. I do not use GIM index because some provisions in the GIM index is only available until 2006. These provisions are also referred to as external governance by Cremer and Nair (2005).

3.2 Event Study

In this paper, I use event studies to analyze the market reaction to CEO/chairman consolidation announcements. In particular, I use cumulative abnormal returns (CAR) to measure the market reaction during the announcement period. I estimate parameters for a base return model using return data in the estimation window that is unaffected by the event. I use day -50 to day -250 as my estimation window. The return model I am using is the Cahart four-factor model (Carhart 1997), which adds an additional momentum factor to the Fama-French three-factor model:

$$R_{i,t} = R_{f,t} + \beta_1 * (R_{m,t} - R_{f,t}) + \beta_2 * SMB_t + \beta_3 * HML_t + \beta_3 * UMD_t + \varepsilon_{i,t} \ ,$$

where

$R_{i,t}$ is the return for stock i on date t

$R_m - R_f$ is the excess market return on date t

SMB is the excess return on small capital stocks relative to large capital stocks on date t

HML is the excess return on high book-to-market ratio stocks compared to low B/M ratio stocks on date t

UMD is the momentum factor on date t

ε is the estimation error, with $E[\varepsilon] = 0$.

Using estimated parameters from the model, I predict the expected daily return for each stock in the event window. The daily abnormal return (AR) is calculated as the difference between the actual return and the predicted return. Summing up all of the daily abnormal returns in the event window, I obtain the cumulative abnormal return (CAR) for stock i.

$$AR_{i,t} = R_{i,t} - E[R_{i,t}] \qquad CAR_i[\tau_1, \tau_2] = \textstyle\sum_{t=\tau_1}^{\tau_2} AR_{i,t}$$

4 Empirical Results

4.1 Descriptive statistics

In this section, I analyze the data in my sample. From 1992 to 2015, within the 24,137

firm-year pairs of S&P 1500 companies, I find 12,881 firm-year pairs that operated under a CEO who was also the chairman of the board; this constitutes 53.3% of all firm-year pairs. The ratio of firms with CEO duality decreases over time, from a high of 69.3% in 1994, down to 44.2% in 2015. Figure 1 plots the trend of CEO duality over the years.

[Insert Figure 1]

Despite this general trend in the market, there are many firms that still choose to consolidate CEO and chairman roles. My event sample contains 610 CEO/chairman consolidation announcements made by 472 S&P 1500 companies from 1992 to 2015, 412 events of which are not following a passing-the-baton (PTB) process. Table 1 summaries the statistics of the event sample, for both the full sample and the non-PTB sub-sample. For my event sample, the median firm size (as measured by the book value of total assets) is 3577.7 million, median return on asset (ROA) is 5.5%, and median market-to-book ratio is 1.54. The median number of other firms located within 100km of a firm's headquarters is 16. Firms that are not following the PTB process generally have smaller size, a higher MTB ratio, and greater blockholder ownership. The average level of market competition (measured by reverse HHI) is -0.1656 with a standard deviation of 0.1686 when basing industry classification on on 3-digit SIC codes (mean=-0.2244, std=0.2023 for 4-digit SIC industries). The median level of managerial entrenchment (E-index) is 3, which is the same for both full sample and the non-PTB sub-sample. I also find that the median age of CEOs promoted to the additional title of chairman is 55. The median CEO tenure at the time of consolidation announcement is 3 years for the full event sample, compare to 4 years for the non-PTB sub-sample. This larger CEO tenure before promotion is expected for the latter non-PTB sub-sample, since events with CEO tenure of less than 1 year at the time of the consolidation announcement are classified exclusively under the PTB sub-sample.

[Insert Table 1]

I further divide my sample by the level of corporate governance and the level of competition in the industry where the firm is operating (measured by reverse HHI). I define a firm

as having weak governance (also referred to as under dictatorship) if the firm's entrenchment index (E-index) value is greater than the median of 3. I also split the sample by the annual median level of reverse HHIs; firms are considered to be operating in competitive industries if their reverse HHI value is above the annual median. Industries are classified based on 3-digit SIC codes by default. One important point of clarification here is that, throughout this paper, the term "competitive industry" does not imply that the industry is perfectly competitive. Rather, it represents a relatively more competitive industry within my sample. Similarly, the term "non-competitive industry" refers to a relatively less competitive industry within my sample. I report the distribution of the events in each sub-sample in Table 2.

[Insert Table 2]

Market reaction to the consolidation event in these sub-samples are different. Figure 2 plots the daily CARs for days [-5, +5] around the consolidation announcement for the full event sample, as well as sub-samples with strong and weak governance, as well as high and low levels of competition. Figure 3 replicates Figure 2 for the firms not following the passing-the-baton (PTB) process. As shown in the graphs, firms with strong governance have larger CARs than firms with weak governance, and firms operating in competitive industries have larger CARs than firms operating in non-competitive industries. This suggests that strong governance and a high level of competition contribute positively to the market reaction. Figure 4 plots the daily CARs for the 2-by-2 sub-samples classified based on governance and market competition. Figure 5 plots the CARs for non-PTB firms. It is clear that firms with strong governance facing high competition elicit positive market reaction for title consolidation events, while the CARs in other sub-samples are close to 0. This suggests that market competition and corporate governance act as complements here. Figures 6 to 9 replicate Figures 2 to 5 for industry classification based on 4-digit SIC codes. The results are identical.

[Insert Figure 2 to 9]

4.2 CAR analysis

In this section, I look at the behavior of the cumulative abnormal return (CAR) around the date of the CEO/chairman consolidation announcement.

4.2.1 Abnormal trading volume and event window determination

Giving the CEO the additional title of chairman is an important firm decision that is always discussed by board members before the actual announcement. Investors may be able to obtain information about this important decision before the actual announcement. Market may therefore be able to react before the firm formally announces it. In order to find the most effective event window, I test for abnormal trading volume around the CEO/Chairman consolidation announcement, as it is generally agreed that trading volume is a proxy for information flow. Following Jarrell and Poulsen (1989) and Bajo (2010), I calculate the normalized abnormal volume (NAV) to capture deviations in trading volume from normal trading activity around the date of consolidation announcement. The NAV for stock i on day t is computed as:

$$NAV_{it} = \frac{TV_{it} - \mu_{it}}{\sigma_{it}} \text{ , where } \mu_{it} = \frac{1}{66} \sum_{t=1}^{66} TV_{it}.$$

TV_{it} is the trading volume for stock i on day t (computed as natural log of 1 + the trading volume).

μ_{it} and σ_{it} are the mean and standard deviation of trading volume in the 66 day window immediately prior to the observation.

I then test whether this NAV is significant across all firms for each day based on different sub-samples. The result is shown in Table 3.

[Insert Table 3]

I find statistically significant positive abnormal trading volume before the announcement date on day -10, day -2 and day -1, and after the announcement date from days 0 to +6, excepting day +4. Within those days, day 0 and day 1 have far more higher abnormal trading volumes than other days. However, if the firm is not following a passing-the-baton (PTB) process, the abnormal trading volume on day -2, day -1 and day +2 are no longer

significant. Instead, I find that day -6, day -5, day +4 and day +8 have significant positive abnormal trading volume for the non-PTB sub-sample. These findings suggest that the market needs time to fully react to the consolidation announcement. Additionally, information leakage prior to consolidation announcements induces significant abnormal trading volume on the days leading up to the actual announcements. For the sub-sample of firms following the PTB process, on the other hand, the only days that I find to have significant positive abnormal trading volume are day -10 and day +1, at significance levels of 10% and 5% respectively. The magnitudes of the abnormal trading volume is also lower for PTB firms. This suggests that investors do not view CEO/Chairman consolidation as an important event if the event can be anticipated. Since there is no consistent result for daily abnormal trading volumes, I cannot construct an event window that is effective for both the full sample and the non-PTB sub-sample.

Next, I look at weekly abnormal trading volumes. Following the above methodology, I use weekly average trading volume (WATV) as my starting point. I calculate the deviation of this WATV from the mean WATV in the 20-week window immediately prior to the observation, scaled by the standard deviation.

$$WAATV_{i,t} = \frac{WATV_{i,t} - \mu_{i,t}}{\sigma_{i,t}} \text{ , where } \mu_{i,t} = \frac{1}{20}\sum_{t=1}^{20} WATV_{i,t}.$$

Here, $WAATV_{i,t}$ is the weekly abnormal average trading volume for stock i in week t. The result is shown in Table 4. I find a positive and significant (both statistically and economically) abnormal trading volume for week 0 (i.e. the week in which the firm announces its CEO duality), as well as on week -1 and week +1. The positive abnormal trading volume in week -1 captures the effect of information leakage, and the positive abnormal trading volume on week +1 captures the remainder of the market's full reaction This finding holds true for both the full sample and the non-PTB sub-sample. As a result, I can use week [-1, +1] as my event window. I use this event window for the remainder of this paper. Similar to the daily result, the only week I find to have a significant positive abnormal trading volume for the PTB sub-sample is week 0. This suggests that investors pay less attention and trade less if the consolidation can be expected.

[Insert Table 4]

4.2.2 CAR for event window for weeks [-1, +1]

In this section, I analyze the CAR starting from the week before the CEO/chairman consolidation announcement until the week after the announcement (event window weeks [-1, +1]). I employ a standard t-test to test the mean of the CAR in each of the sub-samples.

$$t = \frac{ACAR[\tau_1,\tau_2]}{SD[\tau_1,\tau_2]} \sim N(0,1) \ ,$$

where

$ACAR[\tau_1, \tau_2] = \overline{CAR}[\tau_1, \tau_2]$ measures the mean of the CARs over the event window $[\tau_1, \tau_2]$.

$SD[\tau_1, \tau_2]$ is the sample standard deviation of the CARs over the event window $[\tau_1, \tau_2]$.

The event window $[\tau_1, \tau_2]$ here covers week [-1, +1], where week 0 is the week that the company announces the consolidation event. The test results are shown in Table 5.

[Insert Table 5]

As reported in Table 5, the market reaction to the consolidation announcement is positive (0.53%) in general, but the coefficient is not statistically significant (t=1.62). However, I find a positive 3-week abnormal return of 0.81% (t=2.09) for firms with strong governance (E-index of 3 or lower). The difference in market reaction for strong versus weak governance is positive (0.97%), although not significant (t=1.34). The result is stronger for firms that are not following the PTB process (difference=1.79%, t=1.95), which indicates that firms can gain from good governance. I also find that abnormal returns are more significantly positive for firms operating in highly competitive industries (high reverse HHI) than for firms operating in less competitive industries, although the difference is again not statistically significant. The results for industry classification based on 4-digit SIC codes are qualitatively the same.

For the sub-sample of firms with strong governance and facing high competition, I find the 3-week ACAR to be positive and significant at 1.22% (t=2.23). This means that

investors can earn an extra 1.22% profit during this 3-week window for stocks in this sub-sample. The result is even stronger if I focus on firms not following a PTB process, with a highly significant 3-week CAR of 1.97% (t=2.69). I do not find significant abnormal returns for other sub-samples (ie. firms with strong governance and facing low competition, firms with weak governance and facing high competition, and firms with weak governance and facing low competition), in both the full sample and the non-PTB sub-sample. If I classify industries based on 4-digit SIC codes, the results remain qualitatively the same. For firms with strong governance and facing high competition, I find a 3-week ACAR of 1.43% (t=2.41) in the full sample and 2.3% (t=2.95) in the non-PTB sub-sample. Also, no significant results are found in other sub-samples. These results suggest that investors view CEO/chairman title consolidations as good news only if the announcing firm has strong governance and is facing high competition.

I then test the difference between the announcement ACAR for firms with strong versus weak governance in industries with high (low) levels of competition. I find the difference to be significantly positive at 2.11% (t=2.08) for firms in industries with high competition. That is, firms with strong governance earn 2.11% higher abnormal return than firms with weak governance in competitive industries during the 3-week period centered on the announcement week. The difference is negligible (-0.02%, t=-0.02) in non-competitive industries. The results are similar for the non-PTB sub-samples: strong governance firms earn 3.58% (t=2.80) higher abnormal return than weak governance firms in competitive industries; the effect of strong governance is economically and statistically insignificant (0.19%, t=0.14) in non-competitive industries. This finding suggests the gains from good governance are concentrated in industries with high levels of competition. I also test the effect of competition on firms with strong (weak) governance. For firms with strong governance, I find that greater market competition is associated with higher abnormal returns. Although the difference is not statistically significant in the full sample (0.82%, t=1.06), it is significant in the non-PTB sub-sample (1.88%, t=1.84). No extra gain from higher competition is found for firms with weak governance. This indicates that only firms with good governance can

capture the greater benefits of CEO duality in more competitive industries. Again, theses results are not sensitive to the industry classification method.

Overall, when looking at the market reaction to CEO/chairman consolidation announcements, I find strong corporate governance to be valuable only if the firm is facing high competition, and greater market competition to be valuable only if the firm has a strong governance. In other words, high competition and strong governance act as complements in terms of market reaction to CEO/chairman consolidation events. This finding is consistent with my hypotheses.

4.3 Cross-sectional analysis

4.3.1 Baseline Result

In this section, I analyze the effect of market competition and corporate governance on the market reaction to CEO/chairman consolidation announcements. In addition to the key variables of interests, I also control for variables that may affect firm choice of CEO duality suggested by the literature. Linck, Netter and Yang (2008) find that firm size, CEO age, and CEO tenure are positively related to the likelihood of CEO duality, although firm performance does not matter. Wintoki, Linck, and Netter (2012) show that CEO duality may be a function of past values of firm performance and hence would not be strictly exogenous. Given these considerations, I construct my baseline model as the following:

$$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 revHHI + \beta_3 Dic * revHHI + \beta_4 Crisis$$
$$+\beta_5 Firm\,Control + \beta_6 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon,$$

where $CAR[-1,+1]$ is the CAR from week -1 to week $+1$, and measures market reaction to title consolidation announcements; $Dic = 1$ if the firm has weak governance (E-index>3); $revHHI$ is reverse HHI, measuring the level of competition in an industry (a higher $revHHI$ indicates a higher level of competition); $Crisis = 1$ indicates that the event year is after 2007, which is the starting year of the 2007-2009 sub-prime mortgage crisis; $Firm\ Control$ controls for firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership[5] and lagged returns on asset; $CEO\ Control$ controls for CEO characteristics,

[5]Blockholder ownership is also referred to as internal governance by Cremer and Nair (2005).

including CEO age, CEO tenure, and CEO stock ownership. A detailed description of variables can be found in Appendix A. I also include year and industry fixed effects to control for unobserved heterogeneity[6] (Gormley and Matsa, 2014). I run the regression in the full event sample, as well as the sub-sample of firm following (not following) a passing-the-baton (PTB) process. The empirical results are reported in Table 6. Industries are classified based on 3-digit SIC codes by default.

[Insert Table 6]

Column 1 shows test results of this baseline model in the full event sample. I find that the coefficient for Dic is negative (-3.07%) and significant (t=-2.44), suggesting weak governance contributes negatively to the market reaction. In other words, for firms with weak governance, the 3-week CAR is 3.07% lower than firms with strong governance. This result is driven by higher (lower) market concern about the potential agency problem generated by CEO duality in weak (strong) governance firms. The effect is stronger for firms not following a PTB process. Column 2 reports the test results in the non-PTB sub-sample. Weak governance firms earn an announcement CAR that is 4.77% (t=3.08) lower than that of strong governance firms. Column 3 shows the result of this baseline regression for the PTB sub-sample. The effect of weak governance in the PTB sub-sample is not significant, both economically and statistically.

Column 1 also shows that the coefficient for the competition measure ($revHHI$) is positive and significant (0.0452, t=1.88), suggesting that market reaction to the consolidation announcement is positively related to the level of competition in the industry. For one standard deviation increase in reverse HHI, firms can earn a 0.7% (ie. 0.0452*0.155) abnormal return during the 3-week window centered on the announcement week. Recall that higher levels of industry competition indicate greater benefits from CEO duality. One notable finding here that merits further investigation is the low level of significance (both statistically and economically). This low level of significance is driven by noise from firms following a PTB process. Because the CEO duality event can be anticipated for firms following a PTB process, the effect of competition and governance on the market reaction to the consolidation

[6] I control for the one-digit SIC industry fixed effect here to have enough sample variation within the industry group.

announcement is neutralized. Column 3 shows that the effect of competition is insignificant for firms in the PTB sub-sample. As shown in column 2, when I focus on firms not following a PTB process, the effect of competition on the market reaction becomes highly significant (0.107, t=3.31). The 3-week CAR increases by 1.66% (ie. 0.107*0.155) for each standard deviation increase in the reverse HHI index.

I also look at the cross effect of weak governance and competition level. The cross effect is negative but not significant in the full sample (-0.0874, t=1.41). This lack of insignificance is mainly due to firms following a PTB process. As shown in column 2, the cross effect of weak governance and competition level is negative and significant (-0.149, t=2.20) for the sub-sample of firms not following a PTB process. This suggests that the market reaction to consolidation announcements is positively related to the competition level only when the firm has strong governance. For a one standard deviation increase in the competition level, the abnormal return earned by firms with strong governance is 2.31% (ie. 0.149*0.155) higher than firms with weak governance. The magnitude of this cross effect is larger than the effect of competition itself, suggesting that the effect of competition can be negative for firms with weak governance, even though the efficiency gain is high for firms facing high competition. This finding is consistent with my hypothesis that market competition and corporate governance are complements when firms combine CEO and chairman roles. Only firms with strong governance can capture the greater benefits of CEO duality in competitive industries.

In columns 4 to 6, I replicate the tests for industry classification based on 4-digit SIC codes. I find the results to be qualitatively the same as the results using 3-digit SIC codes (in fact, the results are stronger).

Overall, my findings from this baseline model are consistent with the hypotheses stated in Section 2. The market reaction to the CEO/Chairman consolidation announcement is positively related to market competition, and is negatively related to strength of corporate governance. Market competition and corporate governance are therefore complements in terms of market reaction when firms consolidate CEO and chairman roles. In addition, for

firms following a passing-the-baton (PTB) process, all effects are neutralized.

4.3.2 Competition and Governance: Complements

In this section, I break down the complementary between market competition and corporate governance. In particular, I show the effect of market competition on the market reaction to the CEO/chairman consolidation announcements for firms with strong and weak governance, as well as the effect of corporate governance for firms facing high and low competition.

First, I show the effect of market competition for firms with strong and weak governance. I look at the effect of market competition in the sub-sample of firms with strong (weak) governance. The model is specified as followings:

$$CAR[-1,+1] = \alpha + \beta_1 revHHI + \beta_2 Crisis + \beta_3 Firm\,Control$$
$$+\beta_4 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon,$$

where $CAR[-1,+1]$ measures the market reaction to title consolidation announcements; $revHHI$ measures industry competition level. Same as in the baseline model, firms are defined as having weak governance if the entrenchment index is greater than 3 (E-index>3), and as having strong governance otherwise. I then run this regression for the sub-sample of firms with strong/weak governance, separately. All control variables are the same as in the baseline model. Industry and year fixed effects are used to control for unobserved heterogeneity. Industries are classified using 3-digit SIC codes by default. I run the regression for the full sample, the non-PTB sub-sample, and the PTB sub-sample. Estimation results are shown in Table 7.

[Insert Table 7]

As shown in columns 1 and 2 in Panel A of Table 7, the effect of market competition is positive (0.0429) and significant (t=1.66) for firms with strong governance, and the effect is negative (-0.051) and insignificant (t=0.76) for firm with weak governance. Strong governance firms can earn 0.66% (ie. 0.112*0.155) additional abnormal return during the 3-week event window for each standard deviation increase in reverse HHI relative to weak governance firms. Similar to the baseline model, the significance of the competition effect in the full sample is low, both economically and statistically. When I look at the non-PTB

sub-sample, the effect of competition for firms with strong governance is highly significant (0.0999, t=2.66). The extra abnormal return earned by firms of strong governance is 1.55% (ie. 0.0999*0.155) for each additional standard deviation increase in competition level. The effect of competition for firms with weak governance is insignificant even in the non-PTB sub-sample. This suggests that high competition is valuable only for firms with strong governance. The benefit from CEO duality is positively related to market competition for strong governance firms while weak governance firms may not be able to capture this benefit because of managerial entrenchment. Also, as expected, the lack of significance of the coefficient in columns 5 and 6 indicates that market competition does not affect announcement abnormal returns for firms following a PTB process. In Panel B, I repeat the same tests as in Panel A but classify industries based on 4-digit SIC codes as a robustness check. The results qualitatively remain the same, with the exception of a stronger market competition effect for the full sample.

Next, I look at the corporate governance effect for firms facing high and low market competition. This time, I look at the effect of weak governance on the market reaction in competitive and non-competitive industries. The model I use is as follows:

$$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 Crisis + \beta_3 Firm\,Control$$
$$+\beta_4 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon,$$

where $CAR[-1,+1]$ measures the market reaction to the announcements;, and $Dic = 1$ indicates weak governance. The control variables are the same as in the baseline model. Year and industry fixed effects are also included. I run this model for sub-samples of firms in competitive/non-competitive industries, separately. An industry is classified as competitive if the competition level ($revHHI$) is greater than the annual median, and as non-competitive otherwise. Industries are classified using the 3-digit SIC codes by default. Estimation results are reported in Table 8.

[Insert Table 8]

As shown in column 1 in Panel A of Table 8, the effect of weak governance on the market reaction is negative (-3.21%) and significant (t=-2.79) in competitive industries.

Weak governance firms earn 3.21% lower abnormal return than strong governance firms. Column 2 shows the estimation result in non-competitive industries; the effect of weak governance becomes small (-0.39%) and insignificant (t=-0.2) here. These findings suggest that the additional agency problem created by CEO duality prevents firms from capturing the efficiency gain in competitive industries. This additional agency problem does not further harm the firm in non-competitive industries. The effect of corporate governance has already been captured by the normal stock return, and the marginal benefit from good governance here is close to zero. I will show this in more detail in Section 4.4.

Columns 3 and 4 show test results in the non-PTB sub-sample. The results are similar to the finding in the full sample. I find the effect of weak governance to be negative (-3.6%) and significant (t=-2.38) in competitive industries, and insignificant (-0.46%, t=-0.21) in non-competitive industries. Also as expected, all effects are insignificant in the PTB sub-sample. I also check the robustness of the results using 4-digit SIC industry classification in Panel B and find similar results.

Combining the above results, I show that market competition and corporate governance act as complements when firms granting more power to the CEO by adding an additional title of chairman. The effects are concentrated in firms that do not follow a PTB process. These findings support my hypotheses stated in Section 2.

4.3.3 Self-selection: the Heckman two-stage approach

In this section, I address the potential self-selection problem in my baseline model that firms endogenously select into the CEO/chairman consolidation event.

Firm's choice of CEO duality is not exogenous. Even when considering a seemingly exogenous event, the death of the former chairman, the firm can still choose whether to have the current CEO takeover the chairman position, or to hire another outside chairman. When studying the market reaction to CEO/chairman consolidation announcements, researches can only observe firms that have made the decision to have CEO duality. This results in a self-selection problem. In order to address this selection problem in the event study, I adopt

the Heckman two-stage approach (Heckman, 1979) for a robustness check in this section. Heckman characterizes the sample selection problem as a special omitted variable problem. The model is specified as follows:

$$D_i = \begin{cases} 1 & if \quad Z_i\gamma + \eta_i > 0 \\ 0 & if \quad Z_i\gamma + \eta_i \leq 0 \end{cases} \tag{1}$$

$$\{y_i | D_i = 1\} = X_i\beta + (\varepsilon_i | Z_i\gamma + \eta_i > 0) \tag{2}$$

$$E[y_i | D_i = 1] = X_i\beta + \rho_{\varepsilon\eta}\sigma_\varepsilon E[\eta_i | Z_i\gamma + \eta_i > 0] \equiv X_i\beta + \pi\lambda_{D_i=1}(Z_i\gamma) \tag{3}$$

$$IMR \equiv \lambda_{D_i=1}(Z_i\gamma) = \frac{\phi(Z_i\gamma)}{\Phi(Z_i\gamma)} \tag{4}$$

In the above system of equations, Equation (1) is the first stage that predicts the likelihood of a firm choosing to adopt CEO duality. $D_i = 1$ indicates the firm's decision to adopt CEO duality. Variables in Z_i are factors that affect the firm decision on CEO duality and are determined by economic theory. y_i represents the market reaction to the consolidation event, measured by the CAR around the announcement date. The Heckman two-stage process converts the self-selection problem in Equation (2) to the omitted variable problem in Equation (3), where $IMR \equiv \lambda_{D_i=1}(Z_i\gamma)$ is the variable that controls for selection bias. That is, in the second stage of the Heckman two-stage process, I regress the outcome variable y_i on the inverse Mill's ratio (IMR) in addition to variables of interest (X_i). Equation (4) shows that the inverse Mill's ratio (IMR) is calculated from the first stage estimation, where ϕ and Φ represent the probability density function and cumulative density functions of the standard normal distribution, respectively.

One challenge with using the Heckman two-stage model is that factors affecting the selection process may also affect the outcome. For example, firm size can affect both firm decision of CEO duality and market reaction to the announcement. When variables in X and Z are identical, there exists a collinearity problem. For the purpose of identification, I need at least one variable to satisfy the exclusion restriction. That is, I need an instrument that drives the selection process (determines firm decision on CEO duality), but does not affect

the outcome (market reaction to the consolidation event). The variable I use to satisfy the exclusion restriction in this paper is the local director supply pool introduced by Knyazeva, Knyazeva and Masulis (2013). Following Knyazewa et al. (2013), the local director supply pool of a firm is measured by the number of other firms headquartered within 100km of the firm's headquarters, excluding firms in the same 4-digit SIC industry code:

$$Dist_{ij} = \arccos\{\cos(lat_i) * \cos(lon_i) * \cos(lat_j) * \cos(lon_j)$$

$$+ \cos(lat_i) * \sin(lon_i) * \cos(lat_j) * \sin(lon_j) + \sin(lat_i) * \sin(lat_j)\} * \frac{2\pi R}{360}$$

$$I_{ij} = 1 \quad if \quad Dist_{ij} \leq 100 \quad and \quad SIC_i \neq SIC_j$$

$$Dir100\,(Local\ Director\ Supply\ Pool_i) = Ln\ (1 + \sum_j I_{ij})$$

where $Dist_{ij}$ is the distance between the headquarters of firm i and firm j; lat and lon represent the latitude and longitude (measured in degrees) at which a firm's headquarters is located; R is the radius of the earth (6378km). The local director supply pool for firm i counts the number of other firm headquarters that are located within a 100km radius of firm i headquarters, that not in the same industry as firm i. I use natural log to address the right skewness.

I hypothesize that the likelihood of a firm choosing CEO duality is negatively related to the availability of the local director supply pool. This is because the potential candidates for the outside chairman are CEOs, retired CEOs, or other executives in other local companies. While headquarter locations are relevant for determining the cost of participating in board meetings and obtaining information from management, it is plausible that the distance between headquarters of firms is negatively related to the likelihood of a firm's top executive accepting an outside chairman position of another firm (the shorter the distance between firm headquarters, the greater the likelihood the position will be accepted). Firms in the same 4-digit SIC industry classification are excluded because it is unlikely for the same person to hold top positions in competitor firms. As a result, the likelihood of a firm

choosing to have CEO duality is lower if the firm is surrounded by a large number of other non-competitor firms. At the same time, since the locations of the firm headquarters are predetermined at the time of incorporation, and does not change over time, it will have no effect on the abnormal returns to CEO/chairman consolidation announcements.

In the first stage of the Heckman two-stage process, a probit model is used to estimate the probability of the firm having CEO duality in any given year. I use all firms in Execucomp with non-missing data as the estimation sample. The second stage model is similar to the baseline model, except for the additional control variable to address the firm self-selection problem. The variables of interests are the level of competition, governance measure, and the cross effect of the two. I control for factors that may affect firm choice of CEO duality and the market reaction in both the first and second stages of the Heckman two-stage model. I include an additional variable, the local director supply pool, to satisfy the exclusion restriction. The two-stage model is specified as follows:

$$First\ \ Stage:$$

$$(Probit)\ Duality = \alpha + \beta_1 revHHI + \beta_2 Dic + \delta revHHI * Dic$$

$$+\beta_3 Dir100 + \beta_4 Crisis + \beta_5 Firm\ Control + \beta_6 CEO\ Control + \eta,$$

$$Second\ \ Stage:$$

$$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 revHHI + \beta_3 Dic * revHHI + +\beta_4 IMR + \beta_5 Dir100$$

$$+\beta_6 Crisis + \beta_7 Firm\,Control + \beta_8 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon,$$

where $Duality = \{0, 1\}$ is the dependent variable in the first stage, and indicates whether the firm has CEO duality; $CAR[-1, +1]$ is the CAR from week -1 to week $+1$ centered on the announcement week, and measures market reaction to the announcements; $revHHI$ represents reverse HHI, which measures the level of competition within an industry; $Dic = 1$ if the firm has weak governance (E-index>3); $Dir100$ is the size of the local director supply pool; $PTB = 1$ if the firm follows a PTB process; IMR in the second stage is the inverse Mill's ratio calculated from the associated first stage estimation; other variables are the same as in the baseline model. Industries are classified based on 3-digit SIC codes by default. I

report the test results in Tables 9 and 10.

[Insert Table 9]

[Insert Table 10]

Table 9 reports estimation results from the first stage. I find that the effect of *Dic* is positive and significant (9.53%, t=3.29, marginal effect=3.76%), meaning that firms with weak governance are 3.76% more likely to have CEO duality than firms with strong governance. The coefficient for *Dir*100 is negative and significant (-3.43%, t=-4.58, marginal effect=-1.36%), suggesting that the likelihood of CEO duality is negatively related to the size of the local director supply pool, which is consistent with my hypothesis on this variable. Also consistent with the findings of Linck, Netter and Yang (2008), I find that firm size, CEO age, and CEO tenure contribute positively to the choice of CEO duality while the effect of lagged ROA is insignificant.

Table 10 reports results from the second stage. In the second stage, I investigate the effect of market competition and corporate governance on the market reaction to CEO/chairman consolidation events after controlling for the self-selection problem using the inverse Mill's ratio (IMR) calculated from the first stage. Note that the effect from *Dir*100 is insignificant in the second stage, suggesting that the local director supply pool does not affect the announcement abnormal returns. This confirms the validity of this instrumental variable in terms of satisfying the exclusion restriction. Similar to my baseline results, I find that the coefficient on dictatorship is negative and significant (-2.48%, t=-1.97) for the full sample, and that the effect is stronger in the non-PTB sub-sample (-4.12%, t=-2.69), suggesting that market reaction is negatively related to the existence of weak governance. The competition effect is positive and significant for the full sample (0.0433, t=1.78), and is stronger and highly significant for the non-PTB sub-sample (0.103, t=3.10), which implies that announcement abnormal returns are positively related to industry competition. Also, although the cross effect of competition and dictatorship is not significant for the full sample, this effect is negative and significant (-0.160, t=-2.42) for firms not following a PTB process,

suggesting that market competition and corporate governance are complements. All effects are not significant for the PTB sub-sample, suggesting that the PTB process neutralizes the effects of competition and governance on the market reaction to CEO/chairman consolidation announcements. Similar to the baseline model, I also check the robustness of my results using 4-digit SIC industry codes and report the results in Panel B. My results qualitatively remain the same. Overall, the results I find after using the Heckman two-stage approach to address the potential self-selection problem are identical to the results in my baseline model.

4.3.4 Event Sample Selection

Another concern about my baseline results is the sample selection problem. The major finding in my baseline model suggests that competition and governance act as complements with regards to the market reaction to CEO/chairman consolidation announcements. Because my event sample only consists of firms that choose to consolidate the CEO and chairman titles, and I focus only on large S&P 1500 companies, one may be concerned about a sample selection problem. It is possible that firms in my event sample (large firms announcing CEO duality) are special, and that the result from my baseline model (market competition and corporate governance act as complements) is due to some special characteristics of this specific sample. Recall that the literature suggests that market competition and corporate governance are substitutes in general; firms gain from good governance only in non-competitive industries. In this section, I replicate tests in Giroud and Mueller (2011) (GM thereafter) using firms in my event sample, and compare the results with the results I get when using all available firms in the CRSP-Compustat dataset. From this comparison, I can say that my results are not driven by the effect of sample selection, since I find competition and governance to be substitutes in general for firms in my event sample, consistent with the all-firms sample as well as the literature

Following GM, I compute monthly abnormal returns for the long-short hedge portfolios (long on firms with strong governance (Democracy), and short on firms with weak governance (Dictatorship)). I use the same measure of governance (G-index[7]) and competition (HHIs

[7]G-index consists of 24 antitakeover and shareholder rights provisions, and was first introduced and used by Gomper, Ishhi

calculated for the Fama-French 48 industry classification) as GM. Similar to previous sections in this paper, I multiply the HHI by -1 to get reverse HHI (revHHI) for more direct inferences (the level of competition is positively related to the reverse HHI). I obtain the G-index from Andrew Metrick's website, and the Fama-French 48 (FF48) industry classification scheme from Kenneth French's website. Following GM, firms with G-index of 14 or higher are classified as Dictatorship. Firms with G-index of 5 or lower are classified as Democracy. I exclude firms that are traded with dual-class shares and firms with missing SIC code. Next, I divide both Dictatorship firms and Democracy firms into three quantiles based on their industry competition level. Ultimately, 6 portfolios are constructed: one Democracy and one Dictatorship portfolio for each of three revHHI quantiles. Abnormal returns (α) are then calculated for each revHHI quantile using Carhart's four-factor model. Table 11 contains the replication results.

[Insert Table 11]

Panel A reports the abnormal returns for the long-short hedge portfolios containing only firms in my event sample, and Panel B reports results when I use all firms in the Compustat-CRSP database with governance index available. Stocks in the hedge portfolios are value-weighted in columns 1 to 3, and are equal-weighted in columns 4 to 6. Following GM, I look at abnormal returns in 2 different sample periods: September 1990 to December 1999[8] and September 1990 to December 2006.

The replication results using all Compustat-CRSP firms are similar to the main results in GM. The monthly abnormal return of the value-weighted long-short hedge portfolio is small and insignificant (0.13%, t=0.35) for competitive industries (the high revHHI quantile), and is large and significant (1.57%, t=3.23) for non-competitive industries (the low revHHI quantile). Results are similar using an equal-weighted portfolio: the monthly abnormal return is small and insignificant (0.13%, t=0.57) for competitive industries, and is large and significant (0.90%, t=3.37) for non-competitive industries. I then apply the same tests to firms in my event sample, the results of which are qualitatively the same as the results from using all Compustat-CRSP firms. As shown in Panel A of Table 11, I find that

and Metrick (2003). G-index is available until the year 2006.

[8]September 1990 to December 1999 is also the sample period used in Gompers, Ishii and Metrick (2003)

the abnormal return is negligible (-0.39%, t=-0.72) for competitive industries, and is large and significant (1.37%, t=1.81) for non-competitive industries using a value-weighted portfolio. In an equal-weighted portfolio, the abnormal return is close to zero (0.04%, t=0.09) for competitive industries, and is large and significant (1.19%, t=2.26) for non-competitive industries. The results remain similar when I use the longer sample period of September 1990 to December 2006: the abnormal return is small and insignificant (VW alpha=0.19%, t=0.32; EW alpha=0.33%, t=0.63) for competitive industries, and is large and significant (VW alpha=1.03%, t=1.79; EW alpha=1.31%, t=3.72) for non-competitive industries.

One notable finding here which requires further investigation is that the monthly abnormal return using a value-weighted portfolio for event firms in non-competitive industries using is only weakly significant (only at the 10% significance level). This low statistical significance can be driven by the small sample size of the portfolio containing event firms only, and the resulting large standard error. In this case, I claim that smaller portfolios are more volatile, or in other words, the standard deviation of the abnormal return for the long-short portfolio increases as the number of firms in the portfolio decreases.

The average number of event firms in the long-short portfolio is 17, which is around 17.3% of the average number of firms in the portfolio using all Compustat-CRSP firms (98 firms in total). I use simulations to investigate the relationship between the number of firms in the hedge portfolio and the standard deviation of the portfolio abnormal return. First, I randomly draw a pre-determined fraction of firms from the full Compustat-CRSP dataset for each long-short portfolio. This fraction determines the size of the long-short hedge portfolio in the simulation process. When the fraction increases, the number of firms included in the hedge portfolio increases. Monthly abnormal returns and their standard deviations are then estimated for the hedge portfolios containing the selected stocks for each industry competition quantile. I repeat this process 500 times for each pre-determined fraction. The pre-determined portfolio size ranged from 10% to 90% of the full size portfolio, increasing in intervals of 10%. The mean and standard deviation of portfolio abnormal returns and their standard errors are also calculated for each level of the portfolio size. I then look at how the number of firms in the portfolio affect the value and the standard deviation of the portfolio abnormal returns.

[Insert Figure 10, 11]

[Insert Table 12]

Figure 10 plots the distribution of the value and the standard error of the portfolio abnormal returns using a value-weighted long-short portfolio of non-competitive industry firms over the sample period ending in 1999. Figure 11 plots the analogous results for the longer sample period ending in 2006. As shown in the graphs, when the number of firms in the portfolio is small (lower fractions of the full size portfolio), the mean abnormal return is low and the mean standard deviation is high. When the number of firms in the portfolio increases (larger fractions of the full size portfolio), the mean abnormal return increases and the mean standard deviation decreases, thereby enhancing statistical significance. Table 12 shows the statistics of the monthly abnormal return using a value weighted hedge portfolio for non-competitive industries. The mean abnormal return is lowest (0.82%) when portfolio size is smallest (10% of full sample), increases over the range of portfolio size, and is highest (1.54%) when portfolio size is largest (90% of full sample). At the same time, the mean standard error is largest (0.98%) for the smallest portfolio, decreases monotonically over portfolio size, and is smallest (0.51%) for the largest portfolio. This indicates that the statistical significance of abnormal returns increases when the hedge portfolio contains more firms. Large portfolios are more stable, and small portfolios are more volatile. This relationship holds for both sample periods of 1990 to 1999 and 1990 to 2006, for both value and equal weighted portfolios, and across all three industry competition quantiles. A fully detailed report of the simulation results can be found in Appendix B.

I apply the same tests for the governance measure I use throughout this paper, the entrenchment index (E-index). As described in previous sections, I define a firm with E-index of 4 or higher as a Dictatorship, and a Democracy otherwise. The abnormal returns for the long-short portfolios are reported in the Appendix C. The results are comparable to those of using the G-index to measure governance. Although the abnormal return using a value-weighted portfolio for non-competitive industry event firms are not significant because of the small sample size, its magnitude of the is still greater than that of competitive industry

event firms. Overall, the abnormal returns for the long-short portfolio show that market competition and corporate governance act as substitutes in general for firms in my event sample. Therefore, these results demonstrate that the firms in my event sample do not perform differently from those not in the event sample (firms that opt for CEO duality).

In addition to replicating the long-short hedge portfolio, I run a Fama-Macbeth regression to see how competition and governance interactively affect the stock returns of firms in my event sample. I do this by interacting governance measures with revHHI quantiles, and include additional control variables. The model is specified as follows:

$$R_{it} = \alpha_t + \beta_t(G_{it} \times I_{it}) + \delta_{it}X_{it} + \varepsilon_{it},$$

where R_{it} is the stock return for firm i in month t, G_{it} is either a Dictatorship dummy or the G-index, I_{it} is a (3×1) vector of revHHI dummies, and X_{it} is a vector of control variables. Following GM, I control for the full set of control variables used in Gompers, Ishii and Metrick (2003, GIM): firm size (measured by market capitalization), book-to-market ratio, stock price, dividend yield, sales growth over past 5 years, institutional ownership, a NASDAQ dummy, an S&P 500 dummy, trading volume of NYSE or Amex stocks, trading volume of NASDAQ stocks, and returns from months t-3 to t-2, from t-6 to t-4, and from t-12 to t-7. A detailed description of the variables is available in the Appendix of GIM. I use Newey West standard errors with 12 lags when estimating the Fama-Macbeth regression. Table 13 reports the estimation results using firms in my event sample. Industries are classified using Fama-French 48 industry scheme, following GIM and GM.

[Insert Table 13]

In the Fama-MacBeth regression, I find that the cross effect of corporate governance and market competition is similar to what I find when analyzing the abnormal returns of the long-short hedge portfolio. As shown in Table 13, the cross effect of the governance measure (Dictatorship dummy or G-index) and low market competition on stock return is negative and significant; firms gain from good governance only in non-competitive industries. This relationship exists for both estimation periods (ending in 1999 and 2006), suggesting

that market competition and corporate governance are substitutes for firms in my event sample. This finding further confirms that my event firms are not specially selected to exhibit complementarity between competition and governance.

Overall, by replicating the tests in GM, I show that, consistent with the literature, market competition and corporate governance are substitutes in general for firms in my event sample. I can therefore rule out the possibility that the complementary of competition and governance that I find from my baseline model is driven by the effects of sample selection.

4.4 Why Complementary?

In this section, I provide a detailed analysis on the potential reasons behind the complementarity between market competition and corporate governance on the market reaction to firm consolidation of CEO/chairman titles.

Recall that CEO duality has both benefits and costs. The benefits of CEO duality mainly stem from the efficiency gains in top management; the costs are mostly the additional agency problem created by granting the CEO the additional power of chairman. It is clear that the efficiency gain from greater CEO power is positively related to the industry competition level. Li, Lu and Philips (2017) provide direct evidence on this argument by showing that CEO power benefits the firm in competitive industries. Adding together the effect of corporate governance on mitigating the additional agency problem created by CEO duality, we can explain part of the complementary of market competition and corporate governance: only firms with strong governance can capture the efficiency gain from greater CEO power, and the gain of this benefit is positively related to the competitiveness of the market.

However, it is still unclear why the corporate governance effect is different for industries of high versus low competition. From Table 3, we can observe that the difference in market reaction to CEO duality announcements for firms with strong versus weak governance is positive and significant in industries with high competition, and this difference is insignificant when market competition is low.

Giroud and Mueller (2011) show that firms gain from good governance in non-competitive

industries. The reason behind this argument is that market competition itself regulates and mitigates the agency problem. The initial level of the agency problem before CEO duality is therefore low in competitive industries, and high in non-competitive industries. When firms consolidate CEO and chairman roles, the marginal effect of the additional agency problem created by CEO duality is then different for industries with high and low competition. Since firms in competitive industries have initially lower levels of the agency problem, the marginal effect of the additional agency problem created by CEO duality is therefore going to be high. By the same reasoning, since firms in non-competitive industries have initially higher levels of the agency problem, marginal effect of the additional agency problem from CEO duality is therefore going to be low. As a result, the additional benefit of strong corporate governance when firms consolidate CEO and chairman roles is different in industries with high versus low competition. This hypothesis is formally stated as follows:

The additional agency problem generated by CEO duality is high in competitive industries, and is low in non-competitive industries.

To test this hypothesis empirically, I examine the effect of the additional agency problem created by CEO duality through CEO turnover sensitivity to firm performance. Specifically, I analyze how this CEO turnover-performance sensitivity is affected by CEO duality in industries with high versus low competition. The model is specified as follows:

$$\begin{aligned} CEO\,Turnover = \alpha + \beta_1 Performance + \delta_1 Duality * Performance \\ +\beta_2 Duality + \beta_3 Size + \beta_4 Blockholder\,Ownership FE \\ +\beta_5 CEO\,Ownership + \beta_6 CEO\,Age + Year\,FE + Industry\,FE + \varepsilon, \end{aligned}$$

where $CEO\,Turnover = \{0, 1\}$ is the dependent variable, and indicates whether the firm experiences CEO turnover; $Performance$ represents firm performance, for which I look at both accounting performance (measured by lagged return on assets) and market performance (measured by average monthly stock returns); $Duality = \{0, 1\}$ indicates whether the firm has CEO duality, which controls for the direct effect of CEO duality on CEO turnover; $Duality * Performance$, the cross effect of CEO duality and firm performance,

is the variable of interest in the model, and measures the effect of CEO duality on CEO turnover-performance sensitivity; other variables control for firm and CEO characteristics which may affect the CEO turnover decision. I also control for year and industry fixed effects to account for unobserved heterogeneity. This regression is run for sub-samples of firms in industries with high and low competition. Consistent with previous sections, industries are classified as high (low) competition if the reverse HHI (revHHI) is above (below) the annual median. Table 14 shows the estimation results.

[Insert Table 14]

Table 14 provides empirical evidence for the effect of the additional agency problem created by CEO duality on CEO turnover-performance sensitivity. Industries are classified based on 3-digit SIC codes by default. Columns 1 and 2 use ROA to measure firm performance, while columns 3 and 4 use average monthly stock returns. As expected, firm performance contributes negatively to the CEO turnover probability. The effect is weaker for firms in non-competitive industries, and this result is consistent with inference by Giroud and Mueller (2011). In columns 2 and 4 when the industries are highly competitive, the cross effect of CEO duality and firm performance on CEO turnover probability is positive (0.106 for ROA; 0.441 for stock return) and significant (t=2.11 for ROA; t=2.48 for stock return), which is the opposite of the effect of firm performance on CEO turnover. This means that the additional agency problem generated by CEO duality decreases the turnover-performance sensitivity in competitive industries. At the same time, the cross effect in columns 1 and 3 (non-competitive industries) is positive but small (0.051 for ROA; 0.0512 for stock return) and insignificant (t=0.97 for ROA; t=0.36 for stock return). This means that the additional agency problem is negligible when the level of competition in the industry is low. I also check the robustness of the results using the Fama-French 48 industry scheme as an alternative classification for industries. The results qualitatively remains the same and are reported in Panel B of Table 14. Putting everything together, I find that the additional agency problem generated by CEO duality is high for firms in competitive industries, and is low in non-competitive industries. As a result, the benefit from strong governance is high in

competitive industries, and is low in non-competitive industries.

Overall, both the benefits and costs of CEO duality are high in competitive industries, and low in non-competitive industries. Only firms with strong governance can benefit from the higher efficiency gains in competitive industries; the gain from strong governance is high (low) in competitive (non-competitive) industries. This explains the complementary of market competition and corporate governance in the event of firm consolidation of CEO and chairman roles.

4.5 Other Robustness Tests

In this section, I perform further robustness checks for my baseline results.

Alternative event window: day [-1, +1] All previous results are based on the event window of week [-1, +1], determined by abnormal trading volumes surrounding consolidation announcements. As a further robustness test, I use an alternative event window widely used in the literature of day [-1, +1] centered on the announcement date. Using the cumulative abnormal return from day -1 to day +1 as the measure of market reaction, I replicate my baseline estimations. Appendix D2 reports the test results, which are very similar to my main findings: market competition is positively related to the market reaction; management entrenchment is negatively related to the market reaction; competition and governance act as complements. Also, these results are concentrated in non-PTB firms, showing that the PTB process neutralizes all of the effects.

Alternative industry classification: Fama-French 48 I obtain Fama-French 48 industry definitions from Kenneth French's website. Using this alternative industry classification method, I re-estimate my baseline model. As shown in Appendix D2, my baseline results are not sensitive to this alternative industry classification methodology.

Alternative competition measure: CR4 As a further robustness test of my baseline results, I use the four-firm concentration ratio (CR4) as an alternative measure of market

competition. CR4 is calculated as the sum of the market shares of the four largest firms in an industry. High values of CR4 indicate low levels of competition. Similar to the HHI, I construct a reverse CR4 measure my multiplying CR4 by -1 to allow for more straightforward inference (such that revCR4 is positively related to the competition level). I report the replication results in Appendix D. Again, the results here are qualitatively the same as my baseline results, except the lack of significance in the effects for the full sample using 3-digit SIC industry classification. This non-significance is driven by the noise from PTB firms. Overall, my baseline results do not change for this alternative measure of market competition.

5 Conclusion

Existing literature on market competition and corporate governance suggests that competition and governance are substitutes, and that firms in non-competitive industries can benefit from good governance. In this paper, I examine how market competition and corporate governance interactively affect the market reaction to CEO/chairman consolidation announcements. Extending the current literature, I find that competition and governance can be complements when analyzing the market reaction to CEO duality events. I combine agency theory with stewardship theory in the CEO duality literature, and argue that the benefit of CEO duality comes from efficiency gains in top management, and the cost of CEO duality comes from the additional agency problem. Firms benefit from an increase in managerial efficiency due to granting the CEO the additional title of chairman, and this benefit is positively related to the complexity and competitiveness of the product market in which the firm is operating. However, only firms with strong governance are able to capture this benefit by mitigating the additional agency problem generated by CEO duality. On the other hand, the additional agency problem generated by CEO duality is high in competitive industries, and is low in non-competitive industries, which results in a high (low) benefit of strong governance in competitive (non-competitive) industries. As a result, market competition and corporate governance are complements when firms grant more power to their

CEOs. In addition, I also isolate the effect of the passing-the-baton (PTB) process, in which CEO duality can be anticipated, and show that the effects of competition and governance are neutralized in this case.

My results have several important implications. Most importantly, the result that competition and governance can be complements suggests that strong governance is also important for firms in competitive industries. Although the gains from strong governance in competitive industries are generally not as substantial as in non-competitive industries, firms with strong governance will have greater ability to capture the benefits from managerial efficiency in the case of granting the CEO more power. Additionally, my results can also benefit investors in the stock market. Investors need to carefully examine the competition and governance conditions when firms announce CEO duality. Finally, my results also suggest that a one-size-fits-all board structure (ie. having separate CEO and chairman) is not appropriate for all firms. Firms with good governance in competitive industries can gain from CEO duality. Given this, the board needs to carefully weigh the costs and benefits of CEO duality when making the decision. Policy makers may also find my study useful when considering to have all firms separate their CEO and chairman roles.

References

[1] Abdullah, H. and Valentine, B. (2009), "Fundamental and ethics theories of corporate governance", Middle Eastern Finance and Economics, Vol. 4 No. 4, pp. 88-96.

[2] Acharya, V., Gabarro, M. and Volpin, P. (2017), "Competition for Managers and Corporate Governance", Working paper.

[3] Ammann, M., Oesch, D. and Schmid, M. (2013), "Product Market Competition, Corporate Governance, and Firm Value: Evidence from the EU Area", European Financial Management 19(3), pp. 452–469.

[4] Gupta, A., Misra, L., and Shi, Y (2017), "Product-market competitiveness and investor reaction to corporate governance failures", International Review of Economics and Finance 48, pp.134–147.

[5] Bajo, Emanuele (2010), "The Information Content of Abnormal Trading Volume", Journal of Business Finance & Accounting 37, pp. 950–978.

[6] Baliga, B., Moyer, R. and Rao, R. (1996), "CEO duality and firm performance: what's the fuss?", Strategic Management Journal 17, pp.41–53.

[7] Bebchuk, Lucian A., Cohen A. and Ferrell, A. (2009), "What matters in corporate governance?", Review of Financial Studies 22, pp. 783–827.

[8] Brickley, JA, Coles, JL and Jarrell, G. (1997), "Leadership structure: separating the CEO and chairman of the board." Journal of Corporate Finance 3, pp. 189–220.

[9] Chen, T., Harford, J. and Lin, C (2015), "Do analysts matter for governance? Evidence from natural experiments", Journal of Financial Economics 115, pp. 383–410.

[10] Core, J. E., W. R. Guay, T. O. Rusticus (2006), "Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations", Journal of Finance 61, pp. 655–687.

[11] Cremers, M. and Nair, V. (2005), "Governance mechanisms and equity prices", Journal of Finance 60, pp. 2859–2894.

[12] D'Aveni, R. A. and Finkelstein, S. (1994). CEO duality as a double-edged sword: How boards of directors balance entrenchment avoidance and unity of command. Academy of Management Journal 37, pp. 1079–1108.

[13] Davidson, WN., Nemec, C. and Worrell, DL. (1997), "One hat too many: key executive plurality and shareholder wealth", Strategic Management Journal 18(6), pp. 499–507.

[14] Dey, A., Engel, E., Liu, X. (2011), "CEO and board chair roles: to split or not to split", Journal of Corporate Finance 17, pp. 1595–1618.

[15] Donaldson, L., & Davis, J. H. (1991). "Stewardship theory or agency theory: CEO governance and shareholder return", Australian Journal of Management 16, pp. 49-64.

[16] Eisenhardt, K. M. (1989). "Agency theory: An assessment and review". Academy of Management Review 14, pp. 57-74.

[17] Fama, E. F., and Jensen, M. C. (1983). "Agency problems and residual claims", Journal of Law and Economics 26, pp. 327-349.

[18] Giroud, Xavier and Holger M. Mueller (2011), "Corporate governance, product market competition, and equity prices", Journal of Finance 66, pp. 563–600.

[19] Gompers, Paul A., Ishii, Joy L. and Metrick, Andrew (2003), "Corporate governance and equity prices", Quarterly Journal of Economics 118, pp. 107–155.

[20] Gormley, T., and Matsa, D. (2014), "Common errors: how to (and not to) control for unobserved heterogeneity", The Review of Financial Studies 27(2), pp. 617-661.

[21] Guadalupe, M. and J,Wulf. (2010), "The flattening firm and product market competition: The effect of trade liberalization", American Economic Journal: Applied Economics 2, pp. 105–27.

[22] Heckman, J.J., (1979). Sample selection bias as a specification error. Econometrica 47, pp. 153–161.

[23] Hendry, K. and Kiel, G. (2004), "The role of the board in firm strategy: integrating agency and organisational control perspectives", Corporate Governance: An International Review, Vol. 12 No. 4, pp. 500-20.

[24] Jarrel, G. and A.B. Poulsen (1989), "Stock Trading before the Announcement of Tender Offers, Insider Trading or Market Anticipation?", Journal of Law and Organization 5, pp. 225–48.

[25] Jensen, M. C. (1993). "The modern industrial revolution, exit, and the failure of internal control systems", Journal of Finance 48, pp. 831–880.

[26] Kim, SM. and Kim, Y. (2017), "Product market competition on the effectiveness of internal control", Asia-Pacific Journal of Accounting & Economics 24, pp. 163–182.

[27] Krause, R., Semadeni, M. and Cannella, A. (2014), "CEO duality: a review and research agenda", Journal of Management 40, pp. 256–286.

[28] Linck, J. S., Netter, J. M. and Yang, T. (2008), "The determinants of board structure", Journal of Financial Economics, 87, pp. 308-328.

[29] Li, M., Lu, Y. and Philips, G. (2017), "CEOs and the Product Market: When are Powerful CEOs Beneficial?", Working paper.

[30] Masulis, RW., Knyazeva, A. and Knyazeva D. (2013), "The supply of corporate directors and board independence", The Review of Financial Studies 26, pp. 1561-1605.

[31] McNulty, T., and Pettigrew, A. M. (1999). "Strategists on the board", Organization Studies 20, pp. 47-74.

[32] Nicholson, G. and Kiel, G. (2007), "Can directors impact performance? A case-based test of three theories of corporate governance", Corporate Governance: An International Review, Vol. 15 No. 4, pp. 585-608.

[33] Palmon, O. and Wald, J. (2002), "Are two heads better than one? The impact of changes in management structure on performance by firm size", Journal of Corporate Finance 8, pp. 213–226.

[34] Vancil, R. F. (1987), "Passing the baton: Managing the process of CEO succession", Harvard Business School Press.

Figure 1: General trend of CEO duality over years 1992 to 2015

This figure shows the trend of the fraction firms adopting CEO duality over years 1992 to 2015. Data source is from Execucomp.

Figure 2: CARs for HC, LC, HG, LG (Full sample)

This figure shows daily abnormal returns around the CEO consolidation announcement date for the full event sample. HC, LC, HG, LG indicate sub-samples of events that the announcing firm has high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 3-digit SIC codes.

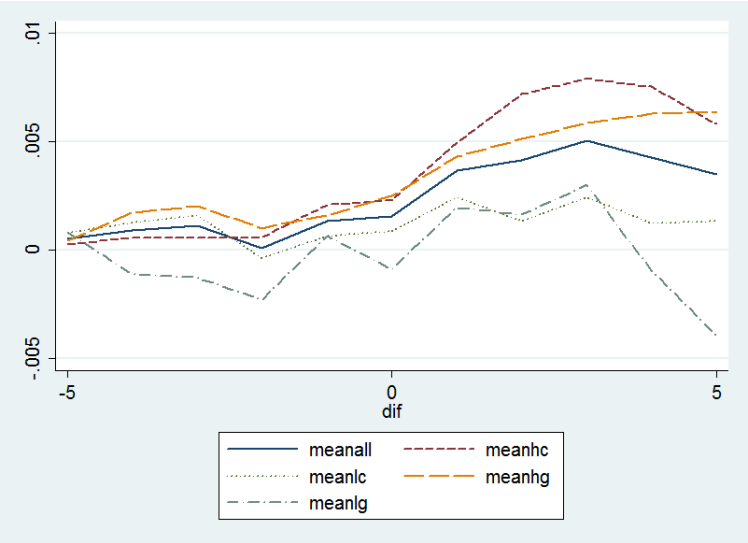

Figure 3: CARs for HC, LC, HG, LG (non-PTB)

This figure shows the daily abnormal returns around the CEO consolidation announcement date for the non-PTB sub-sample. HC, LC, HG, LG indicate sub-samples of events that the announcing firm has high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 3-digit SIC codes.

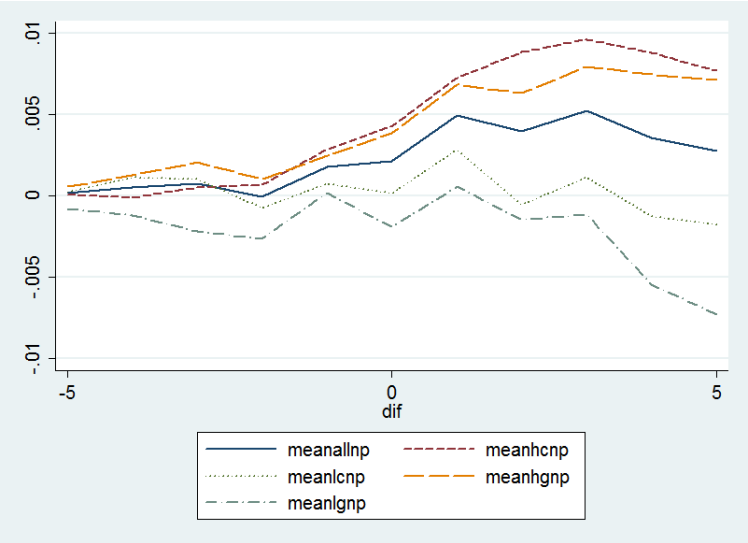

Figure 4: CARs for HCHG, HCLG, LCHG, LCLG (Full sample)

This figure shows daily abnormal returns around the CEO consolidation announcement date for the full event sample. HCHG, HCLG, LCHG, LCLG are sub-samples containing events that are double sorted based on the competition level and the governance level of the announcing firms. HC, LC, HG, LG indicates high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 3-digit SIC codes.

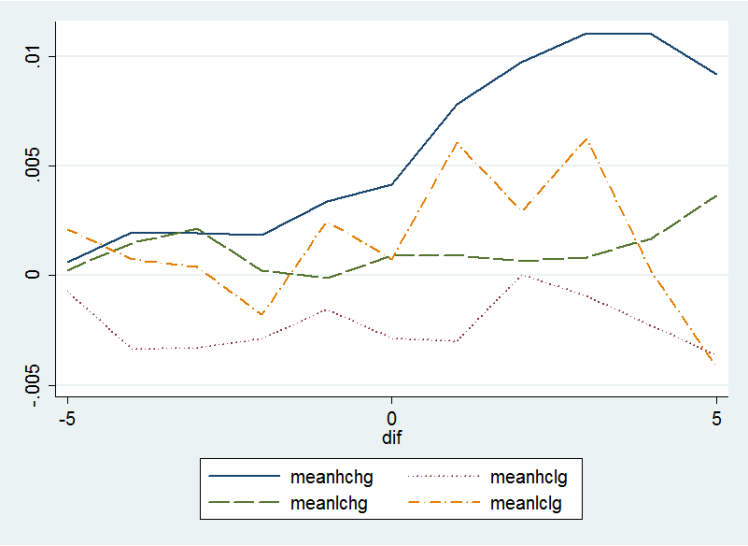

Figure 5: CARs for HCHG, HCLG, LCHG, LCLG (non-PTB)

This figure shows daily abnormal returns around the CEO consolidation announcement date for the non-PTB sub-sample. HCHG, HCLG, LCHG, LCLG are sub-samples containing events that are double sorted based on the competition level and the governance level of the announcing firms. HC, LC, HG, LG indicates high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 3-digit SIC codes.

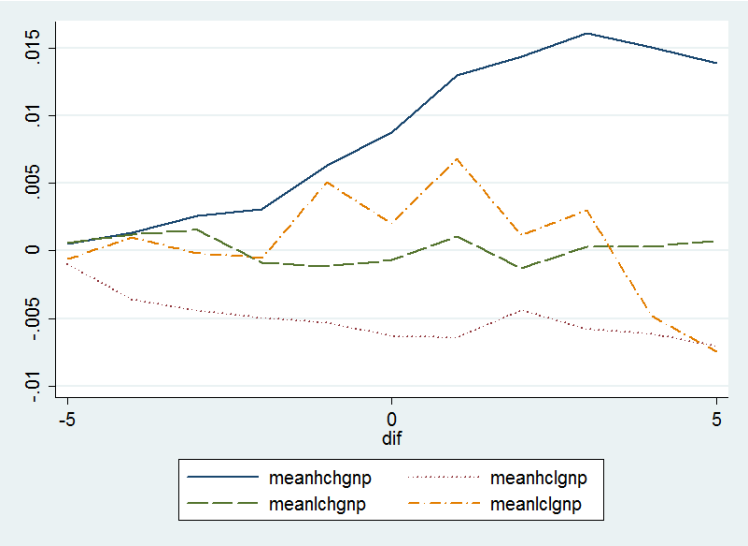

Figure 6: CARs for HC, LC, HG, LG (Full sample) - SIC4

This figure shows the trend of daily abnormal returns around the CEO consolidation announcement date for the full event sample. HC, LC, HG, LG indicates sub-samples of events that the announcing firm has high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 4-digit SIC codes.

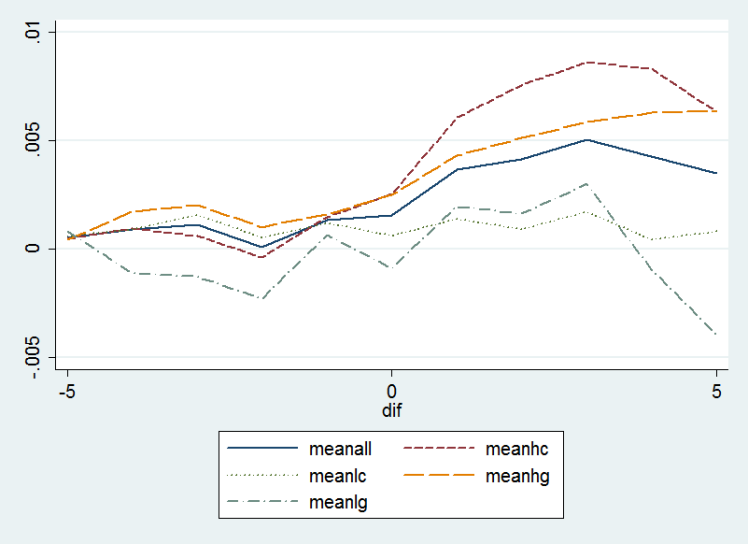

Figure 7: CARs for HC, LC, HG, LG (non-PTB) - SIC4

This figure shows daily abnormal returns around the CEO consolidation announcement date for the non-PTB sub-sample. HC, LC, HG, LG indicate sub-samples of events that the announcing firm has high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 4-digit SIC codes.

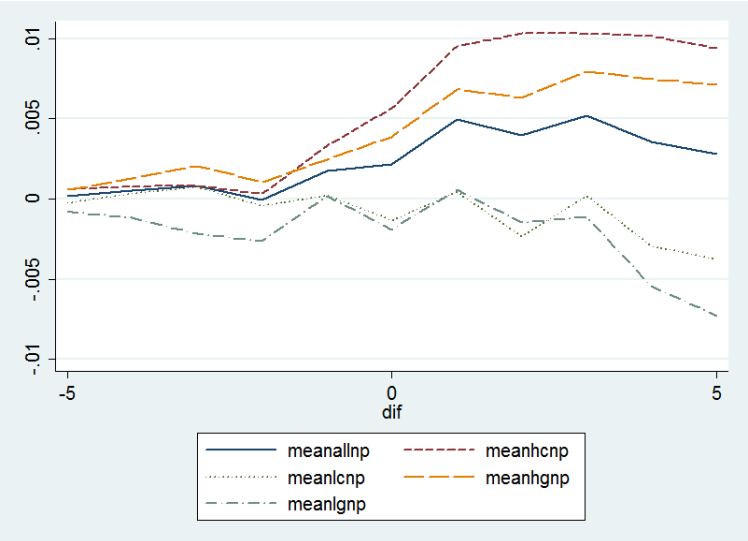

Figure 8: CARs for HCHG, HCLG, LCHG, LCLG (full sample) - SIC4

This figure shows daily abnormal returns around the CEO consolidation announcement date for the full sample. HCHG, HCLG, LCHG, LCLG are sub-samples containing events that are double sorted based on the competition level and the governance level of the announcing firms. HC, LC, HG, LG indicate high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 4-digit SIC codes.

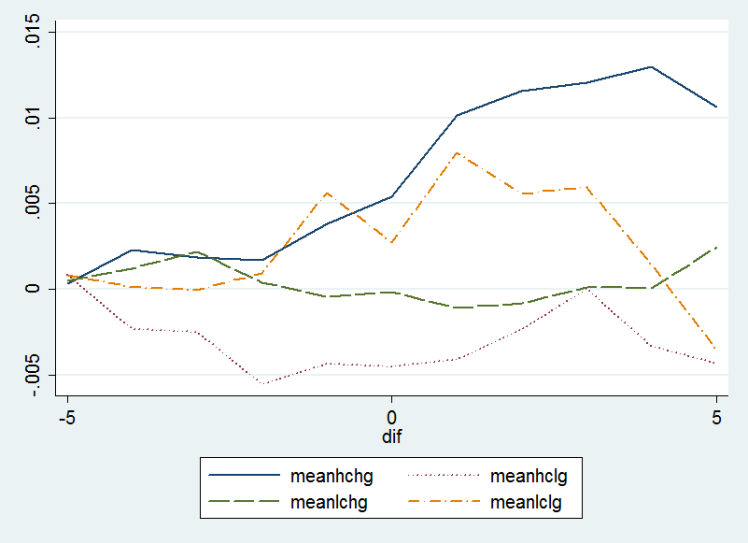

Figure 9: CARs for HCHG, HCLG, LCHG, LCLG (non-PTB) - SIC4

This figure shows the trend of daily abnormal returns around the CEO consolidation announcement date for the non-PTB sub-sample. HCHG, HCLG, LCHG, LCLG are sub-samples containing events that are double sorted based on the competition level and the governance level of the announcing firms. HC, LC, HG, LG indicates high competition, low competition, strong governance, weak governance, respectively. Industries are classified using 4-digit SIC codes.

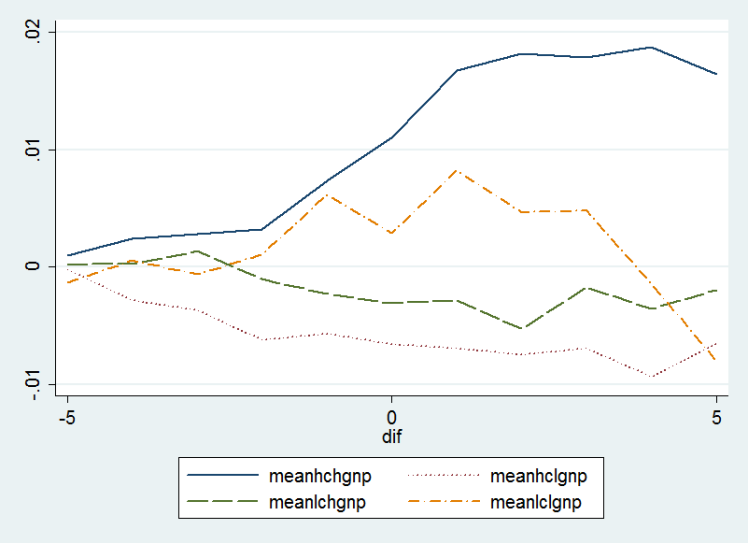

Figure 10: Simulation Result - VW, LC, 99

This figure shows the simulation result for a value-weighted portfolio in non-competitive industries. The sample period is from September 1990 to December 1999. Mean value of the value and standard deviation of the monthly abnormal return for the long-short hedge portfolio from the 500 simulation results are plotted for each of the pre-determined fraction level.

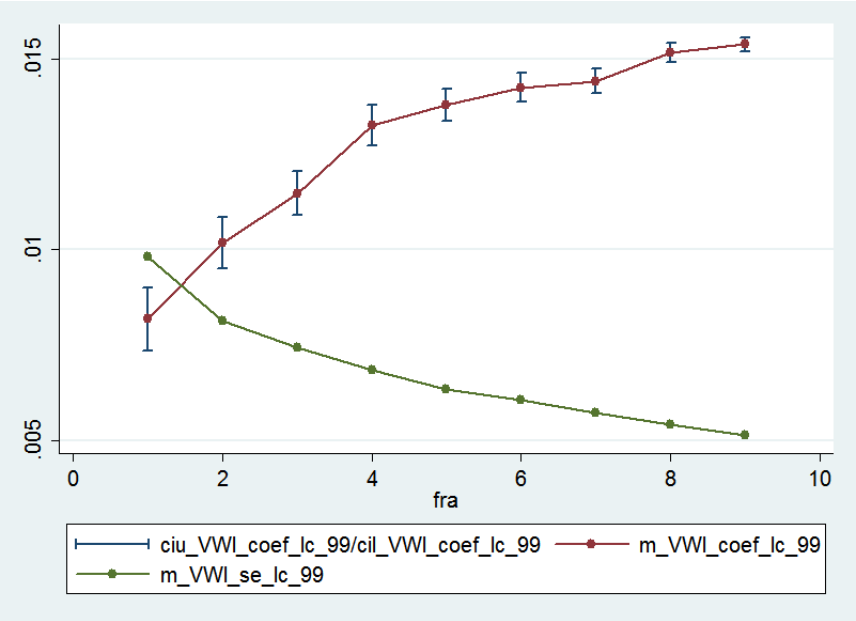

Figure 11: Simulation Result - VW, LC, 06

This figure shows the simulation result for a value-weighted portfolio in non-competitive industries. The sample period is from September 1990 to December 2006. Mean value of the value and standard deviation of the monthly abnormal return for the long-short hedge portfolio from the 500 simulation results are plotted for each of the pre-determined fraction level.

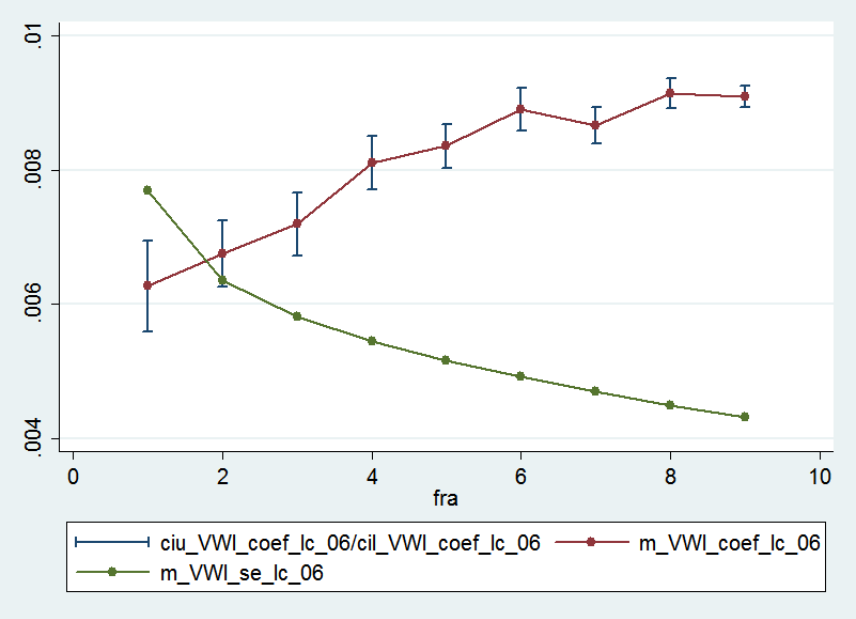

Table 1: Summary Statistics

This table summarizes statistics for key variables of firms that announce the CEO/chairman duality. The sample covers firm-year pairs that the consolidation event is happening during the period of 1992 to 2015 and the announcing firm belongs to S&P 1500 Index. Panel A reports summary statistics for the full event sample. Panel B reports summary statistics for events that are not following a passing-the-baton (PTB) process. A detailed description of the variables can be found in Appendix A.

Panel A: Full event sample						
	observation	mean	median	standard deviation	1%	99%
Size (ln(AT))	610	8.36827	8.182473	1.798843	5.149208	13.44961
AT (Total asset)	610	30925.87	3577.7	148518.6	172.295	693575
MTB	610	1.967538	1.541278	1.874695	0.8903686	7.037645
ceoownpc	588	0.0067768	0.0013906	0.0321287	0	0.08327
blockownpc	610	0.1474541	0.1327058	0.1202228	0	0.4976288
ROA	610	0.0571706	0.0550834	0.1078973	-0.1177216	0.233358
E-index	604	2.695364	3	1.432822	0	6
$revHHI3$	610	-0.1656069	-0.1186609	0.1685538	-0.8996158	-0.0233767
$revHHI4$	610	-0.2243582	-0.1677848	0.2022925	-0.9623716	-0.0163447
CEO Age	610	54.3918	55	5.877703	40	68
Tenure	610	5.962295	3	7.930748	0	34
analyst coverage	610	2.249646	2.484907	0.8848952	0	3.555348
Local Director	597	22.65159	16	23.63663	0	102
Local Director (ln)	597	2.650599	2.833213	1.105737	0	4.634729
Panel B: Non-PTB sub-sample						
	observation	mean	median	standard deviation	1%	99%
Size (ln(AT))	412	8.075216	7.946072	1.750508	5.175726	13.44961
AT (Total asset)	412	28438.53	2824.461	161041.3	176.925	693575
MTB	412	2.033306	1.560092	2.139275	0.8708777	7.199903
ceoownpc	398	0.008944	0.002	0.0386976	0	0.13563
blockownpc	412	0.1556516	0.1508117	0.1220587	0	0.4976288
ROA	412	0.0564593	0.0565159	0.1250976	-0.1258076	0.2404778
E-index	412	2.747549	3	1.439183	0	6
$revHHI3$	412	-0.1623856	-0.1208866	0.1579036	-0.8941474	-0.0233767
$revHHI4$	412	-0.2151002	-0.1649289	0.1864516	-0.9221839	-0.0138872
CEO Age	412	54.73786	55	6.146961	39	69
Tenure	412	6.949029	4	7.843966	0	36
analyst coverage	412	2.169518	2.302585	0.9019063	0	3.583519
Local Director	403	21.71216	15	23.23333	0	102
Local Director (ln)	403	2.587091	2.772589	1.121264	0	4.634729

Table 2: Distribution of the events

This table reports the number of events in different sub-samples. Firms have weak governance if E-index>3, and strong governance otherwise. Firms are operated in competitive industries if the competition level (reverse HHI) is greater than the annual median. HC (LC) is the sub-sample containing events that announcing firms are facing high (low) competition. HG (LG) is the sub-sample containing events that announcing firms have strong (weak) governance. HCHG, HCLG, LCHG, LCLG are sub-samples containing events that are double sorted based on competition and governance levels of announcing firms. Full sample contains all events in the event sample. Non-PTB sub-sample contains events that are not following a passing-the-baton (PTB) process.

Industry Base:	3-digit SIC		4-digit SIC	
Event Sample:	Full Sample	Non-PTB	Full Sample	Non-PTB
HC	292	196	294	203
LC	318	216	316	209
HG	435	285	435	285
LG	175	127	175	127
HCHG	214	138	209	141
HCLG	78	58	85	62
LCHG	221	147	226	144
LCLG	97	69	90	65
Total	610	412	610	412

Table 3: Abnormal Trading Volume (Daily)

This table reports the daily normalized abnormal trading volume. $NAV_{it} = \frac{TV_{it}-\mu_{it}}{\sigma_{it}}$, and $\mu_{it} = \frac{1}{66}\sum_{t=1}^{66} TV_{it}$, where TV_{it} is the trading volume for stock i on day t (computed as the natural log of 1+ the trading volume), μ_{it} and σ_{it} are the mean and standard deviation of trading volume in the 66 day window immediately prior to the observation. Day 0 is the announcement date. The full event sample contains all events. The non-PTB sub-sample contains events that are not following a pass-the-baton (PTB) process. The PTB sub-sample contains events that are following a PTB process. *,** and *** denote significance at the 10%, 5% and 1% level, respectively. Standard errors are in brackets.

day	Full Event Sample	Non-PTB sub-sample	PTB sub-sample
-10	0.0728*	0.0434	0.1338*
	(0.0430)	(0.0516)	(0.0779)
-9	0.0461	0.0604	0.0163
	(0.0406)	(0.0498)	(0.0702)
-8	0.0076	0.0230	-0.0247
	(0.0408)	(0.0508)	(0.0681)
-7	0.0364	0.0636	-0.0202
	(0.0433)	(0.0521)	(0.0775)
-6	0.0549	0.0901*	-0.0184
	(0.0438)	(0.0507)	(0.0838)
-5	0.0621	0.1037**	-0.0244
	(0.0421)	(0.0493)	(0.0789)
-4	0.0378	0.0602	-0.0088
	(0.0408)	(0.0508)	(0.0681)
-3	0.0359	0.0483	0.0100
	(0.0411)	(0.0503)	(0.0716)
-2	0.0821**	0.0693	0.1085
	(0.0413)	(0.0519)	(0.0677)
-1	0.0776*	0.0723	0.0887
	(0.0423)	(0.0510)	(0.0760)
0	0.1762***	0.2095***	0.1069
	(0.0428)	(0.0543)	(0.0679)
1	0.2092***	0.2322***	0.1615**
	(0.0460)	(0.0567)	(0.0786)
2	0.0821*	0.0801	0.0864
	(0.0436)	(0.0540)	(0.0737)
3	0.1137***	0.1165**	0.1079
	(0.0402)	(0.0500)	(0.0673)
4	0.0605	0.0973**	-0.0163
	(0.0399)	(0.0477)	(0.0723)
5	0.0987**	0.1159**	0.0630
	(0.0443)	(0.0528)	(0.0809)
6	0.0913**	0.1191**	0.0333
	(0.0434)	(0.0507)	(0.0823)
7	0.0322	0.0756	-0.0582
	(0.0417)	(0.0512)	(0.0715)
8	0.0479	0.0947	-0.0494
	(0.0409)	(0.0489)	(0.0739)
9	-0.0071	0.0391	-0.1032
	(0.0435)	(0.0505)	(0.0828)
10	-0.0012	0.0074	-0.0192
	(0.0438)	(0.0516)	(0.0818)

Table 4: Abnormal Trading Volume (Weekly)

This table reports the weekly abnormal trading volume. $WAAV_{i,t} = \frac{WATV_{i,t} - \mu_{i,t}}{\sigma_{i,t}}$, and $\mu_{i,t} = \frac{1}{20}\sum_{t=1}^{20} WATV_{i,t}$. Week 0 is the announcement week. The full event sample contains all events. The non-PTB sub-sample contains events that are not following a pass-the-baton (PTB) process. The PTB sub-sample contains events that are following a PTB process. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively. Standard errors are in brackets.

week	Full Event Sample	Non-PTB sub-sample	PTB sub-sample
-3	0.0047	0.0240	-0.0355
	(0.0283)	(0.0347)	(0.0486)
-2	0.0412	0.0453	0.0325
	(0.0291)	(0.0350)	(0.0521)
-1	0.0659**	0.0929***	0.0097
	(0.0288)	(0.0343)	(0.0524)
0	0.1375***	0.1453***	0.1211**
	(0.0294)	(0.0373)	(0.0468)
1	0.0792***	0.0957***	0.0448
	(0.0295)	(0.0360)	(0.0515)
2	-0.0115	0.0354	-0.1091
	(0.0307)	(0.0361)	(0.0567)
3	0.0212	0.0029	0.0593
	(0.0293)	(0.0343)	(0.0553)

Table 5: Cumulative abnormal returns for the event window weeks [-1,+1] around CEO turnover announcements

This table summarizes market reactions to CEO/chairman consolidation events from week -1 to +1 around the announcement week. Results are reported for different sub-samples based on the level of competition and governance of announcing firms. Firms have weak governance (L-Gov) if E-index>3, and strong governance (H-Gov) otherwise. Firms are operated in competitive industries (H-comp) if the competition level (reverse HHI) is greater than the annual median, and non-competitive (L-comp) otherwise. Panel A reports regression results for the full event sample. Panel B reports regression results for the non-PTB sub-sample. Industries are classified based on 3-digit and 4-digit SIC codes. Robust Standard errors are in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: Full Sample						
Industry base:	SIC3			SIC4		
	H-comp	L-comp	Dif	H-comp	L-comp	Dif
H-Gov	0.0122**	0.00403	0.0082	0.0143**	0.00228	0.0120
	(0.0055)	(0.0054)	(0.0077)	(0.0059)	(0.0050)	(0.0077)
L-Gov	-0.00883	0.00420	-0.0130	-0.00610	0.00264	-0.0087
	(0.0074)	(0.0092)	(0.0122)	(0.0071)	(0.0098)	(0.0122)
Dif	0.0211**	-0.000171		0.0204**	-0.0003631	
	(0.0101)	(0.0102)		(0.0104)	(0.0100)	
	High	Low	Dif	High	Low	Dif
Competition	0.00661	0.00408	0.00253	0.00842*	0.00238	0.00604
	(0.0045)	(0.0047)	(0.0065)	(0.0047)	(0.0045)	(0.0065)
Governance	0.00806**	-0.00161	0.00967	Full Sample	0.00529	
	(0.0039)	(0.0061)	(0.0072)		(0.0033)	

Panel B: Non-PTB sub-sample						
Industry base:	SIC3			SIC4		
	H-comp	L-comp	Dif	H-comp	L-comp	Dif
H-Gov	0.0197***	0.000971	0.0188*	0.0230***	-0.00265	0.0257**
	(0.0073)	(0.0071)	(0.0102)	(0.0078)	(0.0065)	(0.0101)
L-Gov	-0.0160*	-0.000887	-0.0151	-0.0148*	-0.00109	-0.0138
	(0.0090)	(0.0115)	(0.0150)	(0.0088)	(0.0120)	(0.0150)
Dif	0.0358***	0.00186		0.0379***	-0.0016	
	(0.0128)	(0.0130)		(0.0132)	(0.0125)	
	High	Low	Dif	High	Low	Dif
Competition	0.00915	0.000377	0.0088	0.0115*	-0.00216	0.0136
	(0.0059)	(0.0060)	(0.0085)	(0.0062)	(0.0058)	(0.0084)
Governance	0.0101**	-0.00780	0.0179*	Full Sample	0.004553	
	(0.051)	(0.0075)	(0.0091)		(0.0042)	

Table 6: Baseline Results

This table reports my baseline results. The model is as follows:
$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 revHHI + \beta_3 Dic * revHHI + \beta_7 Crisis + \beta_8 Firm\,Control + \beta_9 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CAR spanning week -1 to +1, measures market reaction to consolidation announcements, and is calculated based on the Carhart 4-factor model. $Dic = 1$ if the announcing firm has weak governance (E-index>3); revHHI is the reverse HHI, measures the level of competition in the industry; $Crisis = 1$ indicates the event year is after 2007; $Firm\,Control$ controls firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership and the lagged return on asset; $CEO\,Control$ controls CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. Regressions in columns 1 to 3 classify industries based on 3-digit SIC codes; regressions in columns 4 to 6 use 4-digit SIC codes. Regressions in columns 1 and 4 are in the full event sample. Regressions in columns 2 and 5 are for firms not follow a PTB process. Regressions in columns 3 and 6 are for firms not follow a PTB process. All regression include year and industry fixed effects. Robust standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Dep. Variable:	CAR [-1,+1]: Market reaction from week -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Industry Base	SIC3	SIC3	SIC3	SIC4	SIC4	SIC4
Event Sample	Full	Non-PTB	PTB	Full	Non-PTB	PTB
Dic	-0.0307**	-0.0477***	0.00418	-0.0375***	-0.0610***	0.0152
	(0.0126)	(0.0153)	(0.0233)	(0.0128)	(0.0155)	(0.0248)
$revHHI$	0.0452*	0.107***	-0.0341	0.0662***	0.123***	0.0206
	(0.0245)	(0.0331)	(0.0313)	(0.0229)	(0.0297)	(0.0316)
$Dic * revHHI$	-0.0874	-0.149**	-0.0123	-0.0945**	-0.178***	0.0577
	(0.0622)	(0.0678)	(0.131)	(0.0451)	(0.0482)	(0.110)
Crisis	-0.0217	-0.0555*	0.0131	-0.0200	-0.0494	0.0176
	(0.0234)	(0.0333)	(0.0292)	(0.0240)	(0.0336)	(0.0312)
Size	-0.00151	-0.000362	-0.0104*	-0.00152	-0.000556	-0.0102*
	(0.00268)	(0.00330)	(0.00555)	(0.00266)	(0.00326)	(0.00541)
MTB	0.00264*	0.00136	0.0101**	0.00313**	0.00235*	0.00888*
	(0.00144)	(0.00143)	(0.00453)	(0.00140)	(0.00141)	(0.00467)
Anacov	-0.00458	-0.00494	0.00337	-0.00497	-0.00522	0.000790
	(0.00566)	(0.00707)	(0.00968)	(0.00559)	(0.00687)	(0.00969)
Blockholder Ownership	0.0809**	0.0865**	0.101**	0.0777**	0.0825*	0.124***
	(0.0329)	(0.0431)	(0.0497)	(0.0325)	(0.0431)	(0.0473)
ROA_{-1}	-0.0280	-0.0271	0.000702	-0.0274	-0.0267	-0.0197
	(0.0551)	(0.0846)	(0.0540)	(0.0551)	(0.0834)	(0.0551)
CEO Age	0.0000197	0.000365	-0.000793	0.0000304	0.000446	-0.000821
	(0.000646)	(0.000825)	(0.00110)	(0.000641)	(0.000822)	(0.00108)
CEO Tenure	-0.00110	0.00387	0.00296	-0.00169	0.00304	0.000806
	(0.00378)	(0.00614)	(0.0118)	(0.00379)	(0.00616)	(0.0119)
CEO Ownership	0.106	0.130*	0.532	0.112	0.126*	0.461
	(0.0741)	(0.0743)	(0.866)	(0.0711)	(0.0663)	(0.903)
Constant	0.0887*	0.101	0.0409	0.106**	0.112	0.0613
	(0.0535)	(0.0735)	(0.127)	(0.0537)	(0.0726)	(0.129)
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	588	398	190	588	398	190
R-Squared	0.068	0.117	0.219	0.079	0.137	0.221

Table 7: Effect of competition for firms with high/low governance

This table reports the effect of competition for firms with strong versus weak governance. The model is as follows:
$CAR[-1,+1] = \alpha + \beta_1 revHHI + \beta_3 Crisis + \beta_4 Firm\,Control + \beta_5 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CAR spanning week -1 to +1, measures market reaction to consolidation announcements, and is calculate based on the Carhart 4-factor model. revHHI is the reverse HHI, measures the level of competition in the industry; $Crisis = 1$ indicates the event year is after 2007; $Firm\,Control$ controls firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership and the lagged return on asset; $CEO\ Control$ controls CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. Firms have weak governance if E-index>3, and strong governance otherwise. Industries are classified based on 3-digit SIC codes in Panel A, and are classified based on 4-digit SIC codes in Panel B. Regressions in columns 1, 3 and 5 are for firms with strong governance. Regressions in columns 2, 4 and 6 are for firms with weak governance. Regressions in columns 1 and 2 are in the full event sample. Regressions in columns 3 and 4 are for firms not follow a PTB process. Regressions in columns 5 and 6 are for firms follow a PTB process. All regression include year and industry fixed effects. Robust standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: Three-Digit SIC Industries						
Dep. Variable:	CAR [-1,+1]: Market reaction from week -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Governance Level	Strong	Weak	Strong	Weak	Strong	Weak
Event Sample	Full	Full	Non-PTB	Non-PTB	PTB	PTB
$revHHI$	0.0429*	-0.0509	0.0999***	-0.0185	-0.0139	-0.0823
	(0.0259)	(0.0672)	(0.0376)	(0.0820)	(0.0328)	(0.108)
Constant	0.146**	-0.103	0.196**	-0.239*	0.00523	-0.0839
	(0.0632)	(0.101)	(0.0877)	(0.128)	(0.158)	(0.163)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	415	173	271	127	144	46
R-Squared	0.106	0.119	0.163	0.235	0.269	0.743
Panel B: Four-Digit SIC Industries						
Dep. Variable:	CAR [-1,+1]: Market reaction from week -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Governance Level	Strong	Weak	Strong	Weak	Strong	Weak
Event Sample	Full	Full	Non-PTB	Non-PTB	PTB	PTB
$revHHI$	0.0729***	-0.0511	0.126***	-0.0628	0.0364	-0.0417
	(0.0244)	(0.0518)	(0.0328)	(0.0592)	(0.0347)	(0.0965)
Constant	0.168***	-0.0878	0.220**	-0.227*	0.00633	-0.0643
	(0.0632)	(0.103)	(0.0853)	(0.130)	(0.156)	(0.182)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	415	173	271	127	144	46
R-Squared	0.125	0.121	0.189	0.246	0.278	0.732

Table 8: Effect of governance for facing high/low competition

This table reports the effect of competition for firms with strong versus weak governance. The model is as follows:
$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 PTB + \delta_1 PTB * Dic + \beta_3 Crisis + \beta_4 Firm\,Control + \beta_5 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CAR spanning week -1 to +1, measures market reaction to consolidation announcements, and is calculate based on the Carhart 4-factor model. $Dic = 1$ if the firm has weak governance (E-index>3); PTB=1 if the firm follows the passing-the-baton (PTB) process; $Crisis = 1$ indicates the event year is after 2007; $Firm\,Control$ controls firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership and the lagged return on asset; *CEO Control* controls CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. firms are facing high competition if the competition level (revHHI) is above the annual median of all firms, and low competition otherwise. Industries are classified based on 3-digit SIC codes in Panel A, and are classified based on 4-digit SIC codes in Panel B. Regressions in columns 1, 3 and 5 are for firms with high competition. Regressions in columns 2, 4 and 6 are for firms with low competition. Regressions in columns 1 and 2 are in the full event sample. Regressions in columns 3 and 4 are for firms not following the PTB process. Regressions in columns 5 and 6 are for firms following the PTB process. All regression include year and industry fixed effects. Robust standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: Three-Digit SIC Industries						
Dep. Variable:	CAR [-1,+1]: Market reaction from week -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Competition level	High	Low	High	Low	High	Low
Event Sample	Full	Full	Non-PTB	Non-PTB	PTB	PTB
Dic	-0.0321***	-0.00575	-0.0360**	-0.00461	0.00838	-0.00369
	(0.0115)	(0.0172)	(0.0151)	(0.0217)	(0.0197)	(0.0238)
Constant	0.0379	0.0551	0.0289	-0.0746	0.0837	0.127
	(0.0671)	(0.0830)	(0.0903)	(0.108)	(0.191)	(0.241)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	282	306	190	208	92	98
R-Squared	0.168	0.121	0.270	0.168	0.344	0.341
Panel B: Four-Digit SIC Industries						
Dep. Variable:	CAR [-1,+1]: Market reaction from week -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Competition level	High	Low	High	Low	High	Low
Event Sample	Full	Full	Non-PTB	Non-PTB	PTB	PTB
Dic	-0.0259**	-0.0139	-0.0329**	-0.00521	0.0110	-0.00847
	(0.0113)	(0.0150)	(0.0140)	(0.0185)	(0.0242)	(0.0282)
Constant	0.0106	0.0801	-0.0113	-0.0673	0.142	-0.0260
	(0.0671)	(0.0797)	(0.0842)	(0.0983)	(0.212)	(0.229)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	285	303	198	200	87	103
R-Squared	0.169	0.124	0.296	0.198	0.353	0.350

Table 9: Robustness - Heckman 2-Stage (First Stage) - Select into CEO duality

This table reports the estimation results in the first stage of the Heckman two-stage approach. The model in the first stage is as follows:
$Probit: \ Duality = \alpha + \beta_1 revHHI + \beta_2 Dic + \delta revHHI * Dic + \beta_3 Dir100 + Firm\ Control + CEO\ Control + Crisis + \eta$
The sample covers the period 1992 through 2015, using all Execucomp firms with non-missing data. A probit model is used in this first stage. The dependent variable in the first stage is $Duality = \{0, 1\}$, indicates whether the firm has CEO duality. $Dic = 1$ if the firm has weak governance (E-index>3); $Dir100$ is the local director supply pool, which is the instrumental variable used to satisfy the exclusion restriction; $Crisis = 1$ indicates the event year is after 2007; $Firm\,Control$ controls firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership and the lagged return on asset; $CEO\ Control$ controls CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. Regression in column 1 classify industries based on 3-digit SIC codes; regression in columns 2 use 4-digit SIC codes. Robust standard errors are reported in parentheses. Marginal effects are reported in square brackets. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Dep. Var:	CEO duality dummy	
	(1)	(2)
Industry Base	SIC3	SIC4
Dic	0.0953***	0.157***
	(0.0290)	(0.0307)
	[0.0376***]	[0.0617***]
$revHHI$	-0.0977	-0.336***
	(0.0722)	(0.0598)
	[-0.0386]	[-0.1328***]
$Dic * revHHI$	-0.207*	0.125
	(0.0920)	(0.228)
	[-0.0820*]	[0.0495]
$Dir100$	-0.0343***	-0.0351***
	(0.00750)	(0.00751)
	[-0.0136***]	[-0.0139***]
$Size$	0.143***	0.146***
	(0.00663)	(0.00667)
	[0.0565***]	[0.0577***]
$Tenure$	0.0210***	0.0211***
	(0.00122)	(0.00122)
	[0.0083***]	[0.0083***]
Age	0.0441***	0.0439***
	(0.00142)	(0.00142)
	[0.0174***]	[0.0173***]
Other Controls	Yes	Yes
Observations	22,568	22,568
R-Squared	0.1331	0.1339

Table 10: Robustness - Heckman 2-Stage (Second Stage)

This table reports the estimation results for the second stage of the Heckman 2-stage approach. The model in the second stage is as follows:
$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 revHHI + \beta_3 Dic * revHHI + \beta_4 IMR + \beta_5 Dir100 + \beta_6 Crisis + \beta_7 Firm\,Control + \beta_8 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CAR spanning week -1 to +1, measures the market reaction to the announcements, calculate based on the Carhart 4-factor model. $Dic = 1$ if the firm has weak governance (E-index>3); $revHHI$ is the reverse HHI, measures the level of competition in the industry; $Dir100$ is the local director supply pool, which is used to satisfy the exclusion restriction; $Crisis = 1$ indicates the event year is after 2007; IMR in is the inverse Mill's ratio calculated from the associated first stage estimation based on the same industry classification method. $Firm\,Control$ controls for firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership and lagged return on asset; $CEO\ Control$ controls for CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. Regressions in columns 1 to 3 classify industries based on 3-digit SIC codes; regressions in columns 4 to 6 use 4-digit SIC codes. Regressions in columns 1 and 4 are in the full event sample. Regressions in columns 2 and 5 are for firms not following the PTB process.. Regressions in columns 3 and 6 are for firms following the PTB process.. All regressions include year and industry fixed effects. Robust standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Dep. Variable:	CAR [-1,+1]: Market reaction from week -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Industry Base	SIC3	SIC3	SIC3	SIC4	SIC4	SIC4
Event Sample	Full	Non-PTB	PTB	Full	Non-PTB	PTB
Dic	-0.0248**	-0.0412***	0.00728	-0.0294**	-0.0518***	0.0229
	(0.0126)	(0.0153)	(0.0233)	(0.0129)	(0.0158)	(0.0243)
$revHHI$	0.0433*	0.103***	-0.0307	0.0453**	0.102***	-0.00815
	(0.0243)	(0.0332)	(0.0308)	(0.0226)	(0.0312)	(0.0258)
$Dic * revHHI$	-0.0879	-0.160**	-0.0306	-0.0892*	-0.178***	0.0506
	(0.0617)	(0.0662)	(0.137)	(0.0456)	(0.0483)	(0.116)
$Dir100$	0.00374	0.00475	-0.000777	0.00326	0.00408	-0.000870
	(0.00329)	(0.00439)	(0.00491)	(0.00333)	(0.00442)	(0.00492)
IMR	0.0430	0.0955*	0.0240	0.0501	0.103*	0.0345
	(0.0390)	(0.0525)	(0.0622)	(0.0388)	(0.0528)	(0.0623)
Constant	-0.0737	-0.244	-0.0986	-0.0893	-0.262	-0.122
	(0.143)	(0.199)	(0.232)	(0.143)	(0.201)	(0.233)
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	575	389	186	575	389	186
R-Squared	0.076	0.132	0.225	0.083	0.154	0.222

Table 11: Replicating Giroud and Mueller (2011)

This table reports the monthly abnormal return (alpha) for the hedge portfolio that is long on Democracy firms and short on Dictatorship firms using the Carhart 4-factor model. Monthly portfolios are value weighted or equal weighted. Panel A uses firms in the event sample. Panel B uses all firms in the CRSP-Compustat database with available governance data. Governance measure is the G-index from Gompers, Ishii, and Metrick (2003). Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. Both the Democracy and the Dictatorship portfolios are divided into 3 equal sized portfolios by ranking firms according to the revHHI. RevHHI is the negative of HHI, and is computed based on the Fama-French 48 industry classification scheme. High revHHI indicates high competition. A long-short hedge portfolio is then constructed for each revHHI quantile. The sample period is from September 1990 to December 1999, or from September 1990 to December 2006. Robust standard errors are reported in parentheses. P-values are reported in square brackets. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: Firms in the event sample

	VW			EW		
Competition Level	High	Median	Low	High	Median	Low
1990-1999	-0.00391	0.000350	0.0137*	0.000424	0.00230	0.0119**
	(0.00544)	(0.00577)	(0.00755)	(0.00477)	(0.00496)	(0.00527)
	[0.474]	[0.952]	[0.0720]	[0.929]	[0.644]	[0.0261]
1990-2006	0.00192	-0.00251	0.0103*	0.00328	0.00179	0.0131***
	(0.00607)	(0.00524)	(0.00576)	(0.00520)	(0.00420)	(0.00352)
	[0.753]	[0.632]	[0.0751]	[0.528]	[0.669]	[0.000273]

Panel B: All CRSP-Compustat firms

	VW			EW		
Competition Level	High	Median	Low	High	Median	Low
1990-1999	0.00129	0.00182	0.0157***	0.00130	0.00734**	0.00901***
	(0.00366)	(0.00380)	(0.00486)	(0.00229)	(0.00315)	(0.00267)
	[0.725]	[0.634]	[0.00168]	[0.573]	[0.0218]	[0.00104]
1990-2006	-0.00172	0.000785	0.00919**	-1.47e-05	0.00929***	0.00771***
	(0.00283)	(0.00300)	(0.00410)	(0.00221)	(0.00243)	(0.00204)
	[0.545]	[0.794]	[0.0260]	[0.995]	[0.000178]	[0.000215]

Table 12: Simulation Results (value-weighted portfolio, low competition)

This table reports simulation results for values and standard errors of the monthly abnormal return from a value-weighted long-short hedge portfolio for industries with low competition. The simulation randomly draws a pre-determined fraction of firms (ranging from 10% to 90%) in the revHHI quantile with low competition for both Dictatorship and Democracy portfolios. The global sample contains all firms in CRSP-Compustat database with governance information available. Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. The long-short hedge portfolio is constructed using the firms random selected from the low revHHI quantile (low revHHI indicates low market competition). Value and standard error of the abnormal return (alpha) form a value-weighted portfolios is then estimated and stored for each simulation. The simulation is repeated 500 times for each of the pre-determined fraction. Mean, median and the standard deviation of the coefficient and standard errors of the alpha are calculated and reported for each pre-determined fraction. Panel A uses the estimation period from September 1990 to December 1999. Panel B uses the estimation period from September 1990 to December 2006.

Panel A: 1990-1999, Value-weighted, Low Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0081738	0.0081898	0.0004197	0.0098107	0.009743	0.0000431
0.2	0.0101687	0.0100394	0.0003391	0.0081314	0.0081389	0.0000393
0.3	0.0114709	0.0118153	0.0002932	0.0074219	0.0073977	0.0000344
0.4	0.0132471	0.0132851	0.0002674	0.006837	0.0067942	0.0000300
0.5	0.0137801	0.013725	0.0002106	0.0063417	0.0063735	0.0000257
0.6	0.0142459	0.0144987	0.0001938	0.00605	0.0060435	0.0000224
0.7	0.0144094	0.0145377	0.0001658	0.0057059	0.0056838	0.0000203
0.8	0.0151554	0.0151015	0.0001272	0.0054044	0.005383	0.0000162
0.9	0.0153698	0.0154966	0.0000894	0.005135	0.0051418	0.0000116
Panel B: 1990-2006, Value-weighted, Low Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0062666	0.0059051	0.0003476	0.007687	0.0076536	0.0000292
0.2	0.0067541	0.0066149	0.0002524	0.0063563	0.0063524	0.0000261
0.3	0.0071932	0.0071268	0.0002389	0.005814	0.005775	0.0000234
0.4	0.0081055	8.23E-03	0.0002054	0.0054405	0.00542	0.0000218
0.5	0.0083544	0.008524	0.0001686	0.0051528	0.0051623	0.0000190
0.6	0.0089064	0.0088376	0.0001629	0.0049121	0.0049153	0.0000165
0.7	0.0086649	0.0085865	0.0001374	0.0046896	0.0046785	0.0000144
0.8	0.0091354	0.0093276	0.0001133	0.0044892	0.0044827	0.0000118
0.9	0.0090942	0.0091758	0.0000783	0.0043071	0.004313	0.0000083

Table 13: Fama-Macbeth Regression

This table reports the Fama-MacBeth coefficients from monthly cross-sectional regressions. The model is as follows:
$R_{it} = \alpha_t + \beta_t(G_{it} \times I_{it}) + \delta_{it}X_{it} + \varepsilon_{it}$
The sample consists firms in the event sample. The dependent variable is the stock return for firm i in month t. G_{it} is either a Dictatorship dummy or the G-index, where the Dictatorship dummy equals to 1 if the firm is a dictatorship firm (G-index of 14 or higher), and 0 otherwise. I_{it} is a (3×1) vector of revHHI dummies, indicating high, median, and low competition. X_{it} is a vector of control variables. The control variables are firm size (measured by market capitalization); book-to-market ratio; stock price; dividend yield; sales growth over past 5 years; institutional ownership; a NASDAQ dummy; an S&P 500 dummy; trading volume of NYSE or Amex stocks; trading volume of NASDAQ stocks; returns from months t-3 to t-2, from t-6 to t-4, and from t-12 to t-7. The detail description of the variables can be found in the Appendix of Gomper, Ishii, and Metrick (2003). Industries are classified based on the Fama-French 48 industry classification scheme. The sample period is from September 1990 to December 1999 in columns 1 and 3. The sample period is from September 1990 to December 2006 in columns 2 and 4. Newey West standard errors with 12 lags are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Sample Period End	1999	2006	1999	2006
$Dictatorship * High\ \ Comp$	0.307	0.306		
(High revHHI sub-sample)	(0.384)	(0.238)		
$Dictatorship * Median\ \ Comp$	-0.0655	0.0089		
(Median revHHI sub-sample)	(0.352)	(0.216)		
$Dictatorship * Low\ \ Comp$	-1.29**	-1.08***		
(Low revHHI sub-sample)	(0.496)	(0.335)		
$G - index * High\ \ Comp$			0.0129	0.0259
(High revHHI sub-sample)			(0.0341)	(0.0269)
$G - index * Median\ \ Comp$			0.0149	0.0135
(Median revHHI sub-sample)			(0.0306)	(0.0240)
$G - index * Low\ \ Comp$			-0.0615*	-0.0659***
(Low revHHI sub-sample)			(0.0357)	(0.0222)
Other Controls	Yes	Yes	Yes	Yes
Number of Months	112	196	112	196
Number of Observations	25,568	54,523	25,568	54,523
R-Squared	0.192	0.187	0.193	0.188

Table 14: Effect of CEO duality on CEO turnover-performance sensitivity

This table reports the effect of CEO duality on the CEO turnover-performance sensitivity for industries with high versus low competition. The model is as follows:
$CEO\,Turnover = \alpha + \beta_1 Performance + \beta_2 Performance * Duality + \beta_3 Duality + \beta_4 Controls + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CEO turnover dummy, measures whether the firm has CEO turnover; Performance is the firm's accounting (lagged ROA) or market performance (average monthly stock return); Duality={0, 1} measures whether the firm has CEO duality; Control variables include size, blockholder ownership, CEO ownership and CEO age, which may affect the CEO turnover decision. Year and industry fixed effects are controlled for unobserved heterogeneity. Regressions in Columns 1 and 2 are on accounting performances. Regressions in Columns 3 and 4 are on market performances. Columns 1 and 3 are in non-competitive industries. Columns 2 and 4 are in competitive industries. Industries are classified as competitive (non-competitive) if the reverse HHI is above (below) the annual median. Panel A uses 3-digit SIC industries. Panel B uses Fama-French 48 industries. Robust standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: 3-digit SIC Industries				
Dep. Variable:	CEO turnover dummy			
	(1)	(2)	(3)	(4)
Performance Measure	ROA	ROA	Stock Return	Stock Return
Competition Level	Low	High	Low	High
Performance	-0.0966**	-0.136***	-0.153	-0.414**
	(0.0443)	(0.0445)	(0.106)	(0.162)
*Performance * Duality*	0.0510	0.106**	0.0512	0.441**
	(0.0527)	(0.0503)	(0.140)	(0.178)
Duality	-0.0981***	-0.0761***	-0.0956***	-0.0787***
	(0.00769)	(0.00623)	(0.00720)	(0.00635)
Controls	Yes	Yes	Yes	Yes
Year & Industry FE	Yes	Yes	Yes	Yes
Observations	11,230	11,819	11,229	11,836
R-Squared	0.108	0.097	0.107	0.096
Panel B: Fama-French 48 Industries				
Dep. Variable:	CEO turnover dummy			
	(1)	(2)	(3)	(4)
Performance Measure	ROA	ROA	Stock Return	Stock Return
Competition Level	Low	High	Low	High
Performance	-0.0835**	-0.151***	-0.151	-0.547***
	(0.0342)	(0.0545)	(0.140)	(0.143)
*Performance * Duality*	0.0278	0.127**	0.202	0.401**
	(0.0484)	(0.0579)	(0.164)	(0.161)
Duality	-0.0893***	-0.0792***	-0.0908***	-0.0786***
	(0.00681)	(0.00656)	(0.00660)	(0.00641)
Controls	Yes	Yes	Yes	Yes
Year & Industry FE	Yes	Yes	Yes	Yes
Observations	11,728	11,121	11,738	11,123
R-Squared	0.093	0.091	0.092	0.090

Appendix A: Variable Definitions

This table describes variables used in this paper

Variable	Definition	Source
Age	CEO's age in years.	Execucomp
Anacov	Analyst coverage, calculated as the natural log of one plus the number of analysts following the firm.	I/B/E/S
Blockholder Ownership	Total faction of common shares owned by the largest 5 blockholders of the company.	Thomas Reuters
CEO Ownership	Fraction of common shares owned by the CEO.	Execucomp
CEO Turnover	takes a value 1 if the firm has a CEO turnover in the year.	Execucomp
CEO Duality	takes a value 1 if the firm's CEO is also the chairman of the board in the year.	Execucomp
Crisis	Crisis=1 if the year is after 2007, which is the starting year of the 2007-2009 crisis.	
Dictatorship	takes a value 1 if the firm has E-index>3, representing dictatorship, or a weak governance; 0 otherwise.	ISS
Dir100	Local director pool within 100km of the firm's headquarters. Calculated as natural log of one plus the number of firms headquartered within 100km of the firm's headquarters, excluding firms in the same 4 digit SIC industry.	
E-index	Entrenchment index introduced by Bebchuck, Cohen and Ferrel (2009), calculated as the number of existence of the 6 governance provisions.	ISS
G-index	Governance index introduced by Gomper, Ishii and Metrick (2003), calculated as the number of existence of the 24 governance provisions.	ISS
HHI	the Herfindahl-Hirschman Index, calculated as the sum of squared market shares in an industry: $HHI_{j,t} = \sum_{i=1}^{N_j} s_{ijt}^2$. Higher HHI indicates higher industry competition. HHIs are calculated based on different industry classification method.	Compustat
IMR	Inverse Mill's Ratio calculated from the first stage of the Heckman 2-stage process.	
MTB	Ratio of market value of asset to book value of asset: $MTB = \frac{AT+PRCCF*CSHO-CE}{AT}$, where AT is the book value of asset, $PRCCF$ is the market price of common share at the end of the fiscal year, $CSHO$ is the number of share, outstanding and CE is the book value of common stock.	Compustat
PTB	PTB=1 if the firm follows the passing-the-baton (PTB) process.	Factiva
$RevHHI$	The reverse HHI, which is the negative of the HHI: $revHHI = -1 * HHI$. Higher revHHI indicates higher industry competition.	
ROA	Return on asset, calculated as the ratio of the net income to the total asset of the firm.	Compustat
Size	Natural log of the book value of total assets of the company.	Compustat
Tenure	Number of years after the CEO get into the office.	Execucomp

Appendix B: Simulation results

Appendix B1: Value-weighted portfolio, low competition

This table reports simulation results for values and standard errors of the monthly abnormal return from a value-weighted long-short hedge portfolio for industries with low competition. The simulation randomly draws a pre-determined fraction of firms (ranging from 10% to 90%) in the revHHI quantile with low competition for both Dictatorship and Democracy portfolios. The global sample contains all firms in CRSP-Compustat database with governance information available. Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. The long-short hedge portfolio is constructed using the firms random selected from the low revHHI quantile (low revHHI indicates low market competition). Value and standard error of the abnormal return (alpha) from a value-weighted portfolios is then estimated and stored for each simulation. The simulation is repeated 500 times for each of the pre-determined fraction. Mean, median and the standard deviation of the coefficient and standard errors of the alpha are calculated and reported for each pre-determined fraction. Panel A uses the estimation period from September 1990 to December 1999. Panel B uses the estimation period from September 1990 to December 2006.

Panel A: 1990-1999, Value-Weighted, Low Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0081738	0.0081898	0.0004197	0.0098107	0.009743	0.0000431
0.2	0.0101687	0.0100394	0.0003391	0.0081314	0.0081389	0.0000393
0.3	0.0114709	0.0118153	0.0002932	0.0074219	0.0073977	0.0000344
0.4	0.0132471	0.0132851	0.0002674	0.006837	0.0067942	0.0000300
0.5	0.0137801	0.013725	0.0002106	0.0063417	0.0063735	0.0000257
0.6	0.0142459	0.0144987	0.0001938	0.00605	0.0060435	0.0000224
0.7	0.0144094	0.0145377	0.0001658	0.0057059	0.0056838	0.0000203
0.8	0.0151554	0.0151015	0.0001272	0.0054044	0.005383	0.0000162
0.9	0.0153698	0.0154966	0.0000894	0.005135	0.0051418	0.0000116
Panel B: 1990-2006, Value-Weighted, Low Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0062666	0.0059051	0.0003476	0.007687	0.0076536	0.0000292
0.2	0.0067541	0.0066149	0.0002524	0.0063563	0.0063524	0.0000261
0.3	0.0071932	0.0071268	0.0002389	0.005814	0.005775	0.0000234
0.4	0.0081055	8.23E-03	0.0002054	0.0054405	0.00542	0.0000218
0.5	0.0083544	0.008524	0.0001686	0.0051528	0.0051623	0.0000190
0.6	0.0089064	0.0088376	0.0001629	0.0049121	0.0049153	0.0000165
0.7	0.0086649	0.0085865	0.0001374	0.0046896	0.0046785	0.0000144
0.8	0.0091354	0.0093276	0.0001133	0.0044892	0.0044827	0.0000118
0.9	0.0090942	0.0091758	0.0000783	0.0043071	0.004313	0.0000083

Appendix B2: Value-weighted portfolio, median competition

This table reports simulation results for values and standard errors of the monthly abnormal return from a value-weighted long-short hedge portfolio for industries with median competition. The simulation randomly draws a pre-determined fraction of firms (ranging from 10% to 90%) in the revHHI quantile with median competition for both Dictatorship and Democracy portfolios. The global sample contains all firms in CRSP-Compustat database with governance information available. Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. The long-short hedge portfolio is constructed using the firms random selected from the median revHHI quantile (median revHHI indicates median market competition). Value and standard error of the abnormal return (alpha) from a value-weighted portfolios is then estimated and stored for each simulation. The simulation is repeated 500 times for each of the pre-determined fraction. Mean, median and the standard deviation of the coefficient and standard errors of the alpha are calculated and reported for each pre-determined fraction. Panel A uses the estimation period from September 1990 to December 1999. Panel B uses the estimation period from September 1990 to December 2006.

Panel A: 1990-1999, Value-Weighted, Median Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.001316	0.0011308	0.0004043	0.0094543	0.0092977	0.0000519
0.2	0.0011874	0.001233	0.0002887	0.0071549	0.0070677	0.0000382
0.3	0.0009518	0.0007122	0.0002363	0.0062008	0.0061296	0.000031
0.4	0.0006989	0.0008114	0.0001959	0.0054862	0.0054623	0.0000257
0.5	0.0011844	0.0014176	0.0001722	0.0050344	0.0050314	0.0000201
0.6	0.001384	0.0016062	0.0001394	0.0046889	0.0046804	0.0000179
0.7	0.0014173	0.0014057	0.0001147	0.0044018	0.004402	0.0000145
0.8	0.0015436	0.0015108	0.0000911	0.0041854	0.0041915	0.0000112
0.9	0.0016836	0.0017362	0.0000631	0.0039808	0.003959	0.0000087
Panel B: 1990-2006, Value-Weighted, Median Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0042034	0.0039805	0.0003349	0.0076994	0.0076614	0.0000284
0.2	0.0026593	0.0024597	0.0002399	0.0057574	0.0057657	0.0000196
0.3	0.0017554	0.0016604	0.0001944	0.0049422	0.0049445	0.0000162
0.4	0.0013569	0.0012536	0.0001558	0.004421	0.0044161	0.0000137
0.5	0.0012163	0.0012238	0.0001389	0.004008	0.0040018	0.0000112
0.6	0.0011326	0.0010734	0.00011	0.0037231	0.003699	0.0000099
0.7	0.0008094	0.0008249	0.0000942	0.0035173	0.0035193	0.0000083
0.8	0.0008269	0.0008008	0.0000754	0.0033119	0.0033041	0.0000064
0.9	0.000783	0.0007591	0.0000512	0.0031625	0.0031588	0.0000051

Appendix B3: Value-weighted portfolio, high competition

This table reports simulation results for values and standard errors of the monthly abnormal return from a value-weighted long-short hedge portfolio for industries with high competition. The simulation randomly draws a pre-determined fraction of firms (ranging from 10% to 90%) in the revHHI quantile with high competition for both Dictatorship and Democracy portfolios. The global sample contains all firms in CRSP-Compustat database with governance information available. Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. The long-short hedge portfolio is constructed using the firms random selected from the high revHHI quantile (high revHHI indicates high market competition). Value and standard error of the abnormal return (alpha) from a value-weighted portfolios is then estimated and stored for each simulation. The simulation is repeated 500 times for each of the pre-determined fraction. Mean, median and the standard deviation of the coefficient and standard errors of the alpha are calculated and reported for each pre-determined fraction. Panel A uses the estimation period from September 1990 to December 1999. Panel B uses the estimation period from September 1990 to December 2006.

Panel A: 1990-1999, Value-Weighted, High Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0004731	0.0007295	0.0003912	0.0084097	0.0082539	0.0000538
0.2	0.0000763	0.0001023	0.0002718	0.0064457	0.0062998	0.0000399
0.3	0.0002724	0.0003513	0.0002345	0.005648	0.0055484	0.0000326
0.4	0.0007762	0.0010926	0.0001953	0.0049665	0.0049599	0.0000278
0.5	0.0011613	0.0011285	0.000165	0.0046112	0.0045886	0.0000234
0.6	0.0010863	0.0008163	0.0001435	0.0043168	0.004329	0.0000191
0.7	0.0013067	0.0013765	0.0001197	0.004112	0.0041139	0.0000156
0.8	0.0013595	0.0014421	0.0000935	0.0039438	0.0039377	0.0000127
0.9	0.0011996	0.0010998	0.000063	0.0037867	0.0037963	0.0000095
Panel B: 1990-2006, Value-Weighted, High Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	-0.0020084	-0.0021615	0.0002895	0.006674	0.006603	0.0000306
0.2	-0.0018831	-0.0016015	0.000212	0.0052295	0.0051926	0.0000226
0.3	-0.0017928	-0.0016675	0.0001838	0.0045468	0.0045086	0.0000204
0.4	-0.0017091	-0.0015117	0.0001535	0.0040154	0.0040082	0.000016
0.5	-0.0017452	-0.0016904	0.000125	0.0037072	0.0036842	0.0000141
0.6	-0.0018105	-0.0018753	0.0001039	0.0034411	0.0034316	0.0000112
0.7	-0.0015416	-0.001471	0.0000885	0.0032424	0.0032338	0.0000098
0.8	-0.0017262	-0.0017483	0.000069	0.0030802	0.0030752	0.0000074
0.9	-0.0017331	-0.0017584	0.0000486	0.0029574	0.0029583	0.0000056

Appendix B4: Equal-weighted portfolio, low competition

This table reports simulation results for values and standard errors of the monthly abnormal return from a equal-weighted long-short hedge portfolio for industries with low competition. The simulation randomly draws a pre-determined fraction of firms (ranging from 10% to 90%) in the revHHI quantile with low competition for both Dictatorship and Democracy portfolios. The global sample contains all firms in CRSP-Compustat database with governance information available. Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. The long-short hedge portfolio is constructed using the firms random selected from the low revHHI quantile (low revHHI indicates low market competition). Value and standard error of the abnormal return (alpha) from a equal-weighted portfolios is then estimated and stored for each simulation. The simulation is repeated 500 times for each of the pre-determined fraction. Mean, median and the standard deviation of the coefficient and standard errors of the alpha are calculated and reported for each pre-determined fraction. Panel A uses the estimation period from September 1990 to December 1999. Panel B uses the estimation period from September 1990 to December 2006.

Panel A: 1990-1999, Equal-Weighted, Low Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0093258	0.0095906	0.0003535	0.008287	0.0082768	0.0000359
0.2	0.0088559	0.0087331	0.0002355	0.0058025	0.0057984	0.0000255
0.3	0.0089243	0.0089916	0.0001792	0.0047535	0.0047712	0.0000183
0.4	0.0094055	0.0092423	0.0001378	0.0040953	0.0041095	0.0000152
0.5	0.0091409	0.0091529	0.0001171	0.0036473	0.0036482	0.0000128
0.6	0.0090679	0.0089698	0.0001001	0.0033592	0.0033675	0.0000111
0.7	0.0088365	0.008869	0.0000739	0.0031694	0.0031669	0.0000094
0.8	0.0090771	0.0090476	0.0000565	0.0029562	0.0029599	0.0000073
0.9	0.0090198	0.0089937	0.0000415	0.0028288	0.0028328	0.0000050
Panel B: 1990-2006, Value-Weighted, Low Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0082854	0.0087061	0.0002983	0.0067112	0.0066849	0.0000246
0.2	0.0077069	0.0076044	0.000185	0.00466	0.0046651	0.0000155
0.3	0.0076938	0.0079111	0.0001467	0.0038108	0.0037858	0.0000122
0.4	0.0078292	0.0079479	0.0001151	0.0032435	0.0032211	0.0000104
0.5	0.0077135	0.0077041	0.0000919	0.002882	0.002866	0.0000084
0.6	0.007739	0.0076674	0.0000772	0.0026446	0.0026354	0.0000069
0.7	0.007700	0.0077327	0.0000624	0.0024526	0.0024471	0.0000061
0.8	0.007692	0.0076747	0.0000454	0.0022947	0.0022877	0.0000048
0.9	0.007750	0.0077435	0.0000357	0.0021693	0.0021667	0.0000034

Appendix B5: Equal-weighted portfolio, median competition

This table reports simulation results for values and standard errors of the monthly abnormal return from a equal-weighted long-short hedge portfolio for industries with median competition. The simulation randomly draws a pre-determined fraction of firms (ranging from 10% to 90%) in the revHHI quantile with median competition for both Dictatorship and Democracy portfolios. The global sample contains all firms in CRSP-Compustat database with governance information available. Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. The long-short hedge portfolio is constructed using the firms random selected from the median revHHI quantile (median revHHI indicates median market competition). Value and standard error of the abnormal return (alpha) from a equal-weighted portfolios is then estimated and stored for each simulation. The simulation is repeated 500 times for each of the pre-determined fraction. Mean, median and the standard deviation of the coefficient and standard errors of the alpha are calculated and reported for each pre-determined fraction. Panel A uses the estimation period from September 1990 to December 1999. Panel B uses the estimation period from September 1990 to December 2006.

Panel A: 1990-1999, Equal-Weighted, Median Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0074165	0.0075329	0.0003511	0.0083796	0.008365	0.0000397
0.2	0.0072324	0.0074483	0.0002259	0.0059662	0.0059276	0.0000270
0.3	0.0075345	0.0073801	0.0001804	0.0049932	0.0049611	0.0000236
0.4	0.0072662	0.0071838	0.0001429	0.004429	0.0044197	0.0000183
0.5	0.007378	0.0073081	0.0001134	0.0039895	0.0039824	0.0000149
0.6	0.0073981	0.0072907	0.0000947	0.0037521	0.0037368	0.0000133
0.7	0.0072875	0.0072129	0.0000697	0.0035518	0.0035594	0.0000105
0.8	0.0073327	0.0072961	0.0000582	0.0034015	0.0034018	0.0000090
0.9	0.0073021	0.0073197	0.0000410	0.0032844	0.0032914	0.0000066
Panel B: 1990-2006, Equal-Weighted, Median Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0092390	0.0092025	0.0002899	0.0069235	0.0068864	0.0000245
0.2	0.0094375	0.0097208	0.0001863	0.0047974	0.0047746	0.0000170
0.3	0.0093063	0.0092498	0.0001401	0.0039622	0.0039511	0.0000137
0.4	0.0091955	0.0092367	0.0001175	0.0034927	0.0034795	0.0000114
0.5	0.0093258	0.0094572	0.0000934	0.0031551	0.0031511	0.0000095
0.6	0.0094400	0.0094915	0.0000721	0.0029444	0.0029396	0.0000075
0.7	0.0092299	0.009288	0.0000583	0.0027726	0.0027657	0.0000066
0.8	0.0093345	0.0093565	0.0000473	0.0026411	0.0026344	0.0000052
0.9	0.0092811	0.0093008	0.0000339	0.0025447	0.002544	0.0000038

Appendix B6: Equal-weighted portfolio, high competition

This table reports simulation results for values and standard errors of the monthly abnormal return from a value-weighted long-short hedge portfolio for industries with high competition. The simulation randomly draws a pre-determined fraction of firms (ranging from 10% to 90%) in the revHHI quantile with high competition for both Dictatorship and Democracy portfolios. The global sample contains all firms in CRSP-Compustat database with governance information available. Democracy firms are firms with a G-index of 5 or lower. Dictatorship firms are firms with a G-index 14 or higher. The long-short hedge portfolio is constructed using the firms random selected from the high revHHI quantile (high revHHI indicates high market competition). Value and standard error of the abnormal return (alpha) from a value-weighted portfolios is then estimated and stored for each simulation. The simulation is repeated 500 times for each of the pre-determined fraction. Mean, median and the standard deviation of the coefficient and standard errors of the alpha are calculated and reported for each pre-determined fraction. Panel A uses the estimation period from September 1990 to December 1999. Panel B uses the estimation period from September 1990 to December 2006.

Panel A: 1990-1999, Equal-Weighted, High Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.0018268	0.0014998	0.000321	0.0072239	0.0071368	0.0000398
0.2	0.0012695	0.0010862	0.0002001	0.0048194	0.004773	0.0000248
0.3	0.0012486	0.0011768	0.0001592	0.0040261	0.0040099	0.0000209
0.4	0.0011697	0.0012464	0.0001219	0.0034703	0.0034453	0.0000166
0.5	0.0010883	0.0012679	0.0000928	0.0031012	0.0030894	0.0000126
0.6	0.0012293	0.0012717	0.0000832	0.0028689	0.0028473	0.0000114
0.7	0.0013372	0.0013403	0.0000677	0.0026904	0.002685	0.0000098
0.8	0.0012143	0.0012117	0.0000501	0.0025243	0.0025221	0.0000076
0.9	0.0012524	0.0012827	0.0000329	0.0024098	0.0024114	0.0000052
Panel B: 1990-2006, Equal-Weighted, High Competition						
	Coefficient			Standard Error		
Fraction	Mean	Median	Std	Mean	Median	Std
0.1	0.000174	0.0001358	0.000225	0.0057107	0.0056746	0.0000222
0.2	-0.0000066	-0.0000395	0.000156	0.0039955	0.0039747	0.0000151
0.3	0.0002189	0.0002267	0.0001145	0.0033416	0.0033157	0.0000113
0.4	-0.0001205	-0.0000759	0.0000917	0.0029743	0.0029589	0.0000097
0.5	-0.0001937	-0.000182	0.0000712	0.0027325	0.0027301	0.0000080
0.6	-0.0000209	-0.0000437	0.0000599	0.0025808	0.0025754	0.0000073
0.7	-0.0000301	-0.0000147	0.0000509	0.0024543	0.0024542	0.0000057
0.8	-0.0000697	-0.0000463	0.000037	0.0023519	0.002354	0.0000044
0.9	-0.0000386	-0.0000525	0.0000259	0.0022851	0.002285	0.0000033

Appendix C: Replicating Giroud and Mueller (2011), Using E-index

This table reports the monthly abnormal return (alpha) for a hedge portfolio that is long on Democracy firms and short on Dictatorship firms on the Carhart 4-factor model. Monthly portfolios are value weighted or equal weighted. Panel A uses firms in the event sample. Panel B uses firms in CRSP-Compustat database with governance information available. Governance measure is the entrenchment index (E-index) from Bebchuk, Cohen and Ferrell (2009). Democracy firms are firms with an E-index of 3 or lower. Dictatorship firms are firms with an E-index 4 or higher. Both the Democracy and the Dictatorship portfolios are divided into 3 equal sized portfolios by ranking firms according to the revHHI. revHHI is computed based on the Fama-French 48 industry classification scheme. High revHHI indicates high competition. A long-short hedge portfolio is then constructed for each revHHI quantile. The sample period is from September 1990 to December 1999, or from September 1990 to December 2006. Robust standard errors are reported in parentheses. P-values are reported in square brackets. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: Firms in the event sample

	VW			EW		
Competition Level	High	Median	Low	High	Median	Low
1990-1999	-0.000386	0.00719	0.00769	0.000910	-0.000411	0.00835**
	(0.00331)	(0.00480)	(0.00493)	(0.00218)	(0.00333)	(0.00326)
	[0.907]	[0.136]	[0.122]	[0.677]	[0.902]	[0.0117]
1990-2006	0.00194	0.00403	0.00432	0.000917	-0.00120	0.00650***
	(0.00279)	(0.00331)	(0.00385)	(0.00177)	(0.00223)	(0.00241)
	[0.488]	[0.224]	[0.264]	[0.606]	[0.592]	[0.00765]

Panel B: All CRSP-Compustat firms

	VW			EW		
Competition Level	High	Median	Low	High	Median	Low
1990-1999	0.000649	0.00764***	0.00900***	-0.000429	0.00540***	0.00492**
	(0.00222)	(0.00282)	(0.00315)	(0.00156)	(0.00199)	(0.00214)
	[0.771]	[0.00785]	[0.00515]	[0.784]	[0.00782]	[0.0235]
1990-2006	0.00135	0.00431**	0.00780***	-0.00149	0.00182	0.00167
	(0.00173)	(0.00212)	(0.00221)	(0.00128)	(0.00142)	(0.00139)
	[0.435]	[0.0436]	[0.000517]	[0.244]	[0.201]	[0.231]

Appendix D: More Robustness test

Appendix D1: Alternative event window for baseline results

This table reports my baseline results in an alternative event window. The model is as follows: $CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 revHHI + \beta_3 Dic * revHHI + \beta_7 Crisis + \beta_8 Firm\,Control + \beta_9 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CAR spanning day -1 to +1, measures market reaction to CEO/chairman consolidation announcements, and is calculate based on the Carhart 4-factor model. $Dic = 1$ if the firm has weak governance (E-index>3); revHHI is the reverse HHI, measures the level of competition in the industry; $Crisis = 1$ indicates the event year is after 2007; $Firm\,Control$ controls firm characteristics, including size, market-to-book ratio, analyst coverage, block-holder ownership and the lagged return on asset; $CEO\ Control$ controls CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. Regressions in columns 1 to 3 classify industries based on 3-digit SIC codes; regressions in columns 4 to 6 use 4-digit SIC codes. Regressions in columns 1 and 4 are in the full event sample. Regressions in columns 2 and 5 are for firms not following a PTB process. Regressions in columns 3 and 6 are for firms not following a PTB process. All regression include year and industry fixed effects. Robust standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Dep. Variable:	CAR [-1,+1]: Market reaction from Day -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Industry Base	SIC3	SIC3	SIC3	SIC4	SIC4	SIC4
Event Sample	Full	Non-PTB	PTB	Full	Non-PTB	PTB
Dic	-0.0118*	-0.0173**	-0.000545	-0.0147**	-0.0209***	0.000257
	(0.00620)	(0.00792)	(0.0107)	(0.00597)	(0.00707)	(0.0127)
$revHHI$	0.0274**	0.0519**	0.00201	0.0367***	0.0592***	0.0166
	(0.0122)	(0.0202)	(0.0177)	(0.0112)	(0.0160)	(0.0173)
Dic*revHHI	-0.0620*	-0.0941**	-0.0192	-0.0586***	-0.0895***	-0.00454
	(0.0329)	(0.0468)	(0.0307)	(0.0218)	(0.0293)	(0.0303)
Crisis	-0.00296	-0.0151	0.00964	-0.00193	-0.0124	0.0110
	(0.0101)	(0.0167)	(0.0136)	(0.0102)	(0.0169)	(0.0135)
Size	-0.00107	-0.000971	-0.00467*	-0.00113	-0.00111	-0.00463*
	(0.00130)	(0.00162)	(0.00264)	(0.00129)	(0.00159)	(0.00254)
MTB	0.000909	0.000754	0.00218	0.00118	0.00120	0.00195
	(0.000723)	(0.000891)	(0.00198)	(0.000753)	(0.000923)	(0.00199)
Anacov	0.00129	0.00273	-0.00276	0.00104	0.00248	-0.00343
	(0.00307)	(0.00362)	(0.00441)	(0.00306)	(0.00357)	(0.00441)
Blockholder Ownership	0.0233	0.0145	0.0334	0.0213	0.0120	0.0380
	(0.0169)	(0.0225)	(0.0304)	(0.0166)	(0.0224)	(0.0291)
ROA_{-1}	-0.00869	0.0150	-0.0374	-0.00836	0.0152	-0.0433
	(0.0247)	(0.0354)	(0.0267)	(0.0250)	(0.0348)	(0.0272)
CEO Age	-9.99e-05	1.09e-06	-8.76e-05	-9.80e-05	3.11e-05	-0.000123
	(0.000325)	(0.000406)	(0.000570)	(0.000320)	(0.000404)	(0.000571)
CEO Tenure	0.000490	-0.00157	-0.00303	0.000165	-0.00195	-0.00346
	(0.00190)	(0.00295)	(0.00682)	(0.00190)	(0.00295)	(0.00673)
CEO Ownership	-0.00893	0.0255	-0.835**	-0.00696	0.0238	-0.857**
	(0.0487)	(0.0613)	(0.415)	(0.0467)	(0.0567)	(0.413)
Constant	0.0812***	0.113***	0.0703	0.0894***	0.119***	0.0772
	(0.0250)	(0.0379)	(0.0635)	(0.0249)	(0.0367)	(0.0621)
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	588	398	190	588	398	190
R-Squared	0.067	0.124	0.209	0.077	0.138	0.215

Appendix D2: Alternative Industry classification - Fama-French 48

This table reports my baseline results for an alternative industry classification scheme. The model is as follows:
$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 revHHI + \beta_3 Dic * revHHI + \beta_7 Crisis + \beta_8 Firm\,Control + \beta_9 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CAR spanning week -1 to +1, measures market reaction to CEO/chairman consolidation announcements, and is calculate based on the Carhart 4-factor model. $Dic = 1$ if the firm has weak governance (E-index>3); revHHI is the reverse HHI, measures the level of competition in the industry ; PTB=1 if the firm follows the passing-the-baton (PTB) process; $Crisis = 1$ indicates the event year is after 2007; $Firm\,Control$ controls firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership and the lagged return on asset; $CEO\ Control$ controls CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. Industries are classified using Fama-French 48 industry classification scheme. Regression in column 1 is in the full event sample. Regression in column 2 is in the non-PTB sub-sample. Regression in columns 3 is in the PTB sub-sample. All regression include year and industry fixed effects. Robust standard errors clustered at the firm level are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Dep. Variable:	Market reaction from week -1 to +1		
	(1)	(2)	(3)
Industry Base	SIC3	SIC3	SIC3
Event Sample	Full	Non-PTB	PTB
Dic	-0.0238**	-0.0368***	-0.00739
	(0.0105)	(0.0133)	(0.0226)
$revHHI$	0.0802**	0.153**	-0.00703
	(0.0396)	(0.0632)	(0.0432)
Dic*revHHI	-0.116	-0.209**	-0.240
	(0.0935)	(0.104)	(0.341)
Crisis	-0.0221	-0.0500*	0.0161
	(0.0225)	(0.0301)	(0.0301)
Size	-0.00144	-0.000554	-0.0101*
	(0.00274)	(0.00336)	(0.00578)
MTB	0.00278*	0.00149	0.00917*
	(0.00144)	(0.00141)	(0.00467)
Anacov	-0.00549	-0.00622	0.00226
	(0.00568)	(0.00707)	(0.00977)
Blockholder Ownership	0.0864***	0.0899**	0.111**
	(0.0332)	(0.0437)	(0.0543)
ROA_{-1}	-0.0267	-0.0414	-0.00352
	(0.0549)	(0.0847)	(0.0555)
CEO Age	6.68e-05	0.000355	-0.000788
	(0.000650)	(0.000827)	(0.00110)
CEO Tenure	-0.00142	0.00473	0.00301
	(0.00381)	(0.00609)	(0.0120)
CEO Ownership	0.0957	0.0867	0.507
	(0.0842)	(0.0917)	(0.883)
Constant	0.0686	0.0454	0.0422
	(0.0509)	(0.0676)	(0.131)
Year & Industry FE	Yes	Yes	Yes
Observations	588	398	190
R-Squared	0.065	0.105	0.215

Appendix D3: Alternative competition measure - CR4

This table reports my baseline results for the alternative competition measure - the four-firm concentration ratio (CR4). The model is as follows:
$CAR[-1,+1] = \alpha + \beta_1 Dic + \beta_2 revCR4 + \beta_3 Dic * revCR4 + \beta_7 Crisis + \beta_8 Firm\,Control + \beta_9 CEO\,Control + Year\,FE + Industry\,FE + \varepsilon$
The sample covers the period 1992 through 2015. The dependent variable is CAR spanning week -1 to +1, measures market reaction to CEO/chairman consolidation announcements, and is calculate based on the Carhart 4-factor model. $Dic = 1$ if the firm has weak governance (E-index>3); revCR4 is the reverse 4-firm concentration ratio, measures the level of competition in the industry; PTB=1 if the firm follows a passing-the-baton (PTB) process; $Crisis = 1$ indicates the event year is after 2007; $Firm\,Control$ controls firm characteristics, including size, market-to-book ratio, analyst coverage, blockholder ownership and the lagged return on asset; *CEO Control* controls CEO characteristics, including CEO age, CEO tenure, and CEO stock ownership. Regressions in columns 1 to 3 classify industries based on 3-digit SIC codes; regressions in columns 4 to 6 use 4-digit SIC codes. Regressions in columns 1 and 4 are in the full event sample. Regressions in columns 2 and 5 are in the non-PTB sub-sample. Regressions in columns 3 and 6 are in the PTB sub-sample. All regression include year and industry fixed effects. Robust standard errors clustered at the firm level are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Dep. Variable:	CAR [-1,+1]: Market reaction from week -1 to +1					
	(1)	(2)	(3)	(4)	(5)	(6)
Industry Base	SIC3	SIC3	SIC3	SIC4	SIC4	SIC4
Event Sample	Full	Non-PTB	PTB	Full	Non-PTB	PTB
Dic	-0.0469**	-0.0769***	0.0270	-0.0505**	-0.0914***	0.0594*
	(0.0202)	(0.0255)	(0.0318)	(0.0221)	(0.0278)	(0.0315)
revCR4	0.0227	0.0513*	-0.0347	0.0326*	0.0623**	-0.00713
	(0.0192)	(0.0276)	(0.0292)	(0.0196)	(0.0272)	(0.0273)
Dic*revCR4	-0.0524	-0.0924**	0.0373	-0.0518*	-0.104***	0.0790*
	(0.0333)	(0.0411)	(0.0545)	(0.0314)	(0.0391)	(0.0462)
Crisis	-0.0208	-0.0491	0.0116	-0.0184	-0.0444	0.0162
	(0.0229)	(0.0314)	(0.0290)	(0.0233)	(0.0320)	(0.0308)
Size	-0.00189	-0.000452	-0.00988*	-0.00197	-0.000694	-0.0105*
	(0.00270)	(0.00332)	(0.00557)	(0.00269)	(0.00330)	(0.00563)
MTB	0.00275*	0.00144	0.00992**	0.00300**	0.00186	0.00921**
	(0.00146)	(0.00144)	(0.00470)	(0.00146)	(0.00143)	(0.00462)
Anacov	-0.00448	-0.00486	0.00218	-0.00455	-0.00470	0.00143
	(0.00565)	(0.00702)	(0.00944)	(0.00564)	(0.00695)	(0.00954)
Blockholder Ownership	0.0781**	0.0911**	0.110**	0.0741**	0.0821*	0.119**
	(0.0326)	(0.0436)	(0.0476)	(0.0322)	(0.0432)	(0.0465)
ROA_{-1}	-0.0274	-0.0250	0.00480	-0.0281	-0.0243	-0.0135
	(0.0562)	(0.0867)	(0.0547)	(0.0566)	(0.0858)	(0.0579)
CEO Age	3.30e-06	0.000379	-0.000753	3.01e-05	0.000469	-0.000687
	(0.000648)	(0.000836)	(0.00109)	(0.000648)	(0.000840)	(0.00109)
CEO Tenure	-0.000824	0.00455	0.00182	-0.00100	0.00366	9.94e-05
	(0.00378)	(0.00615)	(0.0120)	(0.00379)	(0.00623)	(0.0120)
CEO Ownership	0.0870	0.0808	0.518	0.0853	0.0737	0.524
	(0.0726)	(0.0716)	(0.897)	(0.0702)	(0.0657)	(0.864)
Constant	0.0774	0.0626	0.0279	0.0860	0.0736	0.0495
	(0.0536)	(0.0704)	(0.132)	(0.0541)	(0.0710)	(0.134)
Year & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	588	398	190	588	398	190
R-Squared	0.066	0.109	0.220	0.067	0.117	0.223