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Cash Holdings and CEO Turnover

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Chief Executive Officer (CEO) characteristics, such as the level of risk aversion, are known to affect corporate financial policies, and therefore are likely to impact corporate liquidity decisions. We examine changes in cash holdings around CEO turnover events, a period in which discrete changes in managerial preferences and abilities are likely to have the most dramatic effect on cash holdings. Our results suggest that cash holdings increase significantly following forced departures. The increase is persistent over the successor's tenure and is robust to controls for the standard firm-level determinants of cash holdings and corporate governance characteristics. We find that higher cash holdings arise mainly through the management of net working capital, as opposed to asset sales or reductions in investment. This suggests that the changes are optimal for shareholders rather than an indication of serious agency problems. This conclusion is supported further by our finding that the marginal value of cash does not decrease following the turnover.

Keywords: CEO turnover; cash holdings; corporate governance; agency problems.

1. Introduction

A major concern over the last several decades, articulated by Jensen (1986), has been that managerial risk-aversion may lead to excessively high cash buffers that allow entrenched managers to pursue their own investment

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policies at the expense of shareholders. Entrenched managers may fail to take on good projects because doing so will eat into the buffer or they may hoard cash and later use it for projects, such as acquisitions, that are value destroying. Consistent with Jensen's views, Bertrand and Schoar (2003) find that manager fixed effects increase the explanatory power of a model of corporate cash holdings. Specifically, their results suggest that shareholder value could be enhanced on average if cash holdings were to decrease. This is particularly troublesome in light of the results in Bates *et al.* (2009) that cash holdings have been trending up in recent decades.

The impact of manager preferences on firm policies is particularly difficult to identify, let alone quantify precisely enough to determine if cash holdings are optimally chosen. Cash holdings may be low because the firm has been unprofitable and using up liquidity or holdings may be high in anticipation of undertaking a particularly profitable new project. Furthermore, these are factors that are likely to have an effect on the firm's liquidity for several years. Consequently, researchers such as Fee *et al.* (2013), question the validity of the fixed effects approach.

We attack the econometric problems related to cash holdings and CEOs by examining changes in cash around CEO turnover events. These are periods in which discrete changes in managerial preferences and abilities are likely to have the most dramatic effect on corporate policies (e.g., Weisbach, 1995). If risk aversion is a major agency problem before the turnover that leads to abnormally high, inefficient cash holdings, the board should hire a successor whose preferences are less detrimental to the growth of the firm. If cash holdings are low before the turnover event because the firm was heading towards distress, the board ought to find a successor who can turn around the firm and build up cash reserves towards the optimal amount. This will be particularly true in the case of forced turnovers where the board is focused on making improvements that help maximize shareholder value. If cash holdings do not change from before to after the turnover event, we conclude that any negative impacts on shareholder wealth arising from cash-related agency problems are too small to affect the board's choice of a successor.

In the case of forced turnover, the new CEO is often an outsider, since potential insider candidates may be too similar to the underperforming predecessor. While potential outsider successors may be the most desirable candidates, conditions associated with the forced turnover may limit the pool of talent that a board chooses from when replacing a CEO. Parrino (1997) argues that the costs associated with replacing a CEO are higher when the successor lacks the necessary human capital to manage the firm's assets and is

therefore more susceptible to error and missed opportunities. Naveen (2006) finds support of this view. Thus, we expect that a CEO successor who has little firm-specific experience will be cautious towards his new position and may reduce the risk of a misstep by increasing cash holdings. We expect this effect to be most pronounced following forced turnovers and for firms that hire successors from outside the industry. Because precautionary demand is meant to offset expected losses from distress, this restrained strategy should be in the best interest of shareholders. Thus, we would not view observed higher cash holdings as an indication of managerial preferences that cause an agency problem.

Absent of such considerations, however, we expect forced CEO turnover to lead to more efficient cash holdings policies. If managers are forced out for failure to undertake all positive NPV projects, one would hardly expect the board of directors to appoint a replacement who is even less likely to increase shareholder value. Thus, we expect risk aversion to be less of a problem among the successors in cases of forced departures. Even in the case of voluntary turnover, the board is unlikely to choose a successor who is exceptionally risk averse if the previous CEO's preferences toward high cash holdings had a severe negative influence on shareholder value.

Our results suggest that cash holdings increase significantly after a forced CEO turnover. The median cash-to-assets ratio nearly doubles, increasing from 5.17% during the predecessor period to 9.99% for the successor period. The increase in cash is persistent over the successor's tenure, and is robust to controls for the standard firm-level determinants of cash holdings and corporate governance characteristics. This result is economically significant, representing an inflation-adjusted US$155.5 million difference in cash holdings for the median firm following a forced CEO turnover. Further, our results indicate that in forced turnover cases, the succession of a CEO from outside the industry is associated with significantly greater cash holdings. Since these CEOs are the least likely to be entrenched, this result suggests that higher cash holdings are optimal for the firm.

When we examine event time regressions, using voluntary turnovers as benchmarks, we find that the difference in cash holdings for forced vs. voluntary turnovers is positive and significant in the years following the CEO turnover. For example, in the third year following the turnover, successors following forced turnovers hold nearly 5% more cash than successors following voluntary departures. CEO successors are more likely to reduce net working capital and save the proceeds as cash than their voluntary turnover counterparts. That is, the increase in cash holdings for forced turnover

successors comes from the realization of significant efficiencies in net working capital rather than from a reduction in investment in fixed assets.

Lastly, we use the Faulkender and Wang (2006) methodology to estimate the value of cash holdings for firms subject to CEO turnover. Our results suggest that the marginal value of cash changes insignificantly following a CEO turnover, indicating that the additional cash holdings attributable to managerial succession are not value destroying. The incremental value of cash is also unchanged following forced departures when the replacement CEO has no industry experience. Given that the marginal value of cash declines with larger cash holdings (Faulkender and Wang, 2006), these results suggest that the increase in cash holdings following managerial turnover is, on average, value enhancing, particularly when a CEO is relatively inexperienced.

Since the observed rise in cash holdings is largely due to increased efficiency in the management of net working capital (as opposed to asset sales or reductions in investment) and the marginal value of cash does not decrease following the turnover, we conclude that the changes in cash holdings are not indicative of the agency problems highlighted in Jensen (1986).

The paper proceeds as follows. Section 1 provides a review of related literature. Section 2 describes our sample selection procedure and summary statistics on the determinants of cash holdings. Section 3 provides multivariate results on cash holdings, measures the value of cash holdings, and examines the determinants of cash savings. Section 4 contains additional robustness checks, while Sec. 5 concludes.

2. The Determinants of Corporate Cash Holdings

The primary benefit of holding cash comes from its use as a precautionary tool to hedge against underinvestment when a firm experiences shortfalls in operating cash flows. In addition, cash holdings reduce the transactions costs that a firm incurs when it must convert a non-cash financial asset into cash for payments. Opler *et al.* (1999) show that a company's expected cash holdings are a function of several key characteristics, including size, risk, and growth potential. The basic premise underlying their model is that smaller, riskier companies with promising growth opportunities choose to hold more cash than large, stable, and relatively mature companies with reliable access to outside capital. More recently, Bates *et al.* (2009) show that firm cash holdings have increased over time in a manner that is consistent with a higher precautionary demand for cash.

The disadvantage of high cash holdings, according to Jensen (1986), is the potential agency cost. Specifically, in the absence of valuable investment

opportunities, corporate managers may waste excess cash reserves by making bad acquisitions or pursuing growth at the expense of shareholder value. Several studies examine the effect of corporate governance and agency costs on cash holdings. For example, Harford (1999), Dittmar *et al.* (2003), Pinkowitz *et al.* (2006), Dittmar and Mahrt-Smith (2007), and Harford *et al.* (2008) generally conclude that companies with large cash reserves and weak corporate governance systems tend to invest cash poorly, and that cash holdings are less valuable in these companies.

A growing literature on the influence of CEO style and ability on corporate policies suggests that they can affect cash reserves (e.g., Custodio and Metzger, 2013; Adams *et al.*, 2005; Graham *et al.*, 2013; Cronqvist *et al.*, 2012; Malmendier *et al.*, 2011). Bertrand and Schoar (2003) examine leverage and liquidity decisions and find significant CEO fixed effects. These results suggest that the degree of financial slack in a firm is driven, in part, by the preferences or abilities of managers. This evidence is largely consistent with the negative view expressed by Jensen (1986). However, Fee *et al.* (2013) question these findings in part due to endogeneity concerns. Evidence in Schoar and Zuo (2016) also indicates that a CEO's past business experience can have an impact on future corporate policies and performance.

In related work, Peters and Wagner (2014) find a positive relation between the probability of forced turnover and CEO compensation. In addition to causing managers to demand higher compensation, turnover risk could cause managers to increase cash holdings to protect themselves.

Dittmar and Duchin (2016) examine how CEOs' prior work experiences affect cash holdings. Using a sample of exogenous CEO turnovers (turnover due to death or illness, planned retirements, or scheduled successions), they find that firms run by CEOs who faced financial difficulties during past employment at other firms hold more cash. They conclude that past professional experience shapes the way managers make future financial decisions. However, even in instances of exogenous turnover, the board is likely to hire a CEO who will implement the board's desired policies, so it is unclear whether any changes are due to the CEO's preferences or the board intentionally hiring a CEO with those preferences.

3. Sample Selection and Summary Statistics

We construct our sample of turnover events from Execucomp. We exclude financial firms (SIC codes 6000–6999) and utilities (SIC codes 4900–4999) and restrict our sample to only include Execucomp firm-years that identify

the beginning and end date of the current CEO. We next search the *Wall Street Journal* to verify the exact date of each turnover event and to obtain predecessor and successor characteristics. Due to the importance of correctly identifying forced and voluntary turnovers for our analysis, we drop all observations where we cannot find public notice of the CEO change. Consistent with a previous work (Parrino, 1997), we define forced turnovers as CEO departures (1) explicitly identified in the *Wall Street Journal* as being forced, or (2) when the incumbent CEO is less than 60 years old and the reason for departure is not specified as being due to poor health, death, or the acceptance of a new position within or outside of the firm. Otherwise, we classify the turnover event as voluntary.

Since incoming CEOs cannot instantaneously change corporate policies, we focus our analysis on years $t = -4$ to $t = +4$ relative to the turnover event ($t = 0$) in order to effectively examine cash holdings for both predecessor and successor. Consequently, we limit our turnover sample to those announced from 1992 through 2003. In this way, we examine succession years only through 2007, which ensures that the cash holdings of our sample firms will not be influenced by the credit crisis, which has been tied to a period of cash hoarding by firms (e.g., see Ganor, 2011; Kahle and Stulz, 2013). We also limit our sample to only include firms where the predecessor (successor) has tenure of at least two years (one year), since it is unlikely that the chief executive will be able to influence firm operations in a material way if his tenure with the firm is limited. Moreover, we exclude the last year (first year) of tenure for the successor (predecessor) when tenure is between two and four years from our analysis since firm policy may be influenced by both the departing incumbent and incoming chief executive during these periods. For this same reason, we exclude the year of the turnover (except when otherwise noted) since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. The sample is further structured so that only turnovers with both successor and predecessor characteristics are included.

All observations with turnovers that pertain directly to a merger or acquisition are excluded from the sample. We also eliminate any instances where the successor held or currently holds the Chairman of the Board position in the pre-turnover period, since the successor presumably will already has influence over firm operations prior to his appointment to the top post. Lastly, we exclude any firms that delist within three years after the turnover since CEOs for these firms will most certainly be limited in actively managing firm cash reserves. Data for the accounting variables of interest are from the

WRDS merged CRSP/Compustat files for the period 1988–2007 and we limit our firm-year observations to only include years that have positive assets and sales. Our post restriction sample yields over 4,300 firm-year observations for 550 turnovers events. Complete variable definitions are provided in the Appendix.

3.1. *Summary statistics*

Table 1 provides summary statistics of the different variables employed in this study for both predecessor and successor CEOs. Panel A examines cash and the accounting determinants of cash used in previous studies. Panel B examines firm-specific ownership and corporate governance variables, as well as executive-specific characteristics of the predecessor and successor. All firm-specific and executive-specific variables are first averaged across executive years.

Definitions for variables shown in Table 1 are provided in the Appendix. Median cash/assets increases from 4.5% to 5.3% following the turnover (p-value $= 0.045$).[1] Inflation-adjusted book assets are also higher during the successor tenure than the predecessor tenure; the medians are significantly higher. Mean market-to-book ratios fall, although the medians are not different. Both mean and median cash flow from assets are significantly lower for the successor, while median cash flow volatility increases. Net working capital as a percent of assets falls significantly after turnover, as do capital expenditures, but R&D as a percent of sales and acquisitions as a percent of assets do not differ significantly between the predecessor and successor. Write-downs as a percentage of assets increase from predecessor and successor tenure periods.[2] Finally, there is no significant change in the percentage of firms that pay dividends.[3]

Panel B shows that successor CEOs are both younger and less likely to be a member of the founding family than the predecessor CEOs. Successors are also less likely to hold the title of both CEO and Chairman of the Board.

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[1] At first glance, these results may seem to counter that of Cunha and Ribas (2012), who do not find any CEO effect on cash holdings. However, their finding is likely due to model specification, in that the effect of the turnover is identified only through an examination of year of the CEO departure (i.e., $t = 0$ in our sample).

[2] We define write-downs as special items (spi) scaled by assets. Since we are only concerned with write-downs and not write-ups (i.e., when the firm increases the value of assets), we set our write-down variable to zero when data item spi is missing or positive. We find materially similar results if we use data item wdp scaled by assets.

[3] In untabulated results, we also examine the ratio of total dividends to assets and find results similar to using the dividend dummy. Therefore, when controlling for the type of turnover it does not appear that successors change dividend policies in order to influence cash holdings.

Table 1.   Summary statistics.

	Predecessor Tenure			Successor Tenure		Tests for Differences	
N	Mean	Median	N	Mean	Median	Pr > $\lvert t\rvert$	Pr > $\lvert Z\rvert$
Panel A: Cash and determinants of cash							
Cash/assets	550	0.0964	0.0449	550	0.1016	0.0526	0.4937	0.0453
Firm size	550	7688	2689	550	8819	3418	0.2302	0.0290
Market-to-book	550	2.2625	1.6754	550	2.0855	1.6845	0.0368	0.4644
Leverage	550	0.2395	0.2274	550	0.2543	0.2491	0.1044	0.0525
Cash flow/assets	550	0.0901	0.0881	550	0.0818	0.0849	0.0236	0.0281
Cash flow volatility	545	0.0295	0.0212	547	0.0326	0.0230	0.1137	0.0153
Net working capital/assets	550	0.0882	0.0744	550	0.0573	0.0457	0.0000	0.0002
CAPEX/assets	550	0.0721	0.0619	550	0.0615	0.0515	0.0000	0.0000
R&D/sales	550	0.0456	0.0066	550	0.0569	0.0067	0.4512	0.9116
Acquisitions/assets	526	0.0269	0.0099	523	0.0266	0.0126	0.8849	0.1113
Write-downs/assets	550	−0.0136	−0.0047	550	−0.0218	−0.0092	0.0000	0.0000
Dividends	550	0.6944	1.0000	550	0.6772	1.0000	0.5255	0.4336
Panel B: Firm- and executive-specific characteristics							
CEO age	550	60.07	61.00	550	50.77	51.00	0.0001	0.0001
Member of founding family	550	0.1073	0.0000	550	0.0327	0.0000	0.0001	0.0001
Dual CEO/chairman	542	0.7720	1.0000	539	0.5776	0.6667	0.0001	0.0001
Board size	527	10.51	10.50	488	10.32	10.00	0.2352	0.2512
Percentage of outside directors	527	0.7475	0.7734	488	0.7831	0.8002	0.0001	0.0001
Blockholder ownership	526	0.2831	0.2424	485	0.3166	0.2895	0.0157	0.0026

Note: This table reports mean and median determinants of cash, firm characteristics, and executive-specific characteristics over predecessor ($t = -4$---1) and successor ($t = 1$--4) tenure periods for our sample of 550 turnovers occurring from 1992 to 2003 ($N = 4,344$ firm-year observations). All firm-specific and executive-specific variables are first averaged across executive years and variable definitions are provided in the Appendix. The year of the turnover ($t = 0$) is excluded since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. *p*-values are provided for tests of the restriction that means (medians) for the predecessor and successor periods are drawn from different distributions, based on an analysis of variance (Wilcoxon rank-sum test).

While there is no significant difference in board size between predecessors and successors, both the mean (median) percentage of outside directors increase significantly following turnover, from 74.75% (77.34%) to 78.31% (80.02%). Both mean and median blockholder ownership also increase significantly from the pre- (28.31%, 24.24%) to post-turnover (31.66%, 28.95%) periods.

Table 2 further divides our sample into forced (Panel A) and voluntary (Panel B) turnovers. Both mean and median cash/assets increase significantly following forced turnover; mean cash increases from 9.6% to 12.9%, while median cash nearly doubles, increasing from 5.2% to 10.0%. This difference represents a median increase in raw cash holdings from predecessor to successor period of over US$155 million.[4] This result suggests that high cash holdings benefit shareholders at the time of turnover, which is likely due to the higher expected costs of distress around these times.

Consistent with the prediction that distress costs are higher, we find that, similar to the entire sample of turnovers, firms experience a decline in cash flow around forced turnovers while cash flow volatility increases. Net working capital and capital expenditures (as a percent of assets) decrease, while R&D/sales is unchanged. Write-downs increase following forced turnovers, which is also similar to the results for the entire sample. Acquisitions as a percentage of assets decrease following forced turnovers. These changes in fundamentals are consistent with an increased risk of distress and thus a higher need for a liquidity buffer. However, they may also be indicative of wasteful policies that continue even with the new successors.

Differences between executive-specific and governance characteristics remain largely similar for the entire sample and forced turnover sample. Successors are more likely to be younger and less likely to be a founding family member or hold the Chairman post. However, the results on ownership differ for forced turnovers compared to the entire sample. Unlike Table 1, there is no significant change in block ownership following forced turnovers.

Turning to the voluntary turnover sample, shown in Panel B, we find that there is no change in cash/assets from predecessor to successor periods. There are also no significant changes in cash flow or cash flow volatility following voluntary turnovers. Net working capital and capital expenditures both decrease, but the magnitude of the decreases is not nearly as large as in the forced turnovers. For voluntary turnovers, median acquisitions/assets

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[4]Raw inflation-adjusted median cash holdings (reported as 2007 values) for predecessor (successor) tenure periods are US$200.08 million ($355.55 million), respectively.

Table 2. Pre- to post-turnover changes in cash and the determinants of cash.

	Predecessor Tenure			Successor Tenure			Tests for Differences	
	N	Mean	Median	N	Mean	Median	Pr> |t|	Pr> |Z|
Panel A: Forced turnovers								
Cash/assets	109	0.0965	0.0517	109	0.1294[a]	0.0999[a]	0.0370	0.0118
Firm size	109	9401	3283	109	8964	3320	0.8275	0.7071
Market-to-book	109	2.1671	1.6622	109	1.8099[a]	1.5628[a]	0.0394	0.3036
Leverage	109	0.2710[b]	0.2615[b]	109	0.2871[b]	0.2514	0.5129	0.5519
Cash flow/assets	109	0.0892	0.0843	109	0.0673[a]	0.0691[a]	0.0054	0.0148
Cash flow volatility	108	0.0299	0.0244	109	0.0435[a]	0.0274[a]	0.0041	0.0200
Net working capital/assets	109	0.0864	0.0791	108	0.0338[b]	0.0322[c]	0.0052	0.0022
CAPEX/assets	109	0.0701	0.0612	109	0.0572	0.0495	0.0229	0.0089
R&D/sales	109	0.0421	0.0058	109	0.0455	0.0053	0.7502	0.9991
Acquisitions/assets	106	0.0275	0.0098	107	0.0160[a]	0.0069[a]	0.0183	0.4157
Write-downs/assets	109	−0.0201	−0.0095	109	−0.0331	−0.0185	0.0144	0.0017
Dividends	109	0.6032[b]	1.0000[b]	109	0.5326[a]	0.8000[a]	0.2781	0.2791
CEO age	109	54.30[a]	55.00[a]	109	50.11	50.00	0.0001	0.0001
Member of founding family	109	0.0734	0.0000	109	0.0183	0.0000	0.0524	0.0530
Dual CEO/chairman	108	0.6265[a]	1.0000[a]	107	0.5020[b]	0.6000[c]	0.0382	0.0326
Board size	96	9.92[b]	9.88[b]	88	9.69[a]	9.45[a]	0.5618	0.4189
Percentage of outside directors	96	0.7477	0.7714	88	0.7938	0.8153	0.0054	0.0049
Blockholder ownership	95	0.2914	0.2736	86	0.3382	0.3183	0.1305	0.1596
Panel B: Voluntary turnovers								
Cash/assets	441	0.0964	0.0438	441	0.0947	0.0479	0.8422	0.3137
Firm size	441	7264	2642	441	8783	3480	0.1548	0.0239
Market-to-book	441	2.2861	1.6835	441	2.1536	1.7091	0.1697	0.7797
Leverage	441	0.2318	0.2234	441	0.2462	0.2487	0.1295	0.0511

Table 2.   (*Continued*)

	Predecessor Tenure			Successor Tenure			Tests for Differences	
	N	Mean	Median	N	Mean	Median	Pr > |t|	Pr > |Z|
Cash flow volatility	437	0.0294	0.0205	439	0.0299	0.0221	0.8014	0.1036
Cash flow/assets	441	0.0903	0.0901	441	0.0854	0.0860	0.2295	0.2119
Net working capital/assets	441	0.0886	0.0726	441	0.0631	0.0532	0.0042	0.0086
CAPEX/assets	441	0.0726	0.0622	441	0.0626	0.0522	0.0005	0.0001
R&D/sales	441	0.0465	0.0067	441	0.0597	0.0067	0.4744	0.9018
Acquisitions/assets	420	0.0268	0.0099	416	0.0293	0.0159	0.3507	0.0253
Write-downs/assets	441	−0.0120	−0.0037	441	−0.0190	−0.0084	0.0015	0.0000
Dividends	441	0.7169	1.0000	441	0.7129	1.0000	0.8918	0.7446
CEO age	441	61.50	63.00	441	50.93	51.00	0.0001	0.0001
Member of founding family	441	0.1156	0.0000	441	0.0363	0.0000	0.0001	0.0001
Dual CEO/chairman	434	0.8082	1.0000	432	0.5963	0.7500	0.0001	0.0001
Board size	431	10.65	10.75	400	10.46	10.29	0.2926	0.3678
Percentage of outside directors	431	0.7475	0.7734	400	0.7807	0.7976	0.0001	0.0001
Blockholder ownership	431	0.2812	0.2318	399	0.3119	0.2798	0.0479	0.0075

Note: This table reports the determinants of cash over the predecessor ($t = -4 - -1$) and successor ($t = 1 - 4$) tenure periods. All variables are first averaged across executive years. Forced CEO turnovers are defined as departures that are (1) explicitly identified in the *Wall Street Journal* as being forced, or (2) instances where the incumbent is less than 60 years old and the reason for departure is not specified as being due to poor health, death, or the acceptance of a new position. All other variable definitions are provided in the Appendix. The year of the turnover ($t = 0$) is excluded since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. *p*-values are provided for tests of the restriction that means (medians) for the predecessor and successor periods are drawn from different distributions, based on an analysis of variance (Wilcoxon rank-sum test). Superscripts ($^a p < 0.01$, $^b p < 0.05$, $^c p < 0.10$) are provided in Panel A for tests that means (medians) for (1) forced turnover predecessor vs. the voluntary turnover predecessor and (2) forced turnover successor vs. the voluntary turnover successor periods are drawn from different distributions, based on an analysis of variance (Wilcoxon rank-sum test).

actually increase following the turnover. Similar to that of forced turnovers, write-downs increase following the voluntary turnover. The results on the CEO and corporate governance characteristics are similar to those found in Table 1 for the entire turnover sample. In particular, and in contrast to the forced turnover sample, blockholder ownership increases.

We next examine whether the characteristics of forced predecessors (successors) are different from those of voluntary predecessors (successors). For the sake of brevity, we exclude p-values and simply indicate statistical differences across these samples using superscripts ([a]$p < 0.01$, [b]$p < 0.05$, [c]$p < 0.10$). As shown in Panel A of Table 2, we find that predecessor CEOs in forced turnovers have significantly higher leverage, are younger, and are less likely to hold the title of CEO and Chairman of the Board than their counterparts in voluntary turnovers.

Successor CEOs following forced turnovers hold more cash than their counterparts from voluntary turnovers (12.9% vs. 9.5%, on average). They are also more levered, have lower market-to-book ratios, lower cash flows, higher cash flow volatility, and are less likely to pay dividends than successors in voluntary turnovers. In addition, they have lower net working capital and spend less on acquisitions. In terms of corporate governance characteristics, successors in forced turnovers are less likely to hold the title of CEO and Chairman of the Board and have smaller boards than their counterparts in voluntary turnovers.

We also examine executive tenure with the firm, although we do not report the results in Table 2 since they are largely consistent with results on CEO age. Not surprisingly, mean and median CEO tenure are longer in the case of voluntary turnover compared to forced turnover. Both mean and median predecessor tenure are also longer than that shown in previous studies, which can be attributed to our data restriction of only including turnovers where the predecessor remains with the firm for at least two years.[5]

Finally, in untabulated results, we examine inside vs. outside successors and outside industry successors. Outside successors are executives who are employed with the firm for at most one year prior to being appointed CEO. We identify outside industry successors by examining the industry of the firm successor's last appointment, where the Fama and French 48 industry portfolios are used to determine industry classification.[6] However, we find

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[5]For example see Coles *et al.* (2008).

[6]We would like to thank Kenneth French for providing the industry level identifiers available through his website.

materially similar results when identifying outside industry successors using 2-digit SIC code. If the successor comes from an entity that does not have an available industry class (e.g., foreign firm or government position) or whose main responsibilities were for a subsidiary that is largely unrelated to the stated classification of the parent company (e.g., CEO of Kraft, which previously was a subsidiary of Phillip Morris), we manually compare the characteristics of the previous position held with the industry of the new post to determine outside industry affiliation. We find no significant differences in the ages of inside successor, outside successor, and outside industry successors. Inside successors are more likely to be members of the founding family, however.

4. Results

Univariate results in Table 1 show that cash holdings increase following top managerial changes, while Table 2 suggests that much of the increase in cash holdings come during the tenure of successors who are appointed following forced CEO departures. In Table 3, we further examine this increase in cash holdings in a multivariate setting by modeling holdings controlling for the type of turnover, standard determinants of cash holdings, corporate governance, and executive-specific characteristics. All models include both firm and year fixed effects and standard errors are clustered at the firm level.

Consistent with Opler *et al.* (1999), Model 1 shows that cash is negatively related to leverage, net working capital, capital expenditures, and dividends. Cash is positively associated with the market-to-book ratio and cash flow volatility. Model 2 introduces indicator variables for forced turnover. After controlling for the other determinants of cash, and consistent with our univariate results in Table 2, cash holdings are significantly higher for successors following forced turnovers.

Model 3 results suggest that outsiders are not associated with holding higher levels of cash. However, precautionary motives may lead outside industry successors appointed following forced departures to hold higher levels of cash due to the combined effect of their lack of industry-specific knowledge and the nature of the predecessor departure. To test this prediction, in Model 4 we introduce an interaction term between forced turnover successors and outside industry successors (Forced_Succ*Outside_Ind). Coefficients on both the forced turnover successor control and the interaction are positive and significant, indicating that successor CEOs hold more cash than their predecessor CEOs following forced turnovers and that this is even more true for

Table 3.   Regressions on the executive-specific determinants of cash holdings.

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	0.292	0.271	0.270	0.274	0.270	0.150	0.147
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.028)	(0.032)
Ln(market cap.)	−0.014	−0.013	−0.013	−0.013	−0.012	0.005	0.005
	(0.078)	(0.108)	(0.108)	(0.103)	(0.158)	(0.544)	(0.527)
Leverage	−0.159	−0.157	−0.158	−0.159	−0.157	−0.163	−0.163
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market-to-book	0.008	0.009	0.009	0.009	0.009	0.010	0.010
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)
Cash flow/assets	0.015	0.020	0.020	0.018	0.016	−0.006	−0.007
	(0.704)	(0.611)	(0.614)	(0.651)	(0.673)	(0.891)	(0.857)
Net working capital/assets	−0.222	−0.218	−0.218	−0.215	−0.216	−0.231	−0.233
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash flow volatility	0.186	0.150	0.147	0.135	0.137	0.112	0.105
	(0.048)	(0.108)	(0.111)	(0.143)	(0.134)	(0.395)	(0.420)
R&D/sales	0.014	0.014	0.014	0.013	—	0.003	0.003
	(0.167)	(0.165)	(0.165)	(0.212)	—	(0.851)	(0.836)
CAPEX/assets	−0.351	−0.346	−0.345	−0.336	−0.346	−0.301	−0.298
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dividends	−0.026	−0.025	−0.025	−0.025	−0.026	−0.034	−0.034
	(0.009)	(0.015)	(0.015)	(0.013)	(0.013)	(0.025)	(0.022)
Forced turnover successor	—	0.026	0.025	0.017	0.025	0.021	0.041
	—	(0.002)	(0.001)	(0.035)	(0.001)	(0.021)	(0.014)
Outside industry successor	—	—	0.004	−0.010	−0.014	—	—
	—	—	(0.667)	(0.233)	(0.187)	—	—
Forced_Succ*Outside_Ind	—	—	—	0.043	—	—	—
	—	—	—	(0.067)	—	—	—
R&D dummy	—	—	—	—	−0.018	—	—
	—	—	—	—	(0.170)	—	—
Outside_Ind*R&D	—	—	—	—	0.030	—	—
	—	—	—	—	(0.063)	—	—

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Table 3. (*Continued*)

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
CEO age >= 60	—	—	—	—	—	0.007	0.007
						(0.079)	(0.072)
CEO duality	—	—	—	—	—	0.000	0.003
						(0.968)	(0.560)
Forced_Succ*CEO_Chair	—	—	—	—	—	—	−0.029
						—	(0.097)
Founding family CEO	—	—	—	—	—	0.003	0.002
						(0.807)	(0.857)
Board size	—	—	—	—	—	0.004	0.004
						(0.592)	(0.615)
Board independence	—	—	—	—	—	−0.020	−0.019
						(0.188)	(0.198)
Blockholder ownership	—	—	—	—	—	−0.001	−0.001
						(0.939)	(0.929)
Year controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of firm-year observations	3,769	3,769	3,769	3,769	3,769	2,618	2,618
Adj. R^2	0.416	0.461	0.461	0.461	0.416	0.342	0.336

Note: This table provides OLS regression results on the determinants of cash holdings controlling for both firm and year fixed effects. The dependent variable is the ratio of cash to assets. Forced turnover successor is an indicator variable set equal to 1 for successors that are appointed after forced turnovers. Outside industry successor is an indicator variable equal to 1 for successors that were previously appointed in an industry that differs from their new appointment. Forced_Succ*Outside_Ind is an interaction between the forced turnover successor and outside industry successor variables. Outside_Ind*R&D is an interaction between the outside industry successor variable and a dummy variable set equal to 1 for non-zero R&D firms. CEO age >= 60 and CEO is also Chairman are indicator variables set equal to 1 if the executive is at least 60 years old and if the current CEO also holds the Chairman post. Forced_Succ*CEO_Chair is an interaction between the forced turnover successor and CEO duality variables. Definitions of all other independent variables are provided in the Appendix. The year of the turnover ($t = 0$) is excluded since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. *p*-values based on standard errors robust to clustering at the firm level are provided in parentheses.

successors from outside the firm's industry.[7] Less experienced successors may also be more likely to hold higher levels of cash when operating in firms that require significant R&D expenditures. To test this prediction, in Model 5, we identify positive R&D spending firms (R&D Dummy) and interact it with our outside industry successor control. The positive and significant coefficient on this interaction supports our prediction.

Model 6 incorporates executive-specific characteristics that may influence cash holdings. CEO age is used to further proxy for risk aversion (Peters and Wagner, 2014; Serfling, 2014) and CEO duality and founding family relation are additional proxies for executive control over firm operations. We use an indicator for age greater than 60 and for founding family relation. The indicator on CEO age is positively related to cash holdings, indicating that older CEOs tend to hold higher levels of cash.[8] Founding family affiliation is statistically unrelated to cash holdings. Model 7 further controls for internal and external governance mechanisms (board size, independence, and block ownership) and although no single variable is significantly related to cash holdings, the forced turnover successor variable is robust to including these controls. The board may give some successors free rein over firm operations, thus reducing the precautionary motive to hold cash. To proxy for such instances, we identify successors that are appointed to both the CEO and Chairman positions following a forced departure (Forced_Succ*CEO_Chair). The negative coefficient on this interaction provides some support for this prediction.

Overall, these results indicate that higher cash is associated with increased precautionary demands for cash. The higher demand seems likely to reflect the need to protect against financial distress in the early years of a new CEO's tenure. This view draws particular support from our findings on outsiders in cases of forced turnover and in regards to R&D.

4.1. *Time series changes in cash*

We next compare firm level actual and predicted levels of cash, following the procedure used in Bates *et al.* (2009). First, we estimate a cash holdings model from 1980 to 1989, the period prior to our turnover sample period,

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[7]We also examine outside appointments irrespective of successor industry affiliation and find that, overall, outside appointments are unrelated to the level of cash holdings.

[8]In untabulated results, we further analyze CEO age by separating our age dummy into predecessor and successor groups and find that significance only comes from predecessor age. This is not surprising, since most successors are well under 60 years old (median = 55 years) at the time of their appointment.

using Fama–MacBeth regressions for all non-financial, non-utility firms on Compustat. The coefficients in our model are the average coefficients from annual cross-sectional regressions estimated over this period. Then, we compute the difference between actual and predicted cash holdings in our turnover sample.

Table 4 reports the predicted cash ratios and the deviations from actual for our whole sample of turnover and for the sample of forced turnovers. For the entire turnover sample, actual cash holdings are less than predicted in all years surrounding the turnover event. When we divide the sample into forced vs. voluntary turnovers, however, we find that for forced turnovers, actual cash is less than predicted in predecessor tenure years -3 to -1 relative to the turnover, but cash is greater than predicted by successor tenure years 3 and 4 relative to the turnover. For voluntary turnovers, cash is less than predicted both before and after the turnover for all predecessor and successor years. These results lend further support to the idea that successors hold higher levels of cash following forced turnovers.

We next estimate event time regressions, using voluntary turnovers as benchmarks, and compare the evolution of cash holdings around forced and voluntary turnovers using the following model:

$$Y_{it} = \alpha + \sum_{\eta=-N}^{+N} \beta_\eta^F F_{i\eta} + \sum_{\eta=-N}^{+N} \beta_\eta^V V_{i\eta} + \beta' X_{it} + \varepsilon_{it}. \tag{1}$$

The dependent variable, Y_{it} is cash holdings and X_{it} represents a vector of control variables, where i and t represent firm and year. The notation η represents the year relative to the CEO turnover and spans from $-N$ to $+N$, where $-N$ begins three years prior to the turnover and $+N$ ends three years after the turnover.[9] $F_{i\eta}$ and $V_{i\eta}$ are indicator variables set equal to 1 for forced ($F_{i\eta}$) and voluntary ($V_{i\eta}$) turnover firms i in year η. The coefficients on these variables (β_η^F and β_η^V) represent the annual specific cash holdings for firms where the CEO is forced out or departs voluntarily. The difference in these coefficients ($\beta_\eta^F - \beta_\eta^V$) represents the percentage point difference in cash holdings for each year η for firms surrounding forced turnovers relative to those facing voluntary turnovers, after controlling for other determinants of cash holdings (X_{it}). For example, a difference of 0.02 for $\beta_1^F - \beta_1^V$ means that in the year after a CEO departure, successors in forced turnover firms hold 2% more cash than voluntary turnover firm successors.

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[9]In unreported analysis, we use different event windows surrounding the turnover and find similar results.

Table 4. Predicted cash ratios and deviations from predicted ratios across predecessor and successor periods.

Year Relative to Departure	Entire Sample			Forced Turnovers			Voluntary Turnovers		
	Predicted	Actual – Predicted	t-Statistic	Predicted	Actual – Predicted	t-Statistic	Predicted	Actual – Predicted	t-Statistic
−4	0.130	−0.024	−4.45	0.128	0.012	0.46	0.130	−0.030	−5.13
−3	0.128	−0.034	−7.26	0.130	−0.019	−1.66	0.128	−0.037	−7.18
−2	0.129	−0.034	−7.69	0.118	−0.021	−2.38	0.131	−0.038	−7.33
−1	0.127	−0.039	−9.56	0.113	−0.019	−2.35	0.131	−0.044	−9.49
0	0.127	−0.035	−8.47	0.118	−0.014	−1.54	0.129	−0.041	−8.75
1	0.131	−0.033	−7.56	0.124	−0.010	−1.07	0.133	−0.039	−7.92
2	0.131	−0.027	−5.72	0.130	0.005	0.50	0.132	−0.035	−6.88
3	0.134	−0.028	−5.58	0.132	0.022	1.65	0.134	−0.039	−7.78
4	0.134	−0.023	−4.18	0.130	0.026	1.66	0.135	−0.034	−6.15

Note: This table reports the predicted cash ratios and deviations from actual cash ratios from an out of sample model for each year $t = -4 - +4$ relative to the turnover year ($t = 0$) for all firm-year observations (with available data) for the entire sample ($N = 3,852$), sample of forced turnovers ($N = 726$), and sample of voluntary turnovers ($N = 3,126$). As in Bates *et al.* (2009), we derive annual predicted cash ratios from a Fama–MacBeth model predicting the cash ratios using coefficients from annual cross-sectional regressions from 1980 to 1989 for all Compustat non-financial, non-utility firms. Regression estimates are: Cash ratio = 0.307 + 0.230 Industry Cash Flow Volatility + 0.006 Market to Book − 0.009 Log Firm Size + 0.077 Cash Flow/Assets − 0.238 Net Working Capital/Assets − 0.372 CAPEX/Assets − 0.360 Leverage + 0.048 R&D/Sales − 0.024 Dividend Dummy − 0.233 Acquisitions/Assets + 0.158 Net Equity/Assets + 0.190 Net Debt/Assets. *t*-statistics provide the statistical significance for tests of differences between the predicted and actual cash ratios for the entire sample and forced turnover sample, respectively.

Table 5 provides the results of the event time regressions. Model 1 includes controls for year and firm fixed effects. In this model, the percentage difference in cash holdings in forced vs. voluntary turnovers is negative and significant in years -3 to -1 relative to the turnover, which indicates that predecessors who are soon forced out tend to hold less cash than their voluntary turnover counterparts. The difference is insignificant in years 0 and $+1$ relative to the turnover, which is not surprising since the year of the turnover ($t = 0$) will include periods of both predecessor and successor tenure and it may take time for a successor to implement general policies that will influence cash holdings in a material way.

Interestingly, the difference in cash holdings for forced vs. voluntary successors is positive and significant in years $+2$ and $+3$. Specifically, the coefficient of 0.0493 for year 3 indicates that successors following forced turnovers hold nearly 5% more cash than successors following voluntary turnovers in the third year following the turnover. Given that the inflation-adjusted annual cash holdings for our sample averages US\$659 million, this figure represents US \$32.5 million more cash held by successors who follow forced

Table 5. Level of cash holdings surrounding turnover.

	Model 1	Model 2	Model 3
Panel A: Yearly cash holdings surrounding; the turnover ($t = 0$)			
$\beta_{-3}^F - \beta_{-3}^V$	-0.0234	-0.0068	-0.0096
	(0.029)	(0.472)	(0.425)
$\beta_{-2}^F - \beta_{-2}^V$	-0.0193	-0.0022	-0.0039
	(0.050)	(0.805)	(0.717)
$\beta_{-1}^F - \beta_{-1}^V$	-0.0156	0.0010	-0.0011
	(0.095)	(0.902)	(0.905)
$\beta_0^F - \beta_0^V$	-0.0049	0.0003	-0.0058
	(0.577)	(0.977)	(0.603)
$\beta_1^F - \beta_1^V$	-0.0027	-0.0008	-0.0109
	(0.785)	(0.931)	(0.262)
$\beta_2^F - \beta_2^V$	0.0193	0.0137	0.0208
	(0.035)	(0.119)	(0.028)
$\beta_3^F - \beta_3^V$	0.0493	0.0415	0.0400
	(0.000)	(0.000)	(0.002)
Year controls	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes
Determinants of cash controls	No	Yes	Yes
CEO and governance controls	No	No	Yes
Firm-year observations	4,344	4,344	2,887
Adj. R^2	0.0364	0.5338	0.5609

Table 5.   (*Continued*)

	Model 1	Model 2	Model 3
Panel B: Pre- to post-turnover period cash holdings			
$\beta_-^F - \beta_-^V$	−0.0055	0.0087	0.0033
	(0.448)	(0.172)	(0.663)
$\beta_+^F - \beta_+^V$	0.0346	0.0266	0.0221
	(0.000)	(0.000)	(0.008)
$(\beta_+^F - \beta_+^V)$	0.0401	0.0179	0.0188
$(\beta_-^F - \beta_-^V)$	(0.000)	(0.035)	(0.092)
Year controls	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes
Determinants of cash controls	No	Yes	Yes
CEO and governance controls	No	No	Yes
Firm-year observations	3,530	3,505	2,402
Adj. R^2	0.0330	0.5063	0.5263

Note: This table provides event time regression results on the change in cash holdings around forced and voluntary turnovers. Panel A uses the following specification: $Y_{it} = \alpha + \sum_{\eta=-N}^{+N} \beta_\eta^F F_{i\eta} + \sum_{\eta=-N}^{+N} \beta_\eta^V V_{i\eta} + \beta' X_{it} + \varepsilon_{it}$. The dependent variable, Y_{it}, is cash to assets. The notation η represents the year relative to the CEO turnover and spans from $-N$ to $+N$, where $-N$ begins three years prior to the turnover and $+N$ ends three years after the turnover. $F_{i\eta}$ and $V_{i\eta}$ are indicator variables set equal to 1 for forced ($F_{i\eta}$) and voluntary ($V_{i\eta}$) turnover firms i in year η. The coefficients on these variables represent the annual specific cash holdings for firms where the CEO is forced out or departs voluntarily. Panel B aggregates the annual cash holdings into predecessor ($\beta_-^F - \beta_-^V$) and successor ($\beta_+^F - \beta_+^V$) periods using the following equation: $Y_{it} = \beta_-^F F_- + \beta_+^F F_+ + \beta_-^V V_- + \beta_+^V V_+ + \beta' X_{it} + \varepsilon_{it}$. Additional control variables (X_{it}) for both models include firm and year fixed effects (Models 1–3), previously identified determinants of cash (Models 2 and 3), and CEO and governance characteristics (Model 3). Determinants of cash, CEO characteristics, and governance characteristics are shown in Table 3. Panel B excludes the year of the turnover ($t = 0$) since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. p-values from Wald statistics using standard errors clustered at the firm level are provided in parentheses. Annual estimates of the coefficient differences from Panel A are graphically represented in Fig. 1.

turnovers when compared to voluntary turnover successor cash holdings. Overall, these results indicate CEOs who were forced out held less cash than the CEOs who left their jobs voluntarily. Consistent with the precautionary hypothesis, successors in forced turnovers increase cash significantly following the turnover, relative to successors in voluntary turnovers.

Model 2 of Table 5 adds controls for the usual determinants of cash used in Table 4, while Model 3 also adds controls for the corporate governance variables. Once these other determinants of cash are controlled for, the

differences in cash holdings prior to the turnover are no longer significant. Cash holdings are still significantly higher following forced turnovers relative to voluntary turnovers, however.

Figure 1 represents the results from Panel A of Table 5 graphically. The percentage difference in cash holdings between CEOs in forced turnovers relative to voluntary turnovers is slightly negative in the years leading up to the turnover event. The difference becomes positive in the second year after the turnover and continues to increase in the third year of tenure.

Panel B of Table 5 aggregates the annual cash holdings into predecessor $(\beta_-^F - \beta_-^V)$ and successor $(\beta_+^F - \beta_+^V)$ periods using the following equation:

$$Y_{it} = \beta_-^F F_- + \beta_+^F F_+ + \beta_-^V V_- + \beta_+^V V_+ + \beta' X_{it} + \varepsilon_{it}. \tag{2}$$

Similar to Models 2 and 3 of Panel A, aggregate differences in cash holdings for predecessors who are forced from their post are statistically no different than for predecessors who eventually leave voluntarily. However, aggregate successor periods again show higher cash holdings for forced turnover successors. The difference-in-differences test, $(\beta_+^F - \beta_+^V) - (\beta_-^F - \beta_-^V)$, also shows that forced turnover successors hold more cash than voluntary turnover successors.
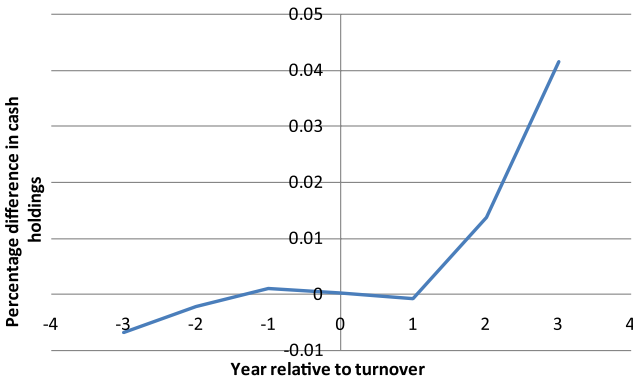
4.2. *Determinants of cash savings*

We next turn to an examination of the sources of the observed higher cash holdings following forced turnovers. If we find that cash holdings arise from lower leverage (reduced dividends, higher equity issuance or lower share repurchases), lower investment or from divesting profitable businesses, we will infer that the changes reflect risk aversion. We start by examining the proceeds from the sale of common and preferred stock less the repurchase of common and preferred and cash dividends (Net Issue), the issuance of long-term debt minus long-term debt reduction (Net Debt), and the sum of proceeds from the sale of property, plant, and equipment net of capital expenditures (Net Sale PP&E). If cash holdings have increased at the expense of future investment, then agency problems may drive the results observed thus far.

In addition, we also examine changes in cash flows and the various components of net working capital since they can also provide sources of cash holdings.[10] Firms can tie up significant amounts of cash in inventory,

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[10] In unreported analysis, we examine the sale of investments (siv) and other sources of funds (fsrco) and find that they are unrelated to changes in cash holdings over predecessor and successor tenures. However, our main results are robust when including these factors.
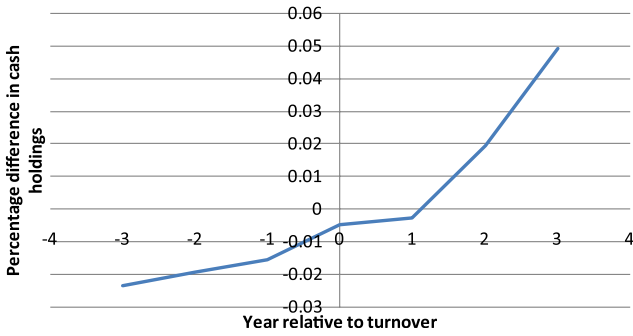
Panel A: Controlling for firm and year effects

Panel B: Controlling for determinants of cash, firm and year effects
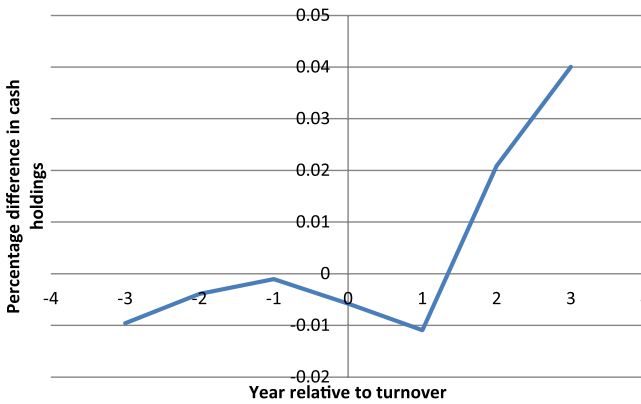
Panel C: Controlling for determinants of cash, governance, firm and year fixed effects

Fig. 1.   Difference between forced and voluntary cash holdings relative to turnover year.

Note: This figure provides the percentage difference in cash holdings between CEOs surrounding forced turnovers relative to voluntary turnovers. Specifically, the plotted annual coefficient differences represent estimates of the difference between cash holdings of predecessors (successors) surrounding forced turnovers compared to cash holdings of predecessors (successors) surrounding voluntary turnovers. Annual estimates of the coefficient differences are reported in Panel A of Table 5.

increasing current assets. If higher cash holdings arise from reduced inventories, the overall impact may be of greater efficiency rather than agency problems related to risk aversion. Likewise, high receivables levels may reduce cash holdings and changes in receivables after a forced turnover may also be related to efficiency gains.

Univariate statistics for the determinants of cash savings are provided in Table 6. Panel A shows that mean and median Net Debt issuance fall significantly following forced turnovers, which is in line with the idea that the ability (or willingness) to borrow additional long-term funds may be impaired for some firms following forced turnovers. The net sale of PP&E increases, providing a source of cash for CEOs following forced turnovers, while cash flows decrease from the predecessor to successor tenure periods. Examining the components of net working capital, we find that successors following forced turnovers decrease current assets as a whole. These reductions come from a significant decrease in both mean and median levels of receivables and inventory. Alternatively, median levels of short-term debt fall following forced turnovers.

Panel B shows that net issues and cash flow both decrease during successor tenure following voluntary turnover. In addition, current assets, receivables, inventory, and payables fall. Overall, our univariate results suggest that sources of cash savings can be seen in firms following both forced and voluntary turnover. We turn to multivariate analysis to disentangle the relation between CEO type and supply of cash holdings.

We measure cash savings using a model similar to McLean (2011), who examines how the propensity to save share issuance proceeds as cash has evolved over time.

$$\Delta\text{Cash}_i = \alpha + \beta_1\text{NetIssue}_i + \beta_2\text{NetDebt}_i + \beta_3\text{NetSalePP\&E}_i \\ + \beta_4\text{CashFlow} + \beta_5\text{Ln(Assets)}_i + \varepsilon_i, \qquad (3)$$

where ΔCash_i is the change in cash from $t-1$ to t; NetIssue_i is proceeds from the sale of common and preferred stock minus the purchase of common and preferred less cash dividends; NetDebt_i is proceeds from long-term debt issuance minus long-term debt reductions; $\text{NetSalePP\&E}_i$ is the sale of property, plant, and equipment less CAPEX; CashFlow_i is net income plus depreciation and amortization; and Ln(Assets)_i is the book value of assets. All variables except assets are scaled by the lagged book value of assets. The coefficients from Eq. (3) can be interpreted as cents saved per dollar of cash proceeds. We estimate a similar equation to determine the sources of the cash increase observed following forced turnovers. However, we also include the

Table 6.   Examining sources of cash.

	Predecessor Tenure			Successor Tenure			Tests for Differences	
	N	Mean	Median	N	Mean	Median	Pr> $|t|$	Pr> $|Z|$
Panel A: Forced turnovers								
Net issue	107	−0.0148	−0.0103	105	−0.0161	−0.0100	0.8692	0.6607
Net debt	107	0.0258	0.0147	105	−0.0039	−0.0062	0.0000	0.0000
Net sale PP&E	107	−0.0781	−0.0646	105	−0.0514	−0.0394	0.0000	0.0000
Cash flow	107	0.1075	0.0958	105	0.0721	0.0783	0.0012	0.0044
CA/assets	107	0.4223	0.4141	105	0.3389	0.3241	0.0002	0.0025
AR/assets	106	0.2056	0.1958	105	0.1601	0.1525	0.0025	0.0045
Inventory/assets	106	0.1652	0.1163	105	0.1271	0.0919	0.0515	0.0427
Other CA/assets	107	0.0483	0.0419	105	0.0497	0.0467	0.7421	0.6097
CL/assets	107	0.3145	0.3082	105	0.3033	0.2936	0.5247	0.7034
ST-debt/assets	107	0.0537	0.0456	105	0.0436	0.0234	0.1635	0.0517
AP/assets	107	0.1102	0.0810	105	0.1043	0.0782	0.6419	0.6526
Other CL/assets	107	0.1346	0.1189	105	0.1376	0.1180	0.7477	0.7403
Panel B: Voluntary turnovers								
Net issue	434	−0.0254	−0.0225	428	−0.0323	−0.0249	0.0685	0.1700
Net debt	434	0.0172	0.0076	428	0.0170	0.0077	0.9537	0.9597
Net sale PP&E	434	−0.0790	−0.0655	428	−0.0631	−0.0505	0.0000	0.0000
Cash flow	434	0.1227	0.1175	428	0.1078	0.1044	0.0031	0.0023
CA/assets	434	0.3938	0.3878	428	0.3416	0.3313	0.0000	0.0000
AR/assets	433	0.1852	0.1708	427	0.1607	0.1470	0.0010	0.0022
Inventory/assets	432	0.1616	0.1346	427	0.1368	0.1102	0.0066	0.0097
Other CA/assets	434	0.0434	0.0367	428	0.0423	0.0346	0.5865	0.7371
CL/assets	434	0.2920	0.2731	428	0.2755	0.2648	0.0435	0.1221
ST-debt/assets	434	0.0425	0.0281	428	0.0402	0.0261	0.4624	0.3850
AP/assets	434	0.1033	0.0845	428	0.0941	0.0786	0.0613	0.0299
Other CL/assets	434	0.1260	0.1126	428	0.1244	0.1138	0.7424	0.9519

Note: This table provides summary statistics for predecessor and successor period sources of cash holdings. All firm-specific and executive-specific variables are first averaged across executive years and variable definitions are provided in the Appendix. All variables are winsorized at the 1% and 99% levels and the year of the turnover ($t = 0$) is excluded from the sample since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. Components of current assets exclude cash. p-values are provided for tests of the restriction that means (medians) for the predecessor and successor periods are drawn from different distributions, based on an analysis of variance (Wilcoxon rank-sum test).

change in net working capital (excluding cash) as a potential source of cash. In addition, we include a dummy for forced turnover successors and interactions between this dummy and the sources of cash.

The results of the sources of cash regressions are in Table 7. Models 1 and 2 examine the determinants of cash irrespective of the controlling CEO. The change in cash is significantly positively related to proceeds from net equity

Table 7.   Regressions on sources of cash.

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Constant	0.003	0.005	0.004	0.003	0.004	0.004	0.004	0.004
	(0.746)	(0.583)	(0.662)	(0.786)	(0.651)	(0.647)	(0.679)	(0.685)
Net issue	0.403	0.467	0.467	0.464	0.471	0.468	0.468	0.463
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net debt	0.112	0.139	0.140	0.142	0.140	0.135	0.140	0.142
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net sale PP&E	0.201	0.241	0.239	0.234	0.238	0.239	0.232	0.236
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash flow	0.262	0.313	0.316	0.315	0.313	0.317	0.317	0.307
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(assets)	0.000	−0.000	−0.000	−0.000	−0.000	−0.000	−0.000	−0.000
	(0.882)	(0.716)	(0.696)	(0.828)	(0.716)	(0.680)	(0.663)	(0.750)
Change in NWC	—	−0.254	−0.253	−0.225	−0.252	−0.253	−0.253	−0.252
	—	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Forced turnover	—	—	0.007	0.009	0.005	0.008	0.013	0.004
successor	—	—	(0.048)	(0.034)	(0.167)	(0.028)	(0.097)	(0.372)
For_succ*Chg_nwc	—	—	—	−0.231	—	—	—	—
	—	—	—	(0.004)	—	—	—	—

Table 7. (*Continued*)

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
For_succ*Net_issue	—	—	—	—	−0.094	—	—	—
					(0.204)			
For_succ*Net_debt	—	—	—	—	—	0.086	—	—
						(0.024)		
For_succ*Net_PP&E	—	—	—	—	—	—	0.112	—
							(0.229)	
For_succ*Cash_flow	—	—	—	—	—	—	—	0.028
								(0.563)
Observations	3,729	3,729	3,729	3,729	3,729	3,729	3,729	3,729
Adj. R^2	0.216	0.288	0.290	0.292	0.290	0.291	0.290	0.290

Note: This table provides Fama–MacBeth regression results for changes in cash holdings on sources of cash. The dependent variable is the percentage change in cash holdings, measured by $(\text{cash}_t - \text{cash}_{t-1})/(\text{assets}_{t-1})$. For_succ*Chg_nwc, For_succ*Net_issue, For_succ*Net_debt, For_succ*Net_PP&E, and For_succ*Cashflow are interactions between Forced Turnover Successor and Change in NWC, Net Issue, Net Debt, and Sale of PP&E, and Cash Flow, respectively. Definitions of all other independent variables are provided in the Appendix. The year of the turnover ($t = 0$) is excluded from the sample since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. All variables are winsorized at the 1% and 99% levels.

and issuance, net sale of PP&E, and cash flow. It is significantly negatively related to the change in net working capital. Model 3 incorporates our forced turnover successor indicator, which is positive and significant, indicating that the change in cash is greater following forced turnovers. The interactions between this dummy and net working capital is negative and significant, shown in Model 4. This finding, combined with the results in Table 2 that net working capital decreases significantly (from 8.6% to 3.4% of assets) following forced turnovers, indicates that successors in forced turnovers are more likely to reduce net working capital and save the proceeds as cash than their voluntary turnover counterparts. The interaction between forced turnover successors and proceeds from net long-term debt issuance is positive and significant. Although successors following forced turnovers are decreasing long-term debt levels on average (shown in Table 7), the positive coefficient on this interaction indicates that successors who chose to issue debt tend to keep more of the proceeds as cash.

In Table 8, we again examine sources of cash regressions, but further break down changes in net working capital into changes in the different components of net working capital, where Panel A includes components of current assets (less cash) and Panel B examines components of current liabilities. Investigating net working capital in this manner enables us to determine the specific sources of cash used by successors following forced turnovers. The components examined include: accounts receivable, inventory, other current assets, accounts payable, short-term debt, and other current liabilities.

Panel A reports negative and significant interactions between forced turnover successors and changes in inventory. Recall from Table 6 that inventory (16.52–12.71% of assets) significantly decreases in the post-turnover successor period. These results indicate that successors in forced turnovers are more likely to reduce net working capital and save the proceeds as cash than their voluntary turnover counterparts.

Results from Panel B show, similar to our findings on long-term debt issuances, the interaction on the change in short-term debt and forced successors is positive and significant, where Table 6 shows that short-term debt falls in the successor tenure period following forced turnovers. We interpret these results as further support for the idea that successors who chose to increase short-term financing following forced turnovers tend to keep more of the proceeds as cash. Taken as a whole, the results from Tables 6–8 indicate that the increase in cash holdings for forced turnover successors is obtained from cash savings from changes in net working capital.

Table 8. Regressions on the sources of cash as measured by the components of NWC.

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Panel A: Current assets (excluding cash)						
Constant	0.001	−0.000	−0.010	−0.011	−0.012	−0.010
	(0.880)	(0.996)	(0.401)	(0.340)	(0.325)	(0.428)
Net issue	0.456	0.456	0.470	0.470	0.469	0.470
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net debt	0.162	0.160	0.171	0.168	0.170	0.171
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net sale PP&E	0.204	0.202	0.206	0.205	0.203	0.208
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Cash flow	0.317	0.316	0.350	0.350	0.349	0.350
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Assets)	0.000	0.000	0.001	0.001	0.001	0.001
	(0.984)	(0.854)	(0.322)	(0.269)	(0.256)	(0.345)
Forced turnover successor	0.006	0.008	0.005	0.006	0.007	0.005
	(0.076)	(0.037)	(0.124)	(0.119)	(0.066)	(0.121)
Change in CA	−0.153	−0.141	—	—	—	—
	(0.008)	(0.010)	—	—	—	—
Forced_succ*Chg_CA	—	−0.086	—	—	—	—
	—	(0.170)	—	—	—	—
Change in AR	—	—	−0.149	−0.130	−0.144	−0.143
	—	—	(0.041)	(0.057)	(0.050)	(0.044)
Change in inventory	—	—	−0.316	−0.310	−0.286	−0.321
	—	—	(0.000)	(0.000)	(0.000)	(0.000)
Change in other CA	—	—	0.149	0.147	0.140	0.136
	—	—	(0.336)	(0.345)	(0.372)	(0.379)
Forced_succ*Chg_AR	—	—	—	−0.212	—	—
	—	—	—	(0.134)	—	—
For_succ*Chg_Inv	—	—	—	—	−0.237	—
	—	—	—	—	(0.088)	—

Table 8.   (Continued)

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
For_succ*Chg_Othr_CA	—	—	—	—	—	0.104
	—	—	—	—	—	(0.591)
Observations	3,729	3,729	3,687	3,687	3,687	3,687
Adj. R^2	0.242	0.242	0.246	0.248	0.246	0.246
Panel B: Current liabilities						
Constant	0.002	0.002	−0.001	−0.001	−0.001	−0.002
	(0.844)	(0.791)	(0.903)	(0.940)	(0.945)	(0.854)
Net issue	0.397	0.398	0.404	0.406	0.402	0.402
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net debt	0.108	0.109	0.117	0.119	0.117	0.119
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Net sale PP&E	0.220	0.214	0.203	0.201	0.206	0.208
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Cash flow	0.262	0.261	0.275	0.275	0.277	0.269
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Assets)	0.000	0.000	0.000	0.000	0.000	0.000
	(0.883)	(0.950)	(0.733)	(0.756)	(0.811)	(0.599)
Forced turnover successor	0.008	0.008	0.008	0.008	0.010	0.007
	(0.038)	(0.053)	(0.033)	(0.062)	(0.022)	(0.059)
Change in CL	0.074	0.067	—	—	—	—
	(0.017)	(0.026)	—	—	—	—
Forced_succ*Chg_CL	—	0.062	—	—	—	—
	—	(0.306)	—	—	—	—
Change in AP	—	—	−0.156	−0.214	−0.155	−0.160
	—	—	(0.139)	(0.052)	(0.137)	(0.103)

Table 8.   (*Continued*)

Independent Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Change in ST debt	—	—	0.001	0.002	−0.017	0.000
			(0.972)	(0.949)	(0.516)	(0.997)
Change in other CL	—	—	0.201	0.217	0.205	0.184
			(0.001)	(0.001)	(0.001)	(0.011)
Forced_succ*Chg_AP	—	—	—	0.070	—	—
				(0.650)		
Forced_succ*Chg_St_debt	—	—	—	—	0.160	—
					(0.077)	
Forced_succ*ChgO_thr_CL	—	—	—	—	—	−0.102
						(0.510)
Observations	3,729	3,729	3,729	3,729	3,729	3,729
Adj. R^2	0.225	0.226	0.239	0.240	0.242	0.240

Note: This table provides Fama–MacBeth regression results for changes in cash holdings on components of Net Working Capital. The dependent variable is the percentage change in cash holdings, measured by $(cash_t - cash_{t-1})/(assets_{t-1})$. Panel A provides estimates on components of current assets (excluding cash). Forced_succ*Chg_CA, Forced_succ*Chg_AR, Forced_succ*Chg_Inv, and Forced_succ*Chg_Othr_CA are interactions between Forced Turnover Successor and Change in CA, Change in AR, Change in Inventory, and Change in CA(Other), respectively. Panel B provides estimates on components of current liabilities. Forced_succ*Chg_CL, Forced_succ*Chg_AP, Forced_succ*Chg_Stdebt, and Forced_succ*Chg_Othr_CL are interactions between Forced Turnover Successor and Change in CL, Change in AP, Change in ST Debt, and Change in CL(Other), respectively. Definitions of all other independent variables are provided in the Appendix. The year of the turnover ($t = 0$) is excluded from the sample since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented at this time. All variables are winsorized at the 1% and 99% levels.

4.3. *Measuring the value of cash*

If the excess cash holdings observed following forced turnovers are value-decreasing, then we would expect a negative marginal value of cash holdings for these firms. Alternatively, if the excess cash holdings are appropriate given CEO risk preference and experience, then we expect that the marginal value of excess holdings will be unrelated to our proxies for successor risk preference and inexperience. A number of recent papers correlate agency costs of cash with the value of corporate cash holdings.[11] The baseline Faulkender and Wang (2006) model is:

$$r_{i,t} - R_{i,t}^B = \gamma_0 + \gamma_1 \frac{\Delta C_{i,t}}{M_{i,t-1}} + \gamma_2 \frac{\Delta E_{i,t}}{M_{i,t-1}} + \gamma_3 \frac{\Delta NA_{i,t}}{M_{i,t-1}} + \gamma_4 \frac{\Delta RD_{i,t}}{M_{i,t-1}} + \gamma_5 \frac{\Delta I_{i,t}}{M_{i,t-1}}$$

$$+ \gamma_6 \frac{\Delta D_{i,t}}{M_{i,t-1}} + \gamma_7 \frac{\Delta C_{i,t-1}}{M_{i,t-1}} + \gamma_8 L_{i,t} + \gamma_9 \frac{\Delta NF_{i,t}}{M_{i,t-1}} + \varepsilon_{i,t}, \tag{4}$$

where $r_{i,t} - R_{i,t}^B$ is the excess stock return for firm i during fiscal year t. The term ΔX indicates changes in the variable X. The X variables include cash holdings (C), earnings (E), net assets (NA), R&D (RD), interest expense (I), dividend payment (D), financial leverage (L), and net financing (NF). Since both the dependent and the independent variables are standardized by lagged market value, the coefficient γ_1 measures the marginal value of one additional dollar cash holdings. In order to test our predictions, we also include our forced turnover successor and outside industry successor indicators. Regression results are provided in Table 9.

Model 1 of Table 9 reports the baseline Faulkender and Wang (2006) model results, while Model 2 incorporates the forced turnover identifier and interacts the change in cash with the forced turnover identifier (Forced_succ$^*\Delta$Cash$_t$). The coefficient on the interaction is insignificant, indicating that the marginal value of cash is unchanged for successors following forced turnovers. Given that forced turnover successors are increasing cash holdings, these results indicate that they are not being penalized for doing so. We find similar results when examining inexperienced successors, as proxied by our outside industry identifier, following forced turnovers. Specifically, Model 3 incorporates outside industry successor related variables and the interaction between the change in cash holdings and forced turnover outside industry appointments (Forced_outind$^*\Delta$Cash$_t$). The statistically

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[11]See Pinkowitz and Williamson (2007), Faulkender and Wang (2006), and Dittmar and Mahrt-Smith (2007), for example.

Table 9.   The effect of turnover and successor characteristics on the value of cash holdings.

Independent Variable	Model 1	Model 2	Model 3
Intercept	0.041	0.040	0.045
	(0.000)	(0.000)	(0.000)
ΔCash_t	0.836	0.820	0.783
	(0.000)	(0.000)	(0.000)
$\Delta\text{Earnings}_t$	0.354	0.353	0.350
	(0.000)	(0.000)	(0.000)
$\Delta\text{Net assets}_t$	0.125	0.126	0.124
	(0.000)	(0.000)	(0.000)
$\Delta\text{R\&D}_t$	0.389	0.408	0.405
	(0.610)	(0.589)	(0.580)
$\Delta\text{Interest expense}_t$	-1.085	-1.077	-1.013
	(0.124)	(0.125)	(0.149)
$\Delta\text{Dividends}_t$	-1.606	-1.575	-1.630
	(0.104)	(0.109)	(0.096)
Cash_{t-1}	0.242	0.234	0.231
	(0.000)	(0.000)	(0.000)
Leverage_t	-0.311	-0.312	-0.319
	(0.000)	(0.000)	(0.000)
Net financing_t	-0.171	-0.169	-0.167
	(0.006)	(0.007)	(0.007)
$\text{Cash}_{t-1}*\Delta\text{Cash}_t$	-0.498	-0.513	-0.516
	(0.204)	(0.186)	(0.174)
$\text{Leverage}_t*\Delta\text{Cash}_t$	-0.562	-0.551	-0.485
	(0.171)	(0.178)	(0.237)
Forced turnover successor	—	0.023	0.040
	—	(0.385)	(0.125)
Forced_succ*ΔCash_t	—	0.062	—
	—	(0.769)	—
Outside industry successor	—	—	-0.055
	—	—	(0.038)
Forced turnover outside	—	—	-0.057
Industry successor	—	—	(0.414)
Forced_outind*ΔCash_t	—	—	0.622
	—	—	(0.144)
Number of observations	3,387	3,387	3,387
Adj. R^2	0.2355	0.2363	0.2347

Note: This table provides OLS regression estimates measuring the value of cash. The dependent variable is the excess stock return of the firm, defined as the annual fiscal year stock return minus the matched Fama-French 5×5 portfolio return. The delta (Δ) refers to the change in the variable of interest over the period $t-1$–t. Forced turnover successor and outside industry successor is defined in Table 3. Definitions of all other independent variables are provided in the Appendix. The year of the turnover ($t = 0$) is excluded from the sample since it represents a transition period for executives and it is unclear whether predecessor or successor policy is implemented during this time. Definitions of all independent variables are provided in the Appendix. p-values based on standard errors clustered at the firm level are provided in parentheses. All variables are winsorized at the 1% and 99% levels.

insignificant coefficient on the interaction term provides further evidence that the marginal value of their cash holdings is not discounted.

5. Robustness

5.1. *Addressing the endogeneity concern*

Changes in top management are often endogenously determined, so the board may simultaneously implement changes in both firm policy and top leadership. For this reason, it is difficult to conclude that the observed increase in cash holdings following forced departures can be attributed to CEO preferences as opposed to board decisions. We address this concern by using an instrument for forced turnovers. Such an instrument must affect the probability of a forced departure, but also must have no influence on cash holdings except for its effect on turnover. The difficulty of finding such an instrument arises from the fact that the observable firm-level variables that influence forced departure will most likely also have a direct influence on the level of firm cash holdings. For this reason, in the spirit of Peters and Wagner (2014), we utilize an industry level instrument for forced turnover.[12] Specifically, we examine the lagged average industry long-term credit ratings using the Fama and French 48 industry portfolios to determine industry classification. Higher levels of industry uncertainty risk (as proxied by the long-term credit ratings) should be positively related to the likelihood of forced departure (Kaplan and Minton, 2012; Eisfeldt and Kuhnen, 2013; Jenter and Kanaan, 2015). We obtain credit ratings from Compustat and similar to Peters and Wagner, convert the ratings to integers values, scaling them by a factor of 1/9.

In untabulated analysis, we replicate our main regression (Model 2 of Table 3) using a two-stage least squares method. Results from the first stage regression yield a positive and significant coefficient on the industry long-term credit rating measure, indicating that higher industry level credit risk is associated with a higher likelihood of forced departure. The F-statistic on the excluded instrument is 34.37, which is above the cutoff point of 10 suggested by Stock *et al.* (2002), indicating that the instrument is strong. Second stage regression results yield a positive and significant coefficient on the forced turnover instrument, which is consistent with our OLS results.

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[12] Peters and Wagner (2014) also use industry level stock return volatility and semi-volatility as instruments for forced turnover when examining the relation between turnover and CEO compensation. We do not use these instruments due to their high correlation with cash flow volatility, which is positively related to cash holdings according to the precautionary motive for holding cash (e.g., see Han and Qiu, 2007).

5.2. *Examining additional sources of cash holdings*

Weisbach (1995) finds that there is an increased probability of divesting poorly performing acquisitions following top management changes. An indirect result of such activity would be a temporary increase in cash for the divesting firm.[13] In order to ensure that our results are not driven simply by an increase in asset divestures, we revisit our analysis on the sources of cash holdings from Table 7. Specifically, we include write-down (Compustat item spi) to lagged assets and an interaction between write-downs and our forced turnover successor variable in Model 3 of Table 7. In unreported results, we find write-downs are significantly related to the change in cash holdings, but the interaction between forced turnover successors and write-downs is insignificant, indicating that forced turnover successors are no more likely to write-down assets when compared to their voluntary turnover counterparts. The coefficients and significance on all other variables of interest remain unchanged.

A second, but closely related concern is that the higher levels of cash holdings for successors following forced turnovers may be related to the strategy of "big bath" accounting, where successors manage earnings downward in the first year of their appointment in order to help increase earnings in following years (e.g., see Murphy and Zimmerman, 1993; Pourciau, 1993). Such a strategy will largely influence the levels of non-cash discretionary accruals, but may also affect cash holdings through activities such as the sale of assets. As mentioned above, write-downs do not drive the level of cash holdings for forced turnover successors. However, in order to examine "big bath" accounting more closely, we again revisit Table 7 and incorporate extraordinary items and discontinued operations related to changes in cash (Compustat item *xidoc*) divided by lagged assets and an interaction between this variable and our forced turnover successor variable. The coefficients on both variables are insignificant and all other results remain unchanged, providing further support that the increase in cash holdings following forced turnovers is not driven by these activities.

Previous literature finds that the similarity of firms within the same industry and complexity of firm operations are related to both turnover and succession decisions (Parrino, 1997; Naveen, 2006; Intintoli, 2013). Therefore, we examine Parrino's industry homogeneity measure and the sales based

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[13]Weisbach (1995) notes that the divesture of poorly performing acquisitions is just as likely for retirements as for resignations, indicating that divestures should not upwardly bias the level of cash holdings for the sample of forced departures.

segment Herfindahl index used in Naveen (2006) to test whether our Table 3 regression results are robust to the inclusion of such controls. In untabulated results, we find that neither measure is significantly related to the level of cash holdings, but the inclusion of these variables does not materially change our main results.

6. Conclusion

How do executives influence their firms' cash holdings? A large number of researchers, such as Jensen (1986), argue that risk aversion motivates managers to keep excessive buffers. In contrast, more recent research argues that new CEOs are more likely to make costly operational mistakes, especially when they are outsiders who take over after forced departures, and the firm benefits from a larger buffer that protects it from financial distress.

We shed light on this subject by examining changes in cash holdings around CEO turnover. We find that cash holdings increase significantly following turnover, especially in cases of forced departures. The increase in cash holdings persists several years into the tenure of the successor and is robust to controls for the standard determinants of cash holdings as well as governance characteristics.

When we examine the determinants of cash holdings for successors following forced turnovers, we find that cash savings come mainly from changes in net working capital (decreases in inventory and accounts receivable). These results suggest that the increase in cash holdings following forced departures is the result of significant efficiencies in net working capital as opposed to a reduction in investment in fixed assets. Lastly, we estimate the value of cash holdings (Faulkender and Wang, 2006) for firms subject to CEO turnover. Regression results suggest that the marginal value of cash does not change following forced departures. Given that the marginal value of cash declines with larger cash holdings, our results suggest that the increase in cash holdings following managerial turnover is, on average, value enhancing.

Acknowledgment

Appendix

Table A.1.   Variable definitions.

Variable Name	Definition
Cash/assets	Cash (che)/assets (at)
Firm size	Inflation-adjusted book assets (at)
Leverage	[Long-term debt (dltt) + short-term debt (dlc)]/assets (at)
Market-to-book	[Book assets (at) − book equity (ceq) + market equity (prcc_c*csho)]/book assets (at)
Cash flow/assets	[OIBD (oibdp) − interest (xint) − income taxes (txt) − dividends (dvc)]/assets (at)
Net working capital/assets	[Working capital (wcap) − cash (che)]/assets (at)
Cash flow volatility	The mean standard deviation of cash flow/assets over the previous five years
R&D/sales	R&D (xrd)/sales (sale)
CAPEX/assets	Capital expenditures (capx)/assets (at)
Acquisitions/assets	Acquisitions (aqc)/assets (at)
Writeoffs/assets	Special items (spi)/assets (at) or zero when missing or positive
Dividends	Dummy variable set equal to 1 if dividends (dvc) > 0
Board size	Lagged board size
Board independence	Lagged ratio of outside directors to total directors
CEO duality	Dummy variable set equal to 1 if CEO also holds the post of Chairman
Founding family CEO	Dummy variable set equal to 1 if CEO is a founder, co-founder, or relative of the firm founder(s)
Blockholder ownership	Lagged percentage ownership of holders that own at least 5% of the firm
ΔCash_t	[Cash (che) − lagged cash]/[lagged market value of equity (cshpri*prcc_f)]
$\Delta \text{Earnings}_t$	[Earnings (ib + xint + txdi + itci) − lagged earnings]/[lagged market value of equity]
$\Delta \text{Net assets}_t$	[Net assets (at − che) − lagged net assets]/[lagged market value of equity]
$\Delta \text{R\&D}_t$	[R&D (xrd) − lagged R&D]/[lagged market value of equity]
$\Delta \text{Interest expense}_t$	[Interest expense (xint) − lagged interest expense]/[lagged market value of equity]
$\Delta \text{Dividends}_t$	[Dividends (dvc) − lagged dividends]/[lagged market value of equity]
Cash_{t-1}	[lagged cash]/[lagged market value of equity]
Leverage_t	[(dltt + dlc)]/[(dltt + dlc + cspri * prcc_f)]
Net financing_t	[sstk − prstkc + dltis − dltr]

Table A.1.   (*Continued*)

Variable Name	Definition
Net issue	[Sale of common and preferred stock (sstk) − Purchase of common and preferred stock (prstkc) − Cash dividends (dv)]/lagged assets (lagged at)
Net debt	[Long-term debt issuance (dltis) − Long-term debt reduction (dltr)]/lagged assets
Net sale PP&E	[Sale of property, plant & equipment (sppe) − Capital expenditures (capx)]/lagged assets
Cash flow	[Net income (ni) + Depreciation and Amortization (dp)]/ lagged assets
Change in NWC	{[Working capital (wcap) − cash (che)] − [lagged working capital − lagged cash]}/lagged assets
Change in CA	{[Current assets (act) − cash (che)] − [lagged current assets − lagged cash]}/lagged assets
Change in AR	[Accounts receivable (rect) − lagged accounts receivable]/ lagged assets
Change in inventory	[Inventories (invt) − lagged inventories]/lagged assets
Change in CA (other)	[Current assets, other (aco) − lagged current assets, other]/ lagged assets
Change in CL	[Current liabilities (lct) − lagged current liabilities]/lagged assets
Change in ST debt	[Debt in current liabilities (dlc) − lagged debt in current liabilities]/lagged assets
Change in CL (other)	[Current liabilities, other (ppenc) − lagged current liabilities, other]/lagged assets

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