Corporate Risk Culture[*]

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Abstract

We examine the formation and evolution of corporate risk culture, defined as the preferences towards risk and uncertainty shared by a firm's leaders, as well as its effect on corporate policies. Commonality in risk attitudes inside the firm arises through the selection of managers and directors with similar attitudes towards risk and uncertainty. Selection also leads to persistence in corporate risk culture over time and across generations of leadership, preserving the risk preferences of the founders long after their departure from the firm. Cross-sectional differences in founders' risk attitudes contribute to persistent differences across firms in corporate policies such as R&D intensity and cash holdings. Finally, divergence in risk preferences among corporate leaders reduces corporate acquisitiveness and increases the use of formal incentives, for example, through the convexity of CEO compensation.

Key words: Corporate culture, cultural heritage, risk preference, uncertainty avoidance, corporate investment, corporate financial policies, CEO selection, directors, executives.

I Introduction

Following the recent global financial crisis, corporate culture with respect to risk has caught the attention of regulators, firms, and the media. In a recent survey of almost 500 bank executives, half of the respondents identified corporate attitudes towards risk as a leading contributor to the global financial crisis (KPMG (2009)). In a world with incomplete contracts or multiple equilibria, corporate risk culture could indeed play an important role to coordinate and regulate firms' risk-related choices and decisions (e.g., O'Reilly (1989) and Kreps (1990))). However, little is known about how attitudes towards risk and uncertainty inside firms form, evolve over time, and ultimately affect corporate decisions.

We contribute to filling this gap. We characterize a firm's risk culture as the shared preferences towards risk and uncertainty of those at the top of the firm, that is, the CEO, other top executives, and non-executive directors, due to their predominant impact (Schein (1985), van den Steen (2010)). The corporate setting allows us to observe the initial formation of corporate risk culture in the form of the risk attitudes of the founders, its transmission through generations of corporate leaders, and its effect on corporate risk-taking (Guiso, Sapienza, and Zingales (2015a)). Of course, firms do not rely exclusively on culture but also employ formal incentives, for example by compensating CEOs directly for taking risks. We therefore also examine the interplay between firms' risk culture and formal incentives.

Recent research shows that individuals' economic preferences, in particular attitudes towards risk, uncertainty, and future-orientation (or patience), are partly shaped by cultural heritage (Chen (2013), Pan, Siegel, and Wang (2014), Becker, Dohmen, Enke, and Falk (2015)). Similar to biologically predisposed behaviors, culturally transmitted preferences are determined early in life, persistent, and therefore fundamental to understanding an individual's economic decisions (Giavazzi et al. (2014)). Unlike the variation due to genetic differences, variation in cultural origins is in many cases easily observed. In this study, we exploit the diversity of culturally determined preferences towards risk and uncertainty among corporate founders, executives, and board members in over 6,000 U.S. public companies from 1996 to 2012.

Specifically, using immigration records of passengers arriving in the port of New York between

1820 and 1957, we use a person's last name to infer her cultural heritage. Based on the citizenship of arriving passengers with a given last name, we obtain a distribution of countries of origin for each last name. We then employ Hofstede's (1980, 1991, 2001) uncertainty avoidance index (UAI) to capture attitudes towards risk and uncertainty associated with an individual's cultural heritage.[1] According to Hofstede, UAI captures a country's tolerance for unfamiliar situations, or essentially the Knightian uncertainty. Outcomes of many corporate decisions are indeed exposed to this type of uncertainty, that is, risks that cannot be measured or easily insured in insurance markets (LeRoy and Singell (1987)). Using the distribution of countries of origin for each last name, we obtain a proxy for a person's attitudes towards risk and uncertainty in the form of the weighted average UAI across the associated origins.

We begin our empirical analysis by examining the existence and persistence of commonality in uncertainty avoidance of key decision makers in a firm, and we propose the common component of these preferences as a measure of corporate risk culture. According to van den Steen (2010), corporate culture originates from selection or self-sorting of employees with similar beliefs and preferences into a firm as well as from learning experiences shared by those inside the firm. Given the predetermined nature of the UAI measure, which does not vary with experience, our approach focuses on the (self-) selection channel, as any observed commonality in preferences inside a firm has to come from selection. Specifically, we examine the selection of new CEOs, executives, and outside directors based on the risk preferences of incumbents and past leaders, including the firm's founders.

Next, we study the relationship between corporate risk culture and corporate risk taking. Since most corporate investment decisions are made under uncertainty, we expect corporate leaders' UAIs to be significantly related to these decisions, particularly large-scale acquisitions and R&D investments. Similarly, firms with a more uncertainty averse culture might have lower financial leverage and hold larger amounts of cash. Furthermore, founders' UAIs, which shape the firm's initial risk culture and are preserved over time through the selection of new leaders with similar preferences to those of the incumbent leadership, could contribute to lasting differences in corporate

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[1]See Karolyi (2015) for a recent review of the use of Hofstede's measures in finance.

policies across firms.

Corporate risk culture, by design or by chance, can vary across firms, not only in the degree of uncertainty aversion, but also in the strength of the culture, that is, the degree of homogeneity in risk attitudes among a firm's leaders. If a firm's corporate risk culture is weak, due to, for example, large differences in UAI between the CEO and outside directors, the board may attempt to coordinate decisions through formal incentives instead of simply relying on corporate culture.

Our results can be summarized as follows. First, we document significant commonality in risk preferences, specifically, uncertainty avoidance, of a firm's CEO, executives, and non-executive directors. The first principal component of corporate leaders' risk preferences explains 43% of the variation across these leaders, compared to about 33% if corporate leaders were selected randomly. This commonality is highly persistent across generations of leadership. In particular, using a subset of firms with information on their founders, we find that the founders' risk preferences, or the firm's initial risk culture, predicts the firm's risk culture even decades later and after the founders' departure from the firm.

Second, persistent commonality in attitudes towards risk and uncertainty arises through the selection of corporate leaders. Specifically, about 19% of the variation in incoming CEOs' UAIs can be explained by the pre-turnover corporate risk culture, in particular by the UAI of outside directors and top executives before the CEO turnover. The matching on risk preferences is not driven by boards or top executives selecting incoming CEOs with the same ethnicities as theirs or by promoting people from the current management team. Furthermore, differences in UAI within firms' leadership teams decrease over CEOs' time in office, consistent with CEOs' promoting subordinates and appointing directors with risk preferences similar to their own.

Third, firms with a more uncertainty averse culture indeed invest less in R&D, make fewer acquisitions, hold more cash, and have lower financial leverage than firms with a less uncertainty averse culture. For persistent corporate policies, such as R&D intensity and cash holdings, corporate risk culture affects them because it is correlated with the firm's initial risk culture determined by the founders' risk preferences and preserved through the selection of subsequent generations of corporate leaders. That is, differences in the firms' founders' UAIs, which are pre-determined

relative to corporate policies and firm characteristics, can lead to persistent differences in corporate policies across firms.

Finally, we find that firms with more divergent risk attitudes among leaders tend to make fewer acquisitions, as broad agreement among leaders might be harder to reach. CEO compensation also exhibits higher vega and thus is more risk inducing, when the CEO has a lower tolerance for uncertainty relative to the outside directors. CEOs whose UAIs differ more from those of the board or executive team also tend to have a shorter tenure. Therefore, firms appear to make more use of retention (termination) and compensation incentives to align risk attitudes when corporate risk culture is weaker.

Inferring an individual's country of origin by her last name allows us to approximate the UAI of a large panel of U.S. corporate leaders, which is essential for our characterization of corporate risk culture as shared risk attitudes among corporate leaders. The drawback is that a person's risk attitude is not fully captured and is measured with imprecision and noise. We assess the impact of measurement error in our analysis and find a pattern consistent with an attenuation bias. Therefore, our estimates should be viewed as a lower bound of the true effect of corporate risk culture.

Our study contributes to a growing literature on corporate culture. While corporate culture has long played a role in micro-economic models (see Hermalin (1998) for a review of early work and van den Steen (2005, 2010) for recent contributions), empirical research has been scarce. Recently, Popadak (2014) and Guiso, Sapienza, and Zingales (2015b) use surveys or comments of rank-and-file employees to capture corporate culture in terms of integrity and customer orientation. Our analysis focuses on another important dimension, firms' attitudes towards risk and uncertainty. In particular, our empirical tests are motivated by predictions in van den Steen (2010) about the origin and evolution of corporate culture. Furthermore, our approach of approximating corporate leaders' UAIs based on ethnic background allows us to measure corporate risk culture for a large panel of firms as well as firms' initial risk cultures shaped by their founders' UAIs. The panel setting is critical for examining the formation, evolution, and persistence of a firm's risk culture as well as its effect on firm policies over multiple generations of firm leaders.

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Our paper also sheds new light on existing studies that have documented substantial persistence in corporate policies, particularly in financial policies (e.g., Lemmon, Roberts, and Zender (2008) and Dittmar and Duchin (2011)). Our results suggest that one source of such policy persistence is the lasting impact of the corporate founders' preferences. Corporate risk culture, reflecting among other things the impact of the founders' risk attitudes and the selection of firm leaders based on risk preferences, is one mechanism through which cross-sectional differences in corporate risk-taking persist.

The selection of corporate leaders and its impact on corporate outcomes has only recently gained attention in the finance literature. For example, Fee, Hadlock, and Pierce (2013) suggests that CEO "styles" reflected in corporate policies could come from boards' delibrate selection of CEOs. Eisfeldt and Kuhnen (2013) and Fee, Hadlock, Huang, and Pierce (2014) examine the selection of CEOs as a response to industry conditions. Shivdasani and Yermack (1999) and Coles, Daniel, and Naveen (2014) study the involvement of CEOs in the appointment of directors. We add to this literature by highlighting the preferences of corporate leaders as an important selection factor, which has not been explored previously. Furthermore, our results suggest that the leadership selection process contributes to the persistence of corporate culture.

The rest of this paper is organized as follows. Section II introduces the main data for our empirical analysis and provides a detailed discussion of our measures of corporate leaders' UAIs. Section III documents the existence of persistent commonality in the uncertainty avoidance of corporate leaders inside a firm, and examines the formation and evolution of corporate culture through leadership selection. Section IV examines how corporate risk culture affects corporate policies, and Section V examines the interplay between corporate risk culture and formal incentives. Section VI concludes.

II   Data

A   Risk Attitudes of Corporate Leaders

Studies of corporate culture face the challenge that preferences and beliefs shared by corporate insiders, in particular by those at the top of the firm, are hard to observe. Existing research has often relied on survey data, but those are typically available only for small cross-sections of firms with at best a short time series of data. We propose a new approach to overcome these limitations. The approach is based on the following arguments. First, attitudes towards risk and uncertainty differ across countries and national cultures (e.g., Hofstede (1980), Rieger et al. (2014), and Becker et al. (2015)). Second, differences in preferences and attitudes often persist between individuals of different origins, even though these individuals grow up in the United States (U.S.) and their families might have been in the U.S. for several generations (e.g., Fernández and Fogli (2006, 2009)) and Giavazzi et al. (2014)). Finally, historical immigration records associated with a person's last name make it possible to construct a proxy for the countries of origin associated with that person. Thus, using information on a person's likely origin together with risk preferences associated with different countries of origin, we are able to infer culturally transmitted attitudes towards risk and uncertainty for a large set of corporate leaders.[2]

Our sample consists of publicly traded firms headquartered in the U.S., for which we can identify the CEO, other non-CEO top executives, as well as the firm's directors in a given year. Specifically, we collect the first and last names of CEOs and of the four most highly paid non-CEO executives using *Standard & Poor's ExecuComp* database, which covers S&P 1500 firms starting in 1992, and *Capital IQ*, which covers a large number of firms starting in 1996. Similarly, we collect information on directors' identity from *RiskMetrics* and *Capital IQ*. For a subset of firms, we are also able to identify the names of the firms' founder(s) using data from a number of sources, including *Wikipedia* and *Funding Universe*.

For each individual in our sample of corporate leaders and founders, we estimate the likelihood

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[2]Similar to our approach, Grinblatt and Keloharju (2001) use the last name and native language of CEOs in Finland to distinguish between Swedish and Finnish CEOs, while Kerr and Lincoln (2010), Gompers et al. (2012), Du et al. (2014) and Liu (2014) use last names to infer ethnicity in U.S. settings.

that an individual's ancestors are from a given country, using the individual's last name together with passenger lists of ships arriving in New York City from foreign ports between 1820 and 1957. The passenger lists, which are available through Ancestry.com, indicate each passenger's first and last names, gender, approximate birth year, and the passenger's nationality (see Appendix A for an example). We search through all available passenger records with non-missing and non-U.S. nationalities and, for each last name in our sample, compute the frequency distribution across 121 countries of origins.[3] The largest origin for each name represents 65% of all non-missing and non-US records on average. Furthermore, 72% of the names have a dominant origin, i.e., an origin with a frequency weight of more than 50%. For example, according to the New York passenger lists, 55% of passengers with the last name Welch are of British origin, while 25% are Irish. The remaining 20% come from a variety of other countries.

We construct a proxy for an individual's attitude towards risk and uncertainty by combining this frequency distribution across countries of origin with Hofstede's (1980, 1991, 2001) country-level uncertainty avoidance index (UAI), which we rescale to take on values between 0 and 1. According to Hofstede, the uncertainty avoidance index indicates to what extent members of a national culture "feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are novel, unknown, surprising, and different from usual."[4] Hofstede initially constructed the index by statistically analyzing answers to questions asked in detailed interviews of IBM employees in 53 countries between 1978 and 1983. Since then, the index has been replicated several times with non-IBM populations and extended to additional countries (e.g., Hofstede et al. (2010), Rieger et al. (2014)). According to Hofstede et al. (2010), Denmark, Sweden, China, Ireland, and Great Britain are countries characterized by particularly low uncertainty avoidance, with UAI taking on values between 0.21 for Denmark and 0.31 for Great Britain. On the other hand, Greece, Portugal, Poland, France, and Italy are countries with relatively high uncertainty avoidance, with UAI ranging between the maximum of 1.00 in the case of Greece and 0.67 in the case of Italy.

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[3]When needed, we aggregate historical origins to their modern counterparts. For example, we group different German origins, such as Hesse, Pomerania, and Preussen under Germany. In a few cases, we further group certain, typically smaller nationalities into larger groups. For example, we group Syrian and Tunisian passengers with those who state their nationality as "Arab," "Arabic," or "Arabian." See Pan et al. (2014) for further details.

[4]See Geert Hofstede's website: `http://www.geerthofstede.nl/dimensions-of-national-cultures`

While much of finance research focuses on risk as opposed to uncertainty, outcomes of many corporate decisions are exposed to substantial uncertainty, which according to Knight (1921) represents unmeasurable or uninsurable risks. Knight (1921, p. 232) explicitly states that "*[i]t is this true uncertainty which … gives the characteristic form of 'enterprise' to economic organization as a whole and accounts for the peculiar income of the entrepreneur.*" At the same time, attitudes towards uncertainty are, not surprisingly, significantly correlated with lottery-based measures of risk aversion or subjective assessments of a person's willingness to take risks.[5] Thus, corporate leaders' attitudes towards uncertainty are an important aspect of a firm's risk culture. Throughout the paper, we use uncertainty avoidance (UAI), risk preferences, and risk attitudes interchangeably.

For each individual in our sample of corporate leaders, we form a weighted average of UAI associated with each relevant country of origin. That is, we calculate UAI for an individual with last name l as $UAI_l = \Sigma w_{lj} UAI_j$, where w_{lj} represents the passenger-record based frequency for last name l with respect to country j. We rescale the weights appropriately as we have country-level UAI values for only 91 out of the 121 possible countries of origins.

Table 1 Panel A reports summary statistics of uncertainty avoidance for CEOs (*UAI (CEO)*), other executives, directors, and founder(s). To characterize the risk attitudes of a firm's executive team (*UAI (Executives)*), we average the UAI of the four most highly paid non-CEO executives for each firm-year. To capture the corresponding preferences of a firm's board of directors (*UAI (Outside Directors)*), we average the UAI of the non-executive directors, for each firm-year. That is, we exclude inside directors, such as the CEO an other executives, to avoid double-counting the effect of these insiders in our analysis below. On average, we include five outside directors in the calculation of *UAI (Outside Directors)*. The average firm with data on its founders has 1.4 founders. We again average the UAIs across the members of the founding team and report *UAI (Founders)* as a time-invariant firm characteristic. Overall, average UAIs are very similar across

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[5]Specifically, using country-level lottery-based measures of risk aversion from Rieger et al. (2014), we find a correlation of 0.28 with the uncertainty avoidance index used here. Similarly, UAI and the country-level, survey-based measure of risk aversion from Becker et al. (2015) exhibit a correlation of 0.35. Rieger, Wang, and Hens conduct a survey of about 7,000 participants in 53 countries. The reported correlation refers to risk aversion extracted from lotteries with positive expected pay-offs. Becker et al. survey 80,000 participants in 76 countries about their self-assessed willingness to take risk. We thank Benjamin Enke for providing the correlation statistic for the Becker et al. (2015) data.

all groups, ranging between 0.448 (executives) and 0.467 (CEOs).

Our approach to measuring corporate leaders' attitudes towards risk and uncertainty has a number of strengths as well as several weaknesses that we briefly discuss here and address in more detail in our analysis below.[6] First, our characterization of corporate risk culture as the risk preferences shared by senior corporate leaders requires us to consistently measure uncertainty avoidance across a large set of individuals. The last-name-based approach allows us to approximate corporate leaders' preferences not only for a large number of firms, but also across generations of leadership within a firm, including the preferences of a firm's founder(s) even after the founder has long left the firm. The resulting large panel data set of corporate risk culture enables us to study the formation and evolution of corporate risk culture as well as its impact on the firm's long-term risk-taking policies. However, the approximation based on last names introduces measurement errors in our preference proxy. For example, in the U.S., a person's last name is typically inherited from only the father, which does not necessarily reveal the person's cultural heritage from the mother. This concern is alleviated, though, by relatively high intra-ethnic marriage rates.[7] Another source of measurement error is due to our inability to precisely determine a person's origins based on the person's last name. Instead, we use a distribution of origins, derived from many immigration records, to approximate a person's true origin.

Second, by relying on culturally transmitted aspects of a person's UAI, we capture a pre-determined and time-invariant component of an individual's preference that by design cannot be caused by experiences, life events, or choices an individual makes (except for the rare events of changing one's last name). In the corporate context, this implies that any commonality we observe among a firm's leaders is due to (self-) selection of these leaders as opposed to social influences (Ahern, Duchin, and Shumway (2014)) or shared experiences (van den Steen (2010)) inside the firm. While this means that the mechanism by which corporate risk culture arises in our context is well-identified, it also implies that we do not capture a firm's corporate risk culture in its entirety.

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[6]Prior research, which has related CEO's willingness to take risk to corporate policies, has used survey evidence, work or life experiences, revealed preferences, or gender to measure CEO's risk aversion (see, e.g., Malmendier et al. (2011), Graham et al. (2013), Cain and McKeon (2014), Dittmar and Duchin (2014), Bernile et al. (2015), Faccio et al. (2015)).

[7]While rates vary across ethnic groups, using data from the Census on spouses' ethnic origins, comparable to those used in our study, we find that the average intra-ethnic marriage rate is about 50%.

B   Outcome Variables

In our empirical analysis, we examine the selection of corporate leaders based on their preferences towards risk and uncertainty (Section III), the impact of the shared risk preferences on corporate investment and financial policies (Section IV), and the interaction between corporate culture and formal incentives such as compensation and retention (Section V). Panel B of Table 1 provides summary statistics for the related outcome variables and Appendix B contains detailed definitions of all variables.

In our selection analysis in Section III, we examine the absolute difference in UAI between the CEO and the board, |*UAI (CEO) - UAI (Outside Directors)*|, and between the CEO and the executive team, |*UAI (CEO) - UAI (Executives)*|, over the course of a CEO's tenure. Table 1 Panel B reveals that on average the CEO's UAI differs from that of the outside directors as well as the executive team by about 0.14 or about 30% relative to the average CEO UAI.

In Section IV, we study the association between the corporate leaders' UAI and corporate investment and financial policies that are related to a firm's exposure to uncertainty. In particular, on the investment side we consider corporate acquisitions and investments in research and development (R&D). Acquisitions and the subsequent integration and reorganization are unique events for a given firm and often marked by significant uncertainty. Similarly, R&D investments often require long-term commitment towards, almost by definition, unknown outcomes. The existing literature has therefore used both policies when examining firms' willingness to take risk (e.g., Coles, Daniel, and Naveen (2006), Kim and Lu (2011), Hirshleifer et al. (2012), and Graham et al. (2013)) and expose itself of uncertainty (e.g., Shane (1993) and Cozzi and Giordani (2011)). We construct an indicator variable *Acquisition* that equals one if a firm makes a completed acquisition of assets or equity interests with disclosed transaction values covered by the SDC database during a given year and zero otherwise.[8] We calculate the *R&D Rate* as R&D expenses scaled by total sales, following Hirschey and Weygandt (1985), Lev and Sougiannis (1996), and Chambers et al. (2002).

On the financial side, we consider *Cash Rate*, defined as cash holdings scaled by total book assets, and *Leverage*, defined as total book debt scaled by the sum of book debt and book equity. Debt

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[8]We exclude leveraged buyouts, exchange offers, repurchases, spinoffs, minority stake purchases, recapitalizations, self-tenders, and privatizations. We include only deals after which the acquirer owns at least 50% of the target.

payments pose significant constraints on a firm's financial flexibility, especially in case of unforeseen negative firm-specific or macro-economic shocks. In contrast, cash holdings offer financial flexibility and lower risk.

All corporate policy variables are winsorized at the 1st and 99th percentiles, except *R&D Rate*, which is highly skewed and is winsorized at the 2nd and 98th percentiles.[9] Summary statistics suggest that on average the probability of a firm making an acquisition in a year is 17.2%. The average firm exhibits an R&D rate of 46.7% (conditional on non-missing R&D data), a cash rate of 16.3%, and a leverage ratio of 33.1%.

Finally, in Section V, we analyze the interaction between corporate risk culture and formal incentives such as the length of CEO tenure in the firm and the CEO's compensation vega. We follow Coles, Daniel, and Naveen (2006) and calculate vega for a subset of firms with available *ExecuComp* data. Vega is defined as the dollar change (in millions) in a CEO's wealth associated with a one-percentage-point change in the firm's stock return volatility. Conditional on vega being non-missing and non-zero, firms on average pay CEOs $143,000 for each percentage point increase in the volatility of the firm's stock return. The average tenure length of CEOs in our sample is 6.58 years with a standard deviation of 7.07 years.

C   Additional Variables

In parts of our empirical analysis, we also control for CEO characteristics such as age, education, gender, and firm characteristics such as firm size (logarithm of net sales), market-to-book ratio, and profitability (return on assets (ROA)). Table 1 Panel C reports summary statistics for these additional variables. Appendix B provides a detailed definition of all variables used in this paper.

III   Origin and Persistence of Corporate Risk Culture

Schein (1985) defines corporate culture as the beliefs and preferences shared by an organization's members, in particular by the organization's senior leaders. Thus, the foundation of corporate risk

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[9]We apply a different winsorization to the *R&D Rate* to reduce the effect of outliers. All results hold (with larger effect sizes), when we winsorize the *R&D Rate* at the 1st and 99th percentile.

culture is the commonality in the risk preferences of a firm's senior leaders. In this section, we first document the existence of such commonality and its persistence, and propose the first principle component of corporate leaders' risk preferences as a measure of corporate risk culture. We then study the role of leadership selection based on risk preferences as well as the lasting impact of the founders' risk preferences in the formation and evolution of the firm's risk culture.

A   Commonality in Risk Attitudes among a Firm's Leaders

We define a firm's senior leadership to include the CEO, the executive team, and the non-executive directors. We measure the commonality among these corporate leaders' risk attitudes through a principal component analysis of *UAI (CEO)*, *UAI (Executives)* and *UAI (Outside Directors)*. Panel A of Table 2 reports the results for our main sample of 6,110 firms with 36,880 firm-year observations. Specifically, the first principal component, which we refer to as "*UAI (Common)*," explains 43% of the total variation across the three parties' risk preferences. That is, *UAI (Common)* explains 10 percentage points more of the variation in UAI relative to what we would observe if corporate leaders were selected randomly and hence independently of their risk attitudes (33.3%).[10]

Panel B of Table 2 further confirms that the commonality in risk preferences in our data is not due to chance. First, we randomly match CEOs, executive teams, and outside directors in the same year 100 times, and extract the first principal component of their UAIs each time. The first principal component on average explains about 33.6% of the total variation in UAIs (with a tight confidence interval ranging from 33.5 to 33.8%), suggesting that the risk attitudes of randomly matched corporate leaders are largely independent of each other.

Commonality in UAI among corporate leaders could arise if corporate leaders come from the same geographical area within the U.S., for example, due to partially segmented executive and director labor markets (see, e.g., Knyazeva, Knyazeva, and Masulis (2013) and Yonker (2015)), and are more likely to share the same ethnic background. To assess the possible impact of ethnicity clustering by geographical region, we randomly match the three leadership parties sampling only

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[10]Specifically, *UAI (Common)* is defined as the following linear combination: *UAI (Common) = 0.568 UAI (CEO) + 0.590 UAI (Outside Directors) + 0.574 UAI (Executives)*. We rescale *UAI (Common)* to have the same mean and variance as *UAI (CEO)*.

from within the firm's headquarter state in the same year. In this case, the first principal component of UAIs explains about 35.6% of the total variation, still well below the 43% observed in actual matches in firms. Similarly, we account for potential ethnicity clustering by industries by conducting random matches of corporate leaders within industry-years. The industry effect on commonality is even smaller than the geographic effect, with the first principle component explaining about 34.1% of the total variation. Finally, the last row of Panel B reveals that state and industry effects together explain only a small part of the commonality we observe in the actual data. Randomly assembling CEOs, outside directors, and executives within the firm's headquarter state and industry in the same year, leads to the first principal component explaining 36.0% of the total variation, compared to 43% found in the actual data in Panel A.

Although our approach allows us to approximate the risk preferences of a large sample of U.S. corporate leaders, it is a noisy approximation. In particular, we rely on a distribution of possible origins for a last name to infer her true origin. While 72% of corporate leaders' last names have a dominant origin, the average (median) number of different origins per last names is 23 (20). In addition to the number of origins associated with a given person, the dispersion in the different UAI values entering a person's weighted average should also capture the difficulty of accurately identifying an individual's true risk preference. The average (also median) dispersion across origins associated with a given last name is 0.14.

To gauge the impact of measurement error, we first consider a subsample of firm-years for which the number of origins associated with the CEO's last name, the average number of origins associated with outside directors, and the average number of origins associated with the executives are all in the bottom 50 percentile of their sample distributions. We compute *UAI (Common)* for this subsample with presumably smaller measurement error. Panel C of Table 2 shows that *UAI (Common)* explains 45.1% of the total variation in leadership's UAIs, only slightly higher than the 43% in the full sample.[11] We obtain an even more modest improvement of the commonality

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[11]We have verified that the higher fraction of variation explained by *UAI (Common)* in the small subsamples in Panel C of Table 2 is not driven by the sample size. We randomly draw firms to form test subsamples of same sizes as the cleaner subsamples in Panel C, and compute the fraction of variation explained by *UAI (Common)* in those test subsamples. The fraction is always very close to 43% in the test subsamples, similar to the number in the full sample.

estimate when using the standard deviation of UAI values across all possible origins associated with a given last name to create, in the same way, a subsample that is less affected by possible measurement error.

Overall, the results in Panel C suggest that measurement error in UAI imposes a modest downward bias on the estimate of commonality in risk preferences. We also note that any measurement error in corporate leaders' UAIs and *UAI (Common)* applies equally to the actual sample in Panel A and the randomly generated samples in Panel B. Thus, the differences in the estimated commonality between the two panels cannot be due to measurement errors.

B Persistence of Corporate Risk Culture

Culture in general is perceived to be slow-moving and persistent. We therefore examine the persistence of corporate risk culture, as proxied for by *UAI (Common)*.

Panel A of Table 3 suggests that *UAI (Common)* is highly persistent over time. The year-to-year correlation is 0.89. There is a gradual decay of correlation as we increase the number of lags, but the correlation with a 10-year lag is still close to 0.50.

The high auto-correlation in *UAI (Common)* may not be surprising, as a firm's leadership team does not significantly change from year to year. We therefore also report the auto-correlation in *UAI (Common)* across generations of leadership. A generation is defined by the regime of a given CEO, and we average *UAI (Common)* over the years belonging to one CEO's tenure. The results in Panel B of Table 3 suggest that the correlation in *UAI (Common)* across different generations of leadership is also high. Specifically, the correlation with the previous generation is 0.632, and the correlation with the average *UAI (Common)* four generations prior is still 0.301, all of which are highly statistically significant.[12]

Overall, though, our results suggest that despite the changes in leadership, corporate risk culture

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[12]While the unconditional link between two adjacent generations of leadership is strong, we find that in some cases, for example in the case of forced CEO turnover, the link weakens substantially, with the correlation of *UAI (Common)* between the two generations dropping to 0.282. This change in risk culture is consistent with existing evidence that forced CEO turnovers are often followed by appointments of CEOs outside the "normal" choice set as well as significant restructuring of the firm (Denis and Denis (1995), Fee et al. (2013)). Note that part of the drop in correlation is due to the increased likelihood of the new CEO being an outsider, but even comparing forced turnovers to non-forced turnovers conditional on the new CEO being an outsider, we observe a significantly smaller correlation in the case of forced turnovers.

is indeed quite persistent. We next examine the forces that give rise to the persistent commonality in risk preferences.

C   The Role of Leadership Selection

How does the commonality in risk attitudes among the firm's leaders arise? According to van den Steen (2010), corporate culture can originate from two main sources: selection or self-sorting of employees and shared learning experiences at work. Since our UAI measure for a given individual does not vary with time and cannot be affected by work experiences, any commonality in risk preferences has to come from the (self-)selection of corporate leaders with similar risk preferences into a firm. Thus, our approach is well suited to examine the importance of leadership selection for the origin and persistence of corporate risk culture. We first discuss the selection of the CEO and then the selection of the executive team and the outside directors.

C.1   Selection of CEOs

What determines an incoming CEO's UAI? Do firms select CEOs to match the UAI of the existing leadership? Do CEOs self-select into firms with characteristics matching their risk preferences? Answers to these questions can shed light on how leadership selection gives rise to correlated risk preferences within a leadership team (the basis of corporate risk culture), and how the risk preference of one generation of leadership relates to the next (the persistence of risk culture).

To answer these questions, we focus on a subset of 3,651 CEO turnovers between 1996 and 2012 with information on the composition of the board and the executive team before the turnovers. First, we relate the incoming CEO's UAI to the firm's risk culture right before CEO turnover. Column (1) of Table 4 reports a positive and significant relation between the two. The firm's existing risk culture alone explains 13% of the variation in the incoming CEO's risk preference.

One of the board's main responsibilities is to select CEOs. The departing CEO and the top executives will in many cases be consulted in the search process as well. We therefore examine the relation between the UAI of the incoming CEO and the UAIs of pre-turnover leaders: the pre-turnover outside directors, *Pre-turnover UAI (Outside Directors)*, the pre-turnover non-CEO

top executives, *Pre-turnover UAI (Executives)*, and the departing CEO, *Pre-turnover UAI (CEO)*.

The results in Column (2) of Table 4 show that both the outside directors' and the top executive team's uncertainty avoidance are important and highly significant determinants of the new CEO's UAI, while the departing CEO's UAI has an insignificant effect. Together, the risk preferences of the existing leadership explain 19% of the variation in the incoming CEO's risk preference. One explanation is that it is the firm's fundamental characteristics that attract CEOs with certain preferences and that those characteristics are also correlated with the incumbent management's preferences. To evaluate this possibility, we control for firm characteristics that capture the nature of the firm's business: firm size, profitability, growth potential, industry membership (2-digit SIC), and headquarter location. In addition, we control for the incoming CEO's characteristics such as age, education, and gender. Interestingly, Column (3) shows that in the presence of the risk preferences of the incumbent leadership team, fundamental firm characteristics do not have additional explanatory power for the new CEO's UAI. This result suggests that to understand firm-CEO matching, it is important to go beyond firm characteristics and study the preferences of people who engage in the selection process.

Another potential explanation for the above results is that directors and executives choose or attract CEOs of the same ethnicity as theirs rather than of similar uncertainty avoidance per se. Thus, the correlation in risk preferences could be driven by ethnicity-based selection. If ethnicity matching is a primary concern in the CEO selection, then the CEO's origin likely matches the most common origin among the directors or the top executives. To examine this concern, we construct an indicator variable, *Ethnicity Match (Directors)*, which equals one if the dominant origin associated with a CEO's last name, i.e., the origin with a frequency weight of more than 50%, is the same as the most common dominant origin among the pre-turnover outside directors and zero otherwise. We also construct the indicator variable *Ethnicity Match (Executives)* in a similar fashion. Table 1 Panel C shows that we observe ethnicity match between the incoming CEO and the pre-turnover board in 27% of the CEO turnovers in our sample, and between the CEO and the pre-turnover executive team in 25% of the turnovers. Given that the odds of ethnicity match if the CEO and the board were randomly matched is only about 12%, revealed by an untabulated randomization

experiment, our statistics suggest that ethnicity may indeed play a role in corporate leadership selection.

In the cases with ethnicity matching, it is hard to draw inferences on whether boards select CEOs with similar uncertainty avoidance. Therefore, we examine whether there is still a positive correlation in the UAIs of corporate leaders when ethnicity matching does not occur. In Column (4), we include an interaction between the outside directors' UAI and *Ethnicity Match (Directors)*. Under this specification, the direct effect of the directors' UAI reflects the correlation with the incoming CEO's UAI when there is no ethnicity match based on our definition. We find that the direct effect is positive and statistically significant, and the magnitude is 60% of the unconditional effect in Column (2). Not surprisingly, the matching on risk preferences becomes even stronger when the incoming CEO's ethnicity is the same as the most common origin among the directors, as evident in the positive and significant interaction effect. We find a similar pattern with the executive team: the relation between the executive team's UAI and the incoming CEO's UAI is significant and positive whether ethnicity matches or not.

We also explore an alternative proxy that captures the degree of ethnic overlap between the incoming CEO on one side and the directors and executive team on the other side. *Fraction of Match (Directors)* is the fraction of outside directors whose dominant origin is the same as the dominant origin of the CEO. It takes on values between zero and 100%. On average, the CEO's dominant origin matches the dominant origin of 22% of the outside directors. *Fraction of Match (Executives)* is constructed in a similar fashion and reveals that, on average, the CEO's origin matches the origin of 28% of the top executives. In Column (5), we include the interaction between the outside directors' UAI and *Fraction of Match (Directors)*. Now the direct effect of the UAI of the outside directors indicates its effect on the incoming CEO's UAI when *Fraction of Match (Directors)* is zero, that is, when there is no ethnicity overlap between the dominant origin of the incoming CEO and the outside directors, which happens in 40% of the turnovers in our sample. However, we still find a positive and significant relation between the CEO's UAI and the pre-turnover board's UAI, and the estimated magnitude is similar to that in Column (4). We find a similar relation between the UAI of the CEO and the executive team, between which in 45% of

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the cases there is no ethnicity overlap. Overall, our results support the selection of CEOs based on uncertainty avoidance, not just ethnicity.

Finally, the UAI match between the new CEO and the directors or executive team could arise mechanically due to the promotion of members of the executive team or the board to the CEO position. To address this concern, we distinguish between insider and outsider CEOs. Based on information from *ExecuComp* and *Boardex* available for a subset of CEOs, about 76% of CEOs are insider CEOs, who was in the executive team of the firm before their appointment as CEO. Column (6) suggests that our results are not driven by insiders being appointed as CEOs. Nevertheless, the drop in the coefficient estimate for *Pre-turnover UAI (Executives)* and the significantly positive interaction term suggests that some of the matching effect reported in the previous columns is due to the new CEO being a former member of the executive team.

Overall, the results in Table 4 suggest that the UAI of the corporate leaders involved in the selection of the new CEO play a significant role in determining the UAI of the incoming CEO.

C.2 Selection of Executives and Outside Directors

While boards and top executive teams tend to select CEOs whose risk preferences are similar to theirs, CEOs may also influence risk preferences in the board room and the executive suits by appointing new outside directors and promoting or hiring new subordinates whose risk attitudes are closer to their own. If this hypothesis is true, we expect the outside directors' and the executive team's average risk preferences to become closer to that of the CEO as the CEO's time in office lengthens.

In Column (1) of Table 5, we relate the CEO's time in office (in years), *Tenure*, in year t to the absolute difference (multiplied by 100) between the UAIs of the outside directors and the CEO in year t, controlling for year fixed effects, headquarter state fixed effects and (2-digit SIC) industry fixed effects. We find that the difference decreases as the CEO's tenure increases. While statistically significant, the effect is relatively small in magnitude. Specifically, over the average tenure length of 6.8 years, the absolute difference in risk preferences would decrease by about 2.5% relative to the sample mean.

Column (2) shows that the absolute difference between CEO's UAI and executive team's UAI decreases over the CEO's tenure in a similar way. Therefore, over time the CEO likely appoints or attracts immediate subordinates that share her risk preferences. Not surprisingly, we find in Column (3) that the divergence between the CEO's UAI and the firm's risk culture decreases over the CEO's time in office as well. In Column (4), we control for firm-CEO fixed effects instead, identifying the CEO's influence purely from the time-series variation within a firm-CEO pair. This approach mitigates the concern that the effect is driven by the correlation between unobservable, time-invariant firm or CEO characteristics and the CEOs' average tenure lengths. The coefficient estimates on *Tenure* remains statistically significant. According to Column (4), over a CEO's time in office, on average about 6.8 years, the absolute difference between the CEO's UAI and the firm's risk culture drops by 3.5%.

Overall, the results in Table 5 are consistent with the hypothesis that CEOs influence corporate risk culture by influencing the composition of the firms' senior leadership. However, the magnitude of the effect is modest, which is likely due to the persistence in the composition of the outside directors and the executive teams, but may also reflect the measurement error of our risk preference proxy.

D The Role of Founders

Our results suggest that the persistent commonality in corporate leaders' risk preferences arise due to selection of corporate leaders. A firm's shared risk attitudes are transmitted from one generation of corporate leaders to the next. What is the origin of the selection process? Differently from societal culture in general, a firm's history and thus its culture can typically be traced back to its beginning and to the people who founded the firm. We therefore examine whether and to what extent a firm's risk culture can be traced back to the risk preferences of the firm's founders, which can be viewed as the firm's initial risk culture. van den Steen (2010) explicitly considers this possibility in his model of the origin of corporate culture.

To examine the link between founders' risk preferences and those of subsequent leaders as well as corporate risk culture, we use a subsample of 1,848 firms for which we have data to construct

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the firm's founders' average UAI (*UAI (Founders)*). A firm's founders represent those that are credited, either by the firm or by other public sources, with having started the firm, often a long time ago. Compared to our full data sample, the founder subsample consists of larger and more mature firms. The average firm size and, where available, firm age, i.e., years since IPO of the firm, are $5.7 billion (net sales) and 23 years in the founder sample, compared to $2.2 billion and 17 years in the full sample.

Panel A of Table 6 reveals that the founders' UAI is positively and significantly related to the UAI of the firm's subsequent generations of CEOs (Column (1)), executive teams (Column (2)), and outside directors (Column (3)). Again, under our approach, the positive relation between founders and subsequent leaders has to come from (self-)selection of future leaders with risk preferences similar to those of the founders. Column (4) shows that the founders' risk preferences are also positively correlated with the firm's risk culture, even when the founder is no longer on the leadership team. Columns (5) and (6) further show that the link between founders' risk preferences and corporate risk culture does not simply operate through firm characteristics or the firm's headquarter state and industry.

The results in Panel A suggest that the cross-sectional differences in the risk preferences of firms' founders could lead to long-lasting differences in corporate risk culture. To gauge the magnitude of such persistence, we follow Lemmon, Roberts, and Zender (2008) and conduct the following exercise. We first select firms for which 10 to 15 years have passed since their IPO and with information about the founders' UAI and sort them into four groups based on the founders' UAI. For each quartile, we report the average risk preference of the founders and the average corporate risk culture 10 to 15 years after the IPO in Panel B of Table 6.[13] There is substantial dispersion in the founders' UAI across these groups, with a difference of 0.343 between the top and bottom quartiles (almost 2.5 times of the standard deviation in *UAI (Founders)*). We find that the ranking of these groups based on the initial founders' UAI perfectly predicts their ranking based on the average corporate risk culture 10 to 15 years after the firms' IPOs. The differences in risk culture

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[13]Given the time between founding and IPO, firms' ages (since founding) will be greater than 10 to 15 years. We obtain similar results using firm age (since founding), but the sample size is much smaller due to the limited availability of data on the founding year.

across groups are both statistically significant and economically meaningful. The difference between the top and bottom groups is 0.152, which is close to one standard deviation of the risk culture measure.

We then repeat the same exercise for firms with 20-25 and 30-35 years since their IPO.[14] The pattern is the same as in the 10-15 age group. Firms with founders with lower UAIs continue to have significantly more risk-tolerant culture even decades after the founding of these firms. However, there is noticeable convergence in risk culture over time. The cross-sectional differences in risk culture in future snap shots are all substantially smaller than the differences in the founding risk culture, and the differences are smaller among "older" firms.

Overall, the results in Table 6 suggest that the founders' risk preferences are an important determinant of corporate risk culture, contributing to its persistence across generations of leadership, and likely operating, at least in part, through the selection of corporate leaders as documented in Tables 4 and 5.

IV   Corporate Risk Culture, Founders, and Corporate Policies

Firms select leaders with preferences and beliefs similar to those of existing leaders because the resulting corporate culture is one way to coordinate decision making inside the firm. In this section, we examine how corporate policies, which are the outcome of such coordination, are related to the risk preferences of corporate leaders and founders. We expect that, ceteris paribus, firms with a less risk averse culture are willing to take more risk. We examine this hypothesis empirically. To do so, on the investments side, we consider a firm's probability of engaging in merger and acquisition activities (*Acquisition*) and the firm's investment in research and development (*R&D Rate*). On the financial side, we consider firms' decisions about financial leverage (*Leverage*) and cash holdings (*Cash Rate*).

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[14]It would be ideal to track the same sample of firms over time. However, this is not plausible for us given that we have a maximum of 17 years of data and the coverage of risk culture measure differs across firms, especially in the subsample with founder information. In untabulated results, we follow 220 firms with both data on founders' UAI and corporate risk culture between 10 and 25 years after IPO. We find a similar pattern as the one reported in Panel B.

A Corporate Risk Culture and Corporate Policies

First, we examine the effect of corporate risk culture, as proxied for by *UAI (Common)*, on acquisitions and R&D investments, controlling for the firm's book-to-market ratio, ROA, and logarithms of sales at the beginning of the year, as well as various sets of fixed effects, i.e., year, headquarter state, 2-digit SIC industry fixed effects. The results in Panel A of Table 7 reveal a negative and significant relation between corporate risk culture and corporate investments. According to Columns (3) and (6), firms with a one-standard-deviation higher *UAI (Common)* exhibit a 2 percentage-point lower acquisition probability, a difference of 11% relative to the sample mean, as well as a 7 percentage-point lower R&D rate, 15% relative to the sample mean. Given the presence of measurement error in UAI (see Section II. A), these results likely represent a *lower* bound of the effect of corporate risk culture on corporate investments.

Panel B shows that a more risk-averse corporate culture is associated with higher cash holdings and lower financial leverage. However, differently from the results on investment policies, state and industry fixed effects seem to account for a sizable portion of this association between corporate risk culture and the financial policies. The effect of risk culture on leverage even becomes insignificant after the inclusion of industry fixed effects. One interpretation of this result is that the clustering of risk preferences among corporate leaders in an industry could have contributed to the strong industry effects in leverage (e.g., Welch (2004), MacKay and Phillips (2005), Frank and Goyal (2009), Leary and Roberts (2014)).

We note that the associations documented in Table 7 do not imply that corporate risk culture causes more corporate policies, but rather that corporate risk culture is aligned with the exposure to uncertainty reflected by these corporate policies. To gauge the extent to which the effect of risk culture might be causal, we now turn to the risk preference of a firm's founders.

B Founders' Risk Preferences and Corporate Policies

The risk preference of a firm's founders is the firm's risk culture at the beginning of its life. In Section III. D we have shown that this initial risk culture has a long-lasting impact on the firm's future risk culture, even after the founders have left the firm. Cross-sectional differences in firms'

initial risk culture lead to persistent differences in firms' risk culture. At the same time, differently from subsequent corporate leaders, a firm's founder(s) are not selected, but are rather the ones that determine firm characteristics and strategic directions. In other words, founders' preferences are predetermined relative to corporate policies. Therefore, founders' risk preferences, i.e., the initial corporate risk culture, may be an important determinant of cross-sectional differences in firms' policies, particularly persistent policies (e.g., R&D, cash and leverage decisions are more persistent than acquisitions).[15]

We again employ the subset of 1,848 firms for which we have information on the founders' risk preferences (*UAI (Founders)*). As mentioned above, compared to our full sample, the founder subsample consists of larger and more mature firms, with about 66% of firm-year observations having founders no longer on the firm's leadership team. Therefore, this subsample allows us to study the extent to which cross-sectional differences in corporate policies are due to differences in founders' risk preferences, but also the persistence of the effect of founders' preferences on policies.

B.1 Founders' Lasting Impact on Corporate Policies

To test whether firms of more risk-averse founders adopt different corporate policies than firms of more risk-tolerant founders, we examine the impact of founders' risk preferences on the time invariant component in corporate risk-taking policies. We estimate firm fixed effects for *Acquisitions*, *R&D Rate*, *Cash Rate*, and *Leverage*, controlling for the same firm characteristics as in Table 7 as well as year fixed effects. We then regress these policy fixed effects on *UAI (Founders)*. Results reported in Panel A of Table 8 suggest that founders' risk preferences indeed have a significant effect on a firm's long-run policies, with higher values of *UAI (Founders)* leading to less risk-taking. Furthermore, differences in *UAI (Founders)* across firms indeed explain some of the cross-sectional variation in corporate policies. According to Columns (1), (4), (7), and (10), a one-standard-deviation change in *UAI (Founders)* explains 8, 12, 11, and 8% of the cross-sectional dispersion in *Acquisitions*, *R&D Rate*, *Cash Rate*, and *Leverage*, respectively. Similar to Table

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[15]Cash and leverage policies are most persistent, with annual autocorrelations around 0.90. R&D exhibits an annual autocorrelation 0.77. In contrast, acquisitions are infrequent and hence only have an annual autocorrelation of 0.28.

7, state and industry fixed effects reduce the effect of *UAI (Founders)* somewhat, especially on financial policies. To the extent that the firm's headquarter location and industry membership are choices made by the founders, the reduction of the *UAI (Founders)* effect implies that the firm's policy choices are affected by these initial choices made by the founders.

Next, we examine whether founders' risk preferences continue to affect corporate policies after the founders' departure from the firm. To gauge the persistence of the founder effect, we construct an indicator variable "On Leadership" that equals one for firm-years during which the founder still serves as the CEO, an executive, or a director of the firm and zero otherwise. Among the 1,848 firms with founder information, 570 firms have only firm-years with founder on the leadership; 987 firms have only firm-years with founder off the leadership; 291 firms have both types of firm-years. We separately estimate firm fixed effects for each policy variable for firm-years with and without founders' presence on the leadership team. Finally, we regress these policy fixed effects on *UAI (Founders)* and its interaction with the *On Leadership* indicator. The results are reported in Panel B of Table 8. For acquisition decisions, the founders' effect is concentrated in the time period when the founder is on the firm's leadership team. For R&D and cash holdings, however, founders have a long-lasting impact, extending beyond the time when founders are part of the firm's leadership team.

The results in Table 8 suggest that differences in the initial corporate risk culture are important determinants of the persistent differences in firms' policies. More generally, differences in founders' preferences and values could be an important but largely overlooked determinant of persistent differences in corporate policies across firms.

B.2 Founders' Risk Preferences and the Effect of Corporate Risk Culture

Given the lasting impact of founders' risk preferences on corporate policies, we examine to what extent the association between corporate risk culture, *UAI (Common)*, and corporate policies reflects the persistent influence of a firm's founders. In Table 9, we repeat the analysis in Table 7, now including both the time-invariant initial risk culture, *UAI (Founders)*, as well the evolving measure of corporate risk culture, *UAI (Common)*, in the same regression. Interestingly, for persistent

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policies such as R&D and cash holdings, the effect of corporate risk culture in Table 7 appears to reflect the firm's initial, rather than its current risk culture.[16] This finding is consistent with the interpretation that founders' long-lasting effects on corporate policies operate at least partly through the firm's culture via the selection of subsequent firm leaders. Of course, corporate founders' risk preferences likely determine other lasting firm characteristics that may also be correlated with firm policies. *UAI (Founders)* may therefore not be a suitable instrument for *UAI (Common)*. Instead, we include both in the same specification and observe that a firm's founders' risk preferences drive out the effect of corporate risk culture when we consider persistent policies.

For acquisition decisions, which are much less persistent and more discrete in nature, the current corporate risk culture continues to matter even after controlling founders' preferences, suggesting that the time-varying part of corporate risk culture that is not predicted by the founders' risk preferences contributes to shaping acquisition decisions.

In summary, the results in Tables 7-9 have several interesting and important implications. First, our proxies for risk preferences and corporate risk culture are associated with corporate policies related to risk and uncertainty in the expected ways, suggesting that these measures do indeed capture risk attitudes that matter for decisions under uncertainty. Second, the founders' risk preferences, an important time-invariant and relatively exogenous component in corporate risk culture, have a long-lasting effect on corporate policies, even after the founders have left the firm. The existing corporate finance literature has documented and discussed about the persistent differences across firms with respect to certain corporate policies, especially financial policies (e.g., Lemmon et al. (2008), Dittmar and Duchin (2011), and DeAngelo and Roll (2015)). Our results suggest that a firm's initial corporate risk culture, as captured by its founders' risk preferences, is a possible determinant of these policy differences, and that corporate culture is one mechanism through which such differences persist.

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[16]In the absence of industry fixed effects, this is also true when we consider the effect of founder's risk preference versus the current corporate culture on corporate leverage.

C   Robustness

As mentioned above, our approach to measuring individuals' risk preferences likely leads to measurement error in *UAI (Founders)* and *UAI (Common)*. Furthermore, the fact that all measures of risk attitudes are derived from a limited set of 91 origins could create a downward bias in the regression standard errors if the error term of the regression model exhibits clustering by origin. In this subsection, we address these issues. For brevity, we focus on the cross-sectional regressions of Panel A in Table 8 involving *UAI (Founders)*.

C.1   Measurement Error

While our UAI measure might suffer from a number of measurement errors, we again use the number of different origins associated with a last name (*# of Origins*) and the standard deviation of UAIs across the origins associated with a last name (*Dispersion in UAI*) to gauge the impact of measuring an individual's origin with noise. We repeat the regressions of firm policies on *UAI (Founders)* and state and industry fixed effects in Panel A of Table 8, adding the interactions terms between *UAI (Founders)* and *# of Origins* and *Dispersion in UAI*.[17] We expect that the effect of *UAI (Founders)* is stronger when the number of origins associated with a given founder's last name or the dispersion in UAI across these origins is smaller. The results in Appendix C Panel A suggest that this is generally the case. For example, in Column (1), the direct effect of *UAI (Founders)* on corporate acquisitiveness (-0.181) is significantly larger (based on a Wald test) than that in Column (3) of Table 8, Panel A (-0.091). The interaction effect between *UAI (Founder)* and *# of Origins* is also positive and significant. Both results suggest that the true effect of founders' risk preferences on acquisition decisions could be quite a bit larger in absolute terms. We find a similar effect in Column (2), even though neither the difference in the *UAI (Founders)* effect relative to Table 8 nor the interaction term with *Dispersion in UAI* is statistically significant. The results for the remaining policies are similar as well, albeit often statistically insignificant. Only in columns (4) (*R&D Rate*) and (7) (*Leverage*) are the differences between the estimates in this table and in Table 8 significant at the 10% confidence level.

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[17]For the 507 firms that have more than one founder, we average the number of origins and the dispersion in UAI for all founders of a firm.

In conclusion, addressing measurement error due to the imprecision with which we identify a person's origin suggests that the true effect of *UAI (Founders)* on corporate policies is likely larger. The precise magnitude of the attenuation bias is harder to establish given our results. Comparing the estimated effects of *UAI (Founders)* between Appendix C Table A and Table 8 Panels A and B across all policies suggests that on average the true effect could be twice the size of the estimated effect. While speculative, this would further underscore the potential impact of founders' risk preferences on persistent policy differences across firms.

C.2   Regression Standard Errors

Given the limited number of origins, our measures of risk preferences and corporate risk culture are positively correlated across observations with overlapping origins. As is well known from the recent literature on clustered standard errors (e.g., Petersen (2009), Thompson (2011), and Cameron and Miller (2015)), such within cluster (here, within origin) correlation of a regressor will affect standard errors, if regression errors are also correlated across observations within clusters.[18] To assess the magnitude of the bias, we repeat the regressions reported in Panels A and B of Table 8, but calculate standard errors that account for clustering by the largest origin associated with a given founder's last name. Among the 1,848 firms with founder information, we select 1,278 firms with a single founder for whom we identify their largest origins. We report the results in Appendix C Panels B and C.

Panel B reports the results for investment policies; Panel C for financial policies. For each policy, we first report results without state and industry fixed effects, then results with the state and industry fixed effects. In each case, the first column reports results with non-clustered standard errors, just as those in Panels A and B of Table 8. Comparing clustered standard errors to non-clustered standard errors, we do not find a systematic difference. Although not reported, the same holds for the standard errors for the effect of *UAI (Founders)* in the panel regressions in Table 9. Thus, there is no evidence that the standard errors we report are systematically biased.

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[18]Cameron and Miller (2015, p. 322, eq. 6) provide an approximate scaler for standard errors in case of correlation within clusters which translates to $1 + \rho_e \rho_{UAI}(N_{cluster} - 1)$ in our context, where ρ_e is the average correlation of the regression residuals within a cluster, ρ_{UAI} is the correlation of UAI within a cluster, and $N_{cluster}$ is the number of observations in a cluster.

V Corporate Risk Culture and Formal Incentives

Culture serves as an unspoken language giving directives to the members of an organization (Crémer (1993)). Firms select leaders and employees with similar risk preferences to coordinate decisions and actions within the firm. Coordinating decisions through corporate culture as opposed to formal contracts or incentives can be particularly advantageous in a world with a lot of unforeseen contingencies. Nevertheless, the *strength* of corporate risk culture, i.e., the degree to which risk attitudes are shared inside a firm, can vary, by chance or by design, across firms. In this section, we examine the consequences of diverging risk attitudes among corporate leaders. Specifically, we conjecture that divergence in corporate leaders' risk attitudes reduces the likelihood of large and discrete investments, such as corporate acquisitions, which require broad support among corporate leaders. We hypothesize further that formal incentives for example from retention and compensation, are important in the presence of diverging risk preferences. In particular, we expect that firms with weaker corporate risk culture, that is, with more diverging risk attitudes, coordinate decisions more through formal incentives.

A Divergence in risk attitudes and Corporate Acquisitions

As we have shown in Section III, corporate risk culture arises as corporate leaders are selected based on similarity in their risk preferences. Such similarity allows for delegation of corporate decisions, reduces monitoring costs, and facilitates equilibrium selection when multiple equilibria exist. Firms with less homogenous preferences might be less likely to reach consensus in case of large and discrete decisions that involve substantial uncertainty, as is the case with many corporate acquisitions. We therefore empirically examine whether the probability of a firm making an acquisition is lower for firms that exhibit larger differences in risk attitudes among their corporate leaders, controlling for the level of risk-aversion in the firm's culture. For each firm year, we measure differences in risk attitudes as the absolute differences between *UAI (CEO)* and *UAI (Outside Directors)*, between *UAI (CEO)* and *UAI (Executives)*, and between *UAI (Executives)* and *UAI (Outside Directors)*.

Table 10 reports results from panel regressions of *Acquisition* on the three UAI difference variables, separately in columns (1) through (3) and jointly in columns (4) and (5). All regressions

include firm-level controls, year, industry, and state fixed effects as well as *UAI (Common)*. Column (1) reveals that differences in risk attitudes of the CEO and of outside directors significantly lower the probability of an acquisition. Specifically, a one standard deviation increase in the absolute difference between *UAI (CEO)* and *UAI (Outside Directors)* lowers the acquisition probability by 1.53 percentage points or about 9% relative to the average acquisition probability. Differences between the CEO and the executive team with respect to their risk preferences have a similar, negative effect on *Acquisition* (column (2)). The effect of absolute differences in risk attitudes between the executive team and the outside directors is negative, but not statistically significant (column (3)).

In column (4), we include all three difference terms simultaneously. The effect of all three differences is jointly significantly different from zero (*p*-value = 0.00%). In column (5), we replace state and industry fixed effects with firm fixed effects and find similar results. Even though only the difference in UAI between the CEO and the outside directors is statistically significant, the joint effect of the three differences in risk attitudes is again statistically significant with a *p*-value of 0.24%.

In summary, the results in Table 10 suggest that divergence in corporate leaders' UAIs can affect real corporate decisions, especially those that require broad approval and coordination.

B   Formal incentives

The degree of homogeneity of risk preferences among corporate leaders is an equilibrium outcome that reflects the search costs for corporate leaders as well as benefits and costs of coordinating corporate actions through informal versus formal rules and incentives. We therefore do not expect higher divergence in corporate risk culture to be necessarily associated with higher or lower firm values.[19] Nevertheless, we expect that firms with less homogenous risk cultures rely more on formal incentives. To test this prediction, we examine the association between differences in risk attitudes and retention or compensation practices across firms. Given the prominence of the CEO as well

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[19]In the model of van den Steen (2010), firms overinvest in corporate culture, as managers value homogeneity for its own good, above and beyond the benefits of coordinating decisions inside the firm. In his model, an exogenous reduction of cultural homogeneity could therefore increase firm value. In related work, Bénabou (2013) and Coles, Daniel, and Naveen (2015) explore the negative consequences of group think, i.e., irrational decisions due to the desire for conformity in a group of people.

as the availability of data for CEOs relative to other corporate leaders, we focus on CEO turnover and CEO compensation.

B.1 CEO Turnover

Our results in Section V. A suggest that increased differences in risk attitudes might decrease the probability of reaching consensus among corporate leaders. One possible consequence of a weaker corporate risk culture might therefore be more frequent (voluntary or involuntary) departures of senior corporate leaders than in firms with a stronger culture, i.e., with more homogenous preferences. We therefore test whether CEOs whose risk preferences differ more from those of other corporate leaders tend to have shorter tenure. For each firm-CEO pair, we calculate the average of the absolute differences in UAI between the CEO, the outside directors, and the executive team over the CEO's entire tenure in the company, and examine their relationship with the length of the CEO's tenure.

Table 11 presents the results. Columns (1) through (3) report the effect of each difference separately on the length of a CEO's total time in office. All three differences are significantly associated with shorter CEO tenure. Specifically, a one-standard-deviation increase in the average absolute difference in UAI decreases CEO tenure by 3.4 months when comparing CEOs to outside directors, by 3.9 months when comparing CEOs to executive teams, and finally by 2.9 months when comparing executive teams and outside directors. Given an average tenure of 6.6 years or 79 months, the reduction in tenure corresponds to a relative effect of 4 to 5%. In Column (4), a test of joint significance reveals that the three difference variables are jointly significantly different from zero with a p-value of 2.21%.

Consistent with our conjecture, divergence in risk attitudes is related to a shorter length of CEO tenure, possibly reflecting the difficulty of reaching consensus among corporate leaders when their risk preferences are not aligned. The magnitudes of the effects are modest and likely represent a lower bound, given that we do measure corporate leaders' risk preferences in an incomplete way and with noise.

B.2 CEO Compensation

In Table 4 above, we show that CEOs' predetermined risk attitudes match those of existing leaders to some degree. In case the similarity is less than what the firm desires, the firm, and in particular, its board of directors, can attempt to adjust CEOs' risk taking incentives through compensation contracts. Following Coles, Daniel, and Naveen (2006), we measure risk taking incentives provided by compensation contracts using *Vega*, the dollar change (in millions) in a CEO's wealth associated with a one percentage-point change in the firm's stock return volatility, for a subset of firms and years with available CEO compensation data.

In Column (1) of Table 12, we examine the relation between the average vega of the CEO's compensation contract during her tenure at a given firm and the risk attitudes of the CEO and of the outside directors, controlling for CEO and firm characteristics, also averaged over time, for the subset of firms with non-zero and non-missing vega. *Vega* and *UAI (CEO)* are significantly and positively related. While the relationship is negative, it is statistically insignificant for *UAI (Outside Directors)*. A CEO with a one-standard-deviation higher UAI is given a compensation contract with a 4.8% higher vega relative to the sample mean (i.e., an additional $5,340 in CEO's wealth for a one-percentage-point increase in firm volatility).

In Column (2), we directly examine how *Vega* responds to the difference between the CEO's UAI and the outside directors' UAI. If the CEO's UAI is higher than that of the outside directors, which we interpret as the desired level of risk aversion, then the board could use a compensation contract with higher vega to counter the CEO's uncertainty avoidance.[20] This is indeed what we find. The higher the CEO's UAI relative to that of the outside directors, the higher the vega in the CEO's compensation contract. In Column (3), we find a similarly positive, but statistically insignificant effect of the difference between CEO's UAI and that of the top executive team. When combined with difference between *UAI (CEO)* and *UAI (Outside Directors)* in Column (4), the latter remains significantly positive. Finally, Column (5) shows that this result holds when we use firm-year level panel data instead, and control for firm and year fixed effects. Thus, within a firm,

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[20]Note that the compensation committee mainly consists of outside directors, especially after NYSE/Nasdaq required full independence of the compensation committee (NYSE listing rules section 303A.05, Nasdaq listing rules section 5605(d)).

the higher the CEO's UAI is relative to the UAI of the non-executive directors, the higher the CEO's compensation vega.

We note that *Vega* could be an omitted variable in our regressions of corporate policies on measures of corporate risk culture. In untabulated results, we have verified that while vega is typically significantly associated with corporate policies, its inclusion changes the coefficient estimates on our measures of corporate risk culture only in a very minor way, consistent with the relatively modest effect we observe in Table 12.

In conclusion, divergence in corporate leaders' risk attitudes can affect real decisions in the firm. Firms with weaker risk culture seem to make fewer acquisitions that usually require broad agreement within a firm. These firms also try to make more use of retention/termination and compensation incentives to align attitudes towards risk and uncertainty.

VI   Conclusion

The popular press as well as corporate executives often describe croporate culture as a critical determinant of corporate decisions. For example, Jim Sinegal, Costco's co-founder and former CEO, said in a 2012 CNBC documentary that "culture is not the most important thing; it's the only thing".[21] Financial economists, though, have only recently started to examine the role of corporate culture in detail, partly due to the difficulty of empirically measuring corporate culture. We study the formation and evolution of corporate *risk* culture, defined as the preferences towards risk and uncertainty shared by a firm's leaders. Approximating corporate leaders' preferences based on their ethnic background allows us to measure not only corporate risk cultures for a large panel of firms but also firms' initial risk cultures that are shaped by their founders' risk attitudes.

Our findings suggest that risk preferences are significantly correlated across members of a firm's leadership team as well as across generations of leadership. Selection of managers and directors based on their risk preferences plays an important role in the formation and persistence of the firm's risk culture, preserving the firm's founders' risk preferences.

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[21]http://blog.marketculture.com/2012/09/14/culture-is-not-the-most-important-thing-its-the-only-thing-costcos-jim-sinegal/

Understanding a firm's risk culture also advances our understanding of corporate investments and financial decisions that expose firms to uncertainty. We find that the persistent differences in corporate R&D expenditures and cash holdings seem to be set in accordance with the persistent part of corporate risk culture, which is rooted in the founders' risk preference. Thus, one source of persistence in corporate policies documented by the existing literature is the persistence in corporate risk culture.

Finally, we provide some evidence on the interaction between the strength of corporate culture and formal incentives, such as the convexity of CEO compensation. The interplay between corporate culture and corporate governance is an interesting topic for future research.

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Table 1: Summary Statistics

Panel A: Uncertainty Avoidance Index

This table reports summary statistics for variables related to corporate leader's culturally transmitted risk preferences, by firm, or firm-CEO pair, or firm-year. Definitions of the variables are provided in Appendix B.

Variables by Firm-CEO	Obs.	Mean	Std. Dev.
UAI (CEO)	9,698	0.467	0.160
Variables by Firm-Year and Group of People			
UAI (Executives)	36,880	0.448	0.097
UAI (Outside Directors)	36,880	0.453	0.090
UAI (Common)	36,880	0.467	0.160
Variables by Firm			
UAI (Founders)	1,848	0.449	0.139

Panel B: Outcome Variables

This table reports summary statistics for outcome variables in the tables related to selection and incentives, as well as firm-level investment and financial policies that are related to risk-taking. The unit of observation for each variables is also reported. Definitions of the variables are provided in Appendix B.

Selection	Unit	Obs.	Mean	Std. Dev.
|UAI (CEO) - UAI (Outside Directors)|	Firm-Year	36,880	0.138	0.102
|UAI (CEO) - UAI (Executives)|	Firm-Year	36,880	0.141	0.107
|UAI (CEO) - UAI (Common)|	Firm-Year	36,880	0.106	0.083
|UAI (Outside Directors) - UAI (Executives)|	Firm-Year	36,880	0.094	0.077
Investment and Financial Policies				
Acquisition (Indicator)	Firm-Year	36,112	0.172	0.377
R&D Rate	Firm-Year	17,955	0.467	2.470
Cash Rate	Firm-Year	36,112	0.163	0.196
Leverage	Firm-Year	36,112	0.331	0.262
Incentives				
Vega	Firm-Year	18,706	0.143	0.232
CEO Entire Tenure Length (in years, excl. last CEO)	Firm-CEO	3,046	6.577	7.069

Panel C: Control Variables

This table reports summary statistics for control variables at the firm-CEO or firm-year levels. Definitions of the variables are provided in Appendix B.

Variables by Firm-CEO	Obs.	Mean	Std. Dev.
CEO Education	9,698	0.986	0.974
Missing CEO Edu. (Indicator)	9,698	0.431	0.495
Missing CEO Age (Indicator)	9,698	0.198	0.399
Female CEO (Indicator)	9,698	0.026	0.159
Variables by Firm-CEO at Turnover			
CEO Age (1st year as CEO in firm)	3,651	46.405	17.648
EthinicityMatch (Director) (Indicator)	3,651	0.271	0.444
EthinicityMatch (Exec) (Indicator)	3,651	0.250	0.433
Fraction of Match (Director)	3,651	0.218	0.243
Fraction of Match (Exec)	3,651	0.276	0.302
Insider CEO (Indicator)	1,924	0.758	0.428
Variables by Firm-Year			
Log(MB)	36,112	0.739	0.814
ROA (%)	36,112	9.425	19.250
Log(Sales)	36,112	6.167	2.205
CEO Tenure	33,696	6.836	7.048

Table 2: Commonality of Risk Preferences of CEOs, Executive Teams, and Outside Directors

Panel A: Actual Combinations of CEOs, Executive Team, and Outside Directors

We conduct a principle component analysis to examine the commonality of risk attitudes among corporate leaders inside a firm. Panel A reports the fraction of the total variation in UAI (CEO), UAI (Executives) and UAI (Outside Directors) that is explained by the first, second, and third principal components in the actual data.

	Obs.	% of toal variation explained
UAI (Common): First Principal Component	36,880	43.02%
Second Principal Component	36,880	28.83%
Third Principal Component	36,880	28.15%

Panel B: Random Combinations of CEO, Executive Team, and Outside Directors

This panel reports the fraction of the total variation in randomly matched UAI (CEO), UAI (Executives) and UAI (Outside Directors) that is explained by the first principal component. In each row, we report the mean and the [5%, 95%] confidence interval for the fraction explained from 100 iterations of randomly matching CEOs, executive teams, and outside directors. In this exercise, we take the executives or outside directors in a firm-year as a group. In row (1), CEOs, executive teams, and outside directors are randomly drawn from the same year, in row (2) from the same year and firm headquarter state, in row (3) from the same year and industry (2-digit SIC), and in row (4), from the same year, state and industry. We drop cases in which the randomly drawn combination of CEO, executive team, and outside directors coincides with an actual combination.

	First Principal Component Mean [5%, 95%]
(1) Draw from the same year	33.63% [33.45%, 33.84%]
(2) Draw from the same year-state	35.63% [35.29%, 35.93%]
(3) Draw from the same year-industry	34.12% [33.83%, 34.47%]
(4) Draw from the same year-industry-state	36.03% [35.46%, 36.54%]

Panel C: Subsample Analysis

This panel reports the fraction of the total variation in UAI (CEO), UAI (Executives) and UAI (Outside Directors) explained by the first principal component. In the first row, we use a subsample of firm-years for which the number of origins associated with the CEO's last name, the average number of origins associated with outside directors, and the average number of origins associated with the executives are all in the bottom 50 percentile of their sample distributions. In the second row, we use a subsample of firm-years for which the standard deviation of UAI values across all possible origins associated with the CEO's last name, the average dispersion associated with outside directors, and the average dispersion associated with the executives are all in the bottom 50 percentile of their sample distributions.

Sample	Obs.	% explained by the first principal component
# of Origins in bottom 50% for each group	5,061	45.08%
Std. Dev. of UAI in bottom 50% for each group	5,639	43.35%

Table 3: Persistence in Corporate Risk Culture

Panel A: Auto-correlations within Firm

This table reports the auto-correlations between UAI (Common) and its 10 lags within a firm. "L#.UAI (Common)" is the #-year lag of UAI (Common).

	Auto-correlations between UAI (Common) and its Lags
L1.UAI (Common)	0.891***
L2.UAI (Common)	0.826***
L3.UAI (Common)	0.769***
L4.UAI (Common)	0.717***
L5.UAI (Common)	0.666***
L6.UAI (Common)	0.615***
L7.UAI (Common)	0.578***
L8.UAI (Common)	0.543***
L9.UAI (Common)	0.516***
L10.UAI (Common)	0.485***

Panel B: Auto-correlations across Generations of Leadership

This table reports the auto-correlations between UAI (Common) of a generation of leadership (measured as the average UAI (Common) over a CEO's tenure) with the UAI (Common) of the previous generations, in the same firm. LG1.UAI (Common) is the UAI (Common) of the last generation, and so on. A generation of leadership consists of the managers and directors under a CEO's regime.

	Obs.	Auto-correlations of UAI (Common) across generations of leadership
LG1.UAI (Common)	3,621	0.632***
LG2.UAI (Common)	1,332	0.421***
LG3.UAI (Common)	423	0.310***
LG4.UAI (Common)	108	0.301**

Table 4: CEO Selection

This table examines the determinants of incoming CEO's UAI. Pre-turnover UAI (Common) is the first principle component in UAI (Outside Directors), UAI (Executives), and UAI (CEO) in the year before turnover. "Pre-turnover UAI (*Group*)" is the UAI of *Group* in the year before turnover. EthnicityMatch (Directors) (Executives) is an indicator variable that equals one if the incoming CEO's dominant origin is the same as the most common dominant origin among the pre-turnover outside directors (or the top four non-CEO executives). Fraction of Match (Directors) (Executives) is the fraction of directors (or the top four non-CEO executives) whose dominant origin is the same as the dominant origin of the CEO. "Insider CEO" is an indicator variable equals one if a CEO is promoted to the position from within the firm. Control variables include CEO Age, Missing Age indicator, CEO Education, Missing Education indicator, Female, ROA, log(MB), and log(Sales). Definitions of the variables are provided in Appendix B. Standard errors are clustered at the firm level. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
			UAI (CEO)			
Pre-turnover UAI (Common)	0.367***					
	(0.016)					
Pre-turnover UAI (Outside Directors)		0.280***	0.280***	0.168***	0.111**	0.358**
		(0.029)	(0.035)	(0.039)	(0.044)	(0.141)
Pre-turnover UAI (Executives)		0.656***	0.619***	0.454***	0.326***	0.363***
		(0.029)	(0.035)	(0.042)	(0.045)	(0.120)
Pre-turnover UAI (CEO)		0.010	0.016	0.011	0.009	0.057*
		(0.017)	(0.020)	(0.020)	(0.019)	(0.030)
Pre-turnover UAI (Outside Directors) x EthnicityMatch (Directors)				0.292***		
				(0.071)		
Pre-turnover UAI (Executives) x EthnicityMatch (Executives)				0.386***		
				(0.064)		
EthnicityMatch (Directors)				-0.202***		
				(0.031)		
EthnicityMatch (Executives)				-0.203***		
				(0.028)		
Pre-turnover UAI (Outside Directors) x Fraction of Match (Directors)					0.546***	
					(0.129)	
Pre-turnover UAI(Executives) x Fraction of Match(Executives)					0.888***	
					(0.089)	
Fraction of Match (Directors)					-0.340***	
					(0.054)	
Fraction of Match (Executives)					-0.427***	
					(0.039)	
EthinicityMatchBoard x Insider New CEO						-0.156
						(0.156)
EthinicityMatchExec x Insider New CEO						0.521***
						(0.133)
Insider New CEO						-0.174*
						(0.092)
CEO Age			-0.000	-0.000	-0.000	0.000
			(0.000)	(0.000)	(0.000)	(0.001)
Missing CEO Age			-0.032	-0.027	-0.026	-0.008
			(0.026)	(0.024)	(0.024)	(0.042)
CEO Education			0.003	0.001	0.001	-0.006
			(0.006)	(0.006)	(0.006)	(0.010)
Missing CEO Edu.			0.013	0.013	0.011	-0.009
			(0.013)	(0.012)	(0.012)	(0.020)
Female CEO			-0.023	-0.023	-0.024*	0.009
			(0.015)	(0.015)	(0.014)	(0.026)
Log(MB)			0.004	0.002	0.001	-0.003
			(0.004)	(0.004)	(0.004)	(0.007)
ROA			-0.000	-0.000	-0.000	0.000
			(0.000)	(0.000)	(0.000)	(0.000)
Log(Sales)			-0.001	-0.001	-0.001	-0.000
			(0.002)	(0.002)	(0.002)	(0.003)
Industry and State FE			x	x	x	x
Obs.	3,651	3,651	3,651	3,651	3,651	1,924
Adjusted R^2	0.128	0.188	0.179	0.261	0.261	0.197

Table 5: Selection of Executives and Outside Directors

This table reports how the divergence between the UAI of the outside directors (or of the executive team) and that of the CEO changes over CEO tenure. In Column (1), the dependent variable is the absolute difference between the UAI of the outside directors and the UAI of the CEO. In Column (2), the dependent variable is the absolute difference between the UAI of the executive team and the UAI of the CEO. In Columns (3) and (4), the dependent variable is the absolute difference between the UAI of the CEO and the corporate risk culture (measured by UAI (common)). Definitions of all variables are in Appendix B. Standard errors are clustered at the firm level. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1) |UAI (CEO) - UAI (Outside Dir.)|	(2) |UAI (CEO) - UAI (Exec.)|	(3) |UAI (CEO) - UAI (Common)|	(4)
CEO Tenure	-0.050***	-0.033*	-0.025*	-0.052*
	(0.018)	(0.018)	(0.013)	(0.029)
State, Industry and Year FE	x	x	x	
Firm-CEO and Year FE				x
Obs.	33,673	33,673	33,673	33,673
Adj. R^2	0.045	0.029	0.028	0.620

Table 6: The Role of Founders

Panel A: Impact of Founders' UAI on Future Leadership

This panel reports the impact of a firm's founders' UAI on the UAI of future leadership (CEO, executive team, outside directors) of the firm, when the founders are not on the leadership team of the firms they founded (i.e., not CEOs in column (1), not top executives in column (2), not directors of the company in column (3), not taking any of the leadership roles in columns (4) to (6)). The unit of observation is firm-year, as top executives and directors change over time, except for column (1) which is at the firm-CEO level. Definitions of all variables are provided in Appendix B. Standard errors are clustered at the firm level. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	UAI (CEO)	UAI (Executives)	UAI (Outsider Directors)	UAI (Common)		
	[Founders not CEO]	[Founders not Exec.]	[Founders not Director]	[Founders not on Leadership]		
UAI (Founders)	0.095***	0.052***	0.063***	0.152***	0.118***	0.114***
	(0.031)	(0.014)	(0.014)	(0.029)	(0.028)	(0.028)
Log(MB)					-0.003	0.002
					(0.005)	(0.005)
ROA					-0.000	-0.001***
					(0.000)	(0.000)
Log(Sales)					-0.004*	-0.003
					(0.002)	(0.003)
Year and State FF					x	
Year, State, Ind FE						x
Obs.	1,754	13,805	12,807	10,771	10,771	10,771
Adj. R^2	0.006	0.006	0.012	0.019	0.107	0.159

Panel B: Persistent Impact of Founders' Risk Preferences on Firm Risk Culture

We select three subsamples of different firm ages. The first subsample consists of firms 10-15 years after IPO, the second subsample 20-25 years after IPO, and the third 30-35 years after IPO. For each subsample, we group firms into quartiles based on UAI (Founders), and report the average UAI (Founders) and the average UAI (Common) for each quartile. For each subsample, we also report the difference between the averages of the top and bottom quartiles. All the differences reported in this panel are significant at 1% confidence level.

Quartiles	10-15 Years after IPO		20-25 Years after IPO		30-35 Years after IPO	
	UAI (Founders)	UAI (Common)	UAI (Founders)	UAI (Common)	UAI (Founders)	UAI (Common)
1	0.320	0.389	0.320	0.397	0.320	0.409
2	0.355	0.428	0.353	0.433	0.340	0.414
3	0.497	0.483	0.504	0.485	0.424	0.455
4	0.662	0.542	0.664	0.529	0.623	0.486
(4)-(1)	0.343	0.152	0.344	0.132	0.303	0.078

Table 7: Corporate Risk Culture and Corporate Policies

This table reports the relationship between measures of corporate risk culture and investment (Panel A) or financial policies (Panel B). Definitions of the variables are provided in Appendix B. Definitions of the variables are provided in Appendix B. Standard errors are clustered at the firm level. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Corporate Risk Culture and Investment Policies

	(1)	(2)	(3)	(4)	(5)	(6)
	Acquisition			R&D Rate		
UAI (Common)	-0.117***	-0.118***	-0.105***	-0.371**	-0.402***	-0.448***
	(0.017)	(0.017)	(0.017)	(0.146)	(0.152)	(0.152)
Log(MB)	0.031***	0.029***	0.026***	0.327***	0.328***	0.275***
	(0.003)	(0.003)	(0.003)	(0.033)	(0.034)	(0.036)
ROA	0.000***	0.000***	0.000	-0.039***	-0.038***	-0.033***
	(0.000)	(0.000)	(0.000)	(0.003)	(0.003)	(0.002)
Log(Sales)	0.018***	0.018***	0.026***	-0.238***	-0.256***	-0.299***
	(0.002)	(0.002)	(0.002)	(0.024)	(0.026)	(0.029)
Year FE	x	x	x	x	x	x
State FE		x	x		x	x
Industry FE			x			x
Obs.	36,112	36,112	36,112	17,955	17,955	17,955
Adj. R^2	0.034	0.038	0.056	0.296	0.299	0.328

Panel B: Corporate Risk Culture and Financial Policies

	(1)	(2)	(3)	(4)	(5)	(6)
	Cash Rate			Leverage		
UAI (Common)	0.091***	0.063***	0.034***	-0.095***	-0.074***	-0.007
	(0.012)	(0.012)	(0.011)	(0.018)	(0.019)	(0.015)
Log(MB)	0.073***	0.063***	0.043***	-0.034***	-0.025***	0.005
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)
ROA	-0.002***	-0.001***	-0.001***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Sales)	-0.026***	-0.024***	-0.023***	0.038***	0.036***	0.038***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
Year FE	x	x	x	x	x	x
State FE		x	x		x	x
Industry FE			x			x
Obs.	36,112	36,112	36,112	36,112	36,112	36,112
Adj. R^2	0.253	0.326	0.436	0.100	0.143	0.373

Table 8: Corporate Founders and Corporate Policies

This table reports the effect of founders' UAI on firm fixed effects in corporate policies (panel A on investment policies, and panel B on financial policies). We estimate firm fixed effects for Acquisitions, R&D Rate, Cash Rate, and Leverage, controlling for log(MB), ROA, and log(sales) as well as year fixed effects. In Panel C, we construct an indicator variable "On Leadership" that equals one for firm-years during which the founders still serve as CEOs, executives, or directors of the firm and zero otherwise, and interact it with UAI (Founder). We separately estimate firm fixed effects for each policy variable for firm-years with and without founders' presence on the leadership team. Definitions of the variables are provided in Appendix B. All regressions include a constant term. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

Panel A: Founders' UAI and Investment Policies

	(1)	(2)	(3)	(4)	(5)	(6)
		Acq FE			R&D FE	
UAI (Founders)	-0.141***	-0.121***	-0.091**	-2.373***	-2.034***	-2.003***
	(0.040)	(0.041)	(0.042)	(0.558)	(0.566)	(0.558)
State FE		x	x		x	x
Industry FE			x			x
Obs.	1,848	1,848	1,848	1,170	1,170	1,170
Adj. R^2	0.006	0.008	0.058	0.014	0.055	0.218

Panel B: Founders' UAI and Financial Policies

	(1)	(2)	(3)	(4)	(5)	(6)
		Cash FE			Leverage FE	
UAI (Founders)	0.127***	0.076***	0.063***	-0.127***	-0.105***	-0.020
	(0.029)	(0.026)	(0.024)	(0.038)	(0.038)	(0.034)
State FE		x	x		x	x
Industry FE			x			x
Obs.	1,848	1,848	1,848	1,848	1,848	1,848
Adj. R^2	0.011	0.186	0.325	0.006	0.070	0.299

Panel C: Founders On or Off Leadership

	(1)	(2)	(3)	(4)
	Acq FE	R&D FE	Cash FE	Leverage FE
UAI (Founders)	-0.029	-1.947***	0.043*	-0.041
	(0.056)	(0.684)	(0.026)	(0.041)
UAI (Founders)xOn Leadership	-0.145*	0.052	0.014	0.059
	(0.082)	(1.013)	(0.045)	(0.060)
On Leadership	0.032	-1.416***	-0.052**	0.025
	(0.039)	(0.491)	(0.021)	(0.028)
State and Industry FE	x	x	x	x
Obs.	2,139	1,355	2,139	2,139
Adj. R^2	0.050	0.268	0.295	0.290

Table 9: Founders' UAI vs. Current Corporate Risk Culture

This table contrasts the effect of founders' UAI with the current corporate risk culture. Definitions of the variables are provided in Appendix B. We control for year fixed effects, 2-digit SIC industry fixed effects, and firm headquarter state fixed effects. Standard errors are clustered at the firm level. All regressions include a constant term. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1) Acquisition	(2) R&D Rate	(3) Cash Rate	(4) Leverage
UAI (Founders)	-0.006	-0.436*	0.077***	-0.039
	(0.038)	(0.231)	(0.022)	(0.032)
UAI (Common)	-0.115***	0.161	0.015	-0.001
	(0.031)	(0.188)	(0.017)	(0.024)
Log(MB)	0.026***	0.282***	0.056***	0.015***
	(0.006)	(0.059)	(0.004)	(0.006)
ROA	0.001*	-0.031***	-0.002***	-0.003***
	(0.000)	(0.006)	(0.000)	(0.000)
Log(Sales)	0.025***	-0.187***	-0.033***	0.049***
	(0.004)	(0.044)	(0.002)	(0.003)
Year, State, and Industry FE	x	x	x	x
Obs.	16,162	9,515	16,162	16,162
Adj. R^2	0.054	0.270	0.467	0.393

Table 10: Divergence in UAI and Corporate Acquisitiveness

This table reports the effect of divergence in UAI among corporate leaders inside a firm on corporate acquisitiveness. Definitions of the variables are provided in Appendix B. Standard errors are clustered at the firm level. All regressions include a constant term. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
			Acquisition		
UAI (Common)	-0.072***	-0.078***	-0.103***	-0.060***	-0.070**
	(0.018)	(0.018)	(0.018)	(0.018)	(0.031)
|UAI (CEO) - UAI (Outside Dir.)|	-0.150***			-0.120***	-0.111***
	(0.025)			(0.026)	(0.037)
|UAI (CEO) - UAI (Executives)|		-0.120***		-0.079***	-0.054
		(0.024)		(0.025)	(0.035)
|UAI (Executives) - UAI (Outside Dir.)|			-0.018	-0.003	-0.022
			(0.030)	(0.030)	(0.040)
Log(MB)	0.026***	0.027***	0.026***	0.027***	0.035***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
ROA	0.000	0.000	0.000	0.000	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Sales)	0.026***	0.026***	0.026***	0.026***	-0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.006)
Year, State, and Industry FE	x	x	x	x	
Year and Firm FE					x
Obs.	36,112	36,112	36,112	36,112	36,112
Adj. R^2	0.058	0.057	0.056	0.058	0.190

Table 11: Divergence in Risk Preferences and CEO Turnover

This table reports the relationship between CEO's entire tenure length and the difference between CEO's UAI and the UAI of the outside directors (Column (1)) or executive team (Column (2), the difference between the executive team and outside directors (Column (3)), and all three difference measures (Column (4)). The absolute differences are the average differences over a CEO's tenure. We exclude CEOs whose entire tenure lengths are unknown (e.g., the current reining CEO). Firm-level controls such as M/B, sales, and ROA, are also average values over a CEO's tenure. All regressions include 2-digit SIC industry fixed effects and firm headquarter state fixed effects. Definitions of other variables are provided in Appendix B. Standard errors are clustered at the firm level. All regressions include a constant term. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
	CEO Entire Tenure Length			
$|$UAI (CEO) - UAI (Outside Directors)$|_{avg}$	-2.960**			-1.537
	(1.458)			(1.554)
$|$UAI (CEO) - UAI (Executives)$|_{avg}$		-3.401***		-2.461*
		(1.299)		(1.351)
$|$UAI (Executives) - UAI (Outside Directors)$|_{avg}$			-3.695**	-2.867
			(1.810)	(1.821)
CEO Age	0.111***	0.111***	0.111***	0.111***
	(0.023)	(0.023)	(0.023)	(0.023)
Missing Age	6.171***	6.178***	6.176***	6.146***
	(1.275)	(1.272)	(1.272)	(1.275)
CEO Education	0.452	0.452	0.438	0.471*
	(0.282)	(0.282)	(0.280)	(0.282)
Missing Edu.	1.747***	1.787***	1.743***	1.788***
	(0.588)	(0.588)	(0.587)	(0.588)
Female	-1.385***	-1.414***	-1.354***	-1.370***
	(0.477)	(0.482)	(0.479)	(0.479)
Log(MB)	0.061***	0.060***	0.060***	0.060***
	(0.009)	(0.009)	(0.009)	(0.009)
ROA	0.949***	0.955***	0.947***	0.946***
	(0.174)	(0.173)	(0.174)	(0.173)
Log(Sales)	0.094	0.102	0.088	0.083
	(0.077)	(0.077)	(0.078)	(0.078)
State and Industry FE	x	x	x	x
Obs.	3,046	3,046	3,046	3,046
Adj. R^2	0.083	0.084	0.083	0.084

Table 12: Divergence in Risk Preferences and Compensation Vega

This table reports the relationship between CEO's compensation vega and her UAI or the difference between her UAI and outside directors' average UAI. The analysis in Columns (1) to (4) is at the firm-CEO level. In these columns, all the variables are the average values over a CEO's tenure at a given firm. In these columns, we control for 2-digit SIC industry fixed effects and firm headquarter state fixed effects. The analysis in Columns (5) is at the firm-CEO-year level. In this column, firm-year level control variables (Log(MB), ROA, and Log(Sales)) are lagged, and we also control for firm fixed effects and year fixed effects. *UAI - UAI (Outside Directors)* is the difference between CEO's UAI and outside directors' UAI. *UAI - UAI (Executives)* is the difference between CEO's UAI and executive team's UAI. Definitions of all variables are provided in Appendix B. Standard errors are clustered at the firm level. All regressions include a constant term. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
			Vega		
UAI (CEO)	0.034**				
	(0.015)				
UAI (Outside Directors)	-0.004				
	(0.033)				
UAI (CEO) - UAI (Outsider Directors)		0.031**		0.044*	0.065**
		(0.014)		(0.025)	(0.032)
UAI (CEO) - UAI (Executives)			0.019	-0.015	-0.022
			(0.013)	(0.023)	(0.030)
CEO Age	-0.001**	-0.001**	-0.001**	-0.001**	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Missing Age	-0.052***	-0.052***	-0.052***	-0.052***	0.165***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.035)
CEO Education	0.018***	0.018***	0.018***	0.018***	0.007
	(0.006)	(0.006)	(0.006)	(0.006)	(0.011)
Missing Edu.	0.004	0.004	0.005	0.004	0.011
	(0.010)	(0.010)	(0.010)	(0.010)	(0.022)
Female	-0.005	-0.005	-0.005	-0.005	-0.000
	(0.014)	(0.014)	(0.014)	(0.014)	(0.020)
Log(MB)	0.039***	0.039***	0.039***	0.039***	0.013***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
ROA	-0.001***	-0.001***	-0.001***	-0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Sales)	0.062***	0.062***	0.062***	0.062***	0.066***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.008)
State and Industry FE	x	x	x	x	
Year and Firm FE					x
Obs.	4,348	4,348	4,348	4,348	18,706
Adj. R^2	0.357	0.357	0.357	0.357	0.642

Appendix A: Image of a Passenger Record from Ancestry.com

Page Tools

Start a Tree with this person
Save record to my shoebox
Add Alternate Information
Report Issue
View printer-friendly

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Comments

There are no comments for this record

Leave a comment

Make a Connection

Find others who are researching your ancestors in Public Member Trees:

Find others researching John Welch

New York, Passenger Lists, 1820-1957 about John Welch

Name:	**John Welch**
Arrival Date:	2 May 1851
Birth Date:	abt 1789
Age:	62
Gender:	Male
Ethnicity/ Nationality:	British (English)
Place of Origin:	Great Britain
Port of Departure:	Liverpool, England
Destination:	United States of America
Port of Arrival:	New York, New York
Ship Name:	Oriental
Search Ship Database:	Search the Oriental in the 'Passenger Ships and Images' database

View Passenger List

Save This Record
Attach this record to a person in your tree as a source record, or save for later evaluation.

Save

Source Citation: Year: *1851*; Arrival: *New York, New York*; Microfilm Serial: *M237, 1820-1897*; Microfilm Roll: *Roll 098*; Line: *42*; List Number: *465*.

Source Information:

THE NATIONAL ARCHIVES
ARCHIVES.GOV

Ancestry.com. *New York, Passenger Lists, 1820-1957* [database on-line]. Provo, UT, USA: Ancestry.com Operations, Inc., 2010.

Original data:

Passenger Lists of Vessels Arriving at New York, New York, 1820-1897. Microfilm Publication M237, 675 rolls. Records of the U.S. Customs Service, Record Group 36. National Archives at Washington, D.C.

Passenger and Crew Lists of Vessels Arriving at New York, New York, 1897-1957. Microfilm Publication T715, 8892 rolls. Records of the Immigration and Naturalization Service; National Archives at Washington, D.C.

Supplemental Manifests of Alien Passengers and Crew Members Who Arrived on Vessels at New York, New York, Who Were Inspected for Admission, and Related Index, compiled 1887-1952. Microfilm Publication A3461, 21 rolls. ARC ID: 3887372. RG 85, Records of the Immigration and Naturalization Service, 1787-2004; Records of the Immigration and Naturalization Service; National Archives, Washington, D.C.

Index to Alien Crewmen Who Were Discharged or Who Deserted at New York, New York, May 1917-Nov. 1957. Microfilm Publication A3417. ARC ID: 4497925. National Archives at Washington, D.C.

Passenger Lists, 1962-1972, and Crew Lists, 1943-1972, of Vessels Arriving at Oswego, New York. Microfilm Publication A3426. ARC ID: 4441521. National Archives at Washington, D.C.

Description:
This database is an index to the passenger lists of ships arriving from foreign ports at the port of New York from 1820-1957. In addition, the names found in the index are linked to actual images of the passenger lists. Information contained in the index includes given name, surname, age, gender, arrival date, port of arrival, port of departure and ship name. Learn more...

Appendix B: Variable Definitions

UAI (CEO)	Uncertainty Avoidance Index for the CEO, from Hofstede. See the data section for detailed explanation.
UAI (Executives)	The average value of UAI of the top four most highly paid non-CEO executives in a firm-year.
UAI (Outside Directors)	The average value of UAI of the non-executive directors in a firm-year.
UAI (Common)	The first principal component of UAI, UAI (Executives), and UAI (Outside Directors) in a firm-year, normalized to have the same mean and standard deviation as UAI (CEO).
L#.UAI (Common)	#-th Lag of UAI (Common) by firm-year. L1.UAI is the one-year lag of UAI (Common), and so on.
LG#.UAI (Common)	Lag of UAI (Common) by generation. LG1.UAI (Common) is the UAI (Common) of the last generation (measured at the first year when the last CEO took office), and so on. A generation of leadership consists of the managers and directors under a CEO's regime.
|UAI (CEO) - UAI (Executives)|	The absolute difference between the CEO's UAI and the executive team's UAI in a firm-year
|UAI (CEO) - UAI (Executives)$\|_{avg}$	The absolute difference between the CEO's UAI and the non-CEO executives' UAI, averaged over a CEO's entire tenure.
UAI (CEO) - UAI (Outside Dir.)	The difference between the CEO's UAI and the non-executive directors' UAI in a firm-year.
|UAI (CEO) - UAI (Outside Dir.)$\|_{avg}$	The absolute difference between the CEO's UAI and the non-executive directors' UAI, averaged over a CEO's entire tenure.
UAI (Founders)	The UAI of the founder(s), averaged if there are multiple founders.
UAI (Pre-turnover Executives)	The average value of UAI of the top four most highly paid non-CEO executives in the year before CEO turnover.
UAI (Pre-turnover Outside Directors)	The average value of UAI of the non-executive directors in the year before CEO turnover.
UAI (Outgoing CEO)	UAI of the departing CEO
EthnicityMatch (Director)	An indicator variable that equals one if a CEO's (dominant) origin is the same as the most common (dominant) origin among the non-executive directors, and zero otherwise.
EthnicityMatch (Exec)	An indicator variable that equals one if a CEO's (dominant) origin is the same as the most common (dominant) origin among the top four non-CEO executives, and zero otherwise.

Fraction of Match (Directors)	The fraction of directors in a firm-year whose dominant origin is the same as the dominant origin of the CEO.
Fraction of Match (Exec)	The fraction of executives in a firm-year whose dominant origin is the same as the dominant origin of the CEO.
CEO Age	The age of the CEO.
Missing Age	An indicator variable that equals one if a CEO's age information is missing, and zero otherwise.
CEO Education	The level of the CEO's education. It is equal to 3 if the CEO holds a doctorate degree (including post-doctoral training), and equal to 2 if the highest degree is a Master's degree, and equal to 1 if the highest degree is undergraduate. If the education information is missing, we set "CEO Education" to be zero, and "Missing Education" is equal to one.
Missing Education	An indicator variable that equals one if a CEO's education information is missing, and zero otherwise.
Female	An indicator variable that equals one if a CEO is a female, and zero if female.
Insider CEO	An indicator variable that equals one if a CEO is promoted to the position from within the firm and zero otherwise.
CEO Tenure	The number of years since the CEO takes office. The value equals zero for the year in which the turnover occurs. This measure varies over time by firm-CEO.
CEO Entire Tenure Length	The total time in office, measured ex post for CEOs in our sample, except for the last reigning CEO in each firm in our sample. This measure does not vary over time by firm-CEO.
Acquisition	An indicator variable that equals one if the firm engages in mergers or acquisitions during a fiscal year, and zero otherwise.
R&D Rate	Annual R&D expenses scaled by the firm's sales at the beginning of the year.
Cash Rate	Cash holdings scaled by the firm's book assets.
Leverage	Total debt scaled by the firm's book assets.
Log(MB)	The logarithm of the firm's ratio of the market value of equity to the book value of equity.
ROA	Earnings before interest, tax, and depreciation scaled by the firm's book assets at the beginning of the year.
Log(Sales)	The logarithm of the firm's net sales.
Vega	The dollar change (in millions) in CEO's wealth associated with a one-percentage-point change in the standard deviation of the firm's returns.

Appendix C: Robustness Checks

Panel A: Impact of Noise and Imprecision in UAI (Founders)

This table reports the impact of noise and imprecision in the measurement of founders' UAI on the firm fixed effects in corporate policies, similar to Panels A and B in Table 8. We interact UAI (Founders) with one of the two measurement error proxies: In Columns (1), (3), (5), and (7), we use # of Origins, which is the number of non-USA origins associated with a founder's last name. In Columns (2), (4), (6), and (8), we use Dispersion in UAI, which is the standard deviation of UAI values associated with different origins of a founder's last name. If a firm has more than one founder, we average # of Origins (or Dispersion in UAI) across all founders for this firm. Definitions of all variables are provided in Appendix B. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
	Acquisition Firm FE		R&D Firm FE		Cash Firm FE		Leverage Firm FE	
UAI (Founders)	-0.181***	-0.198*	-2.615***	-3.834***	0.065*	0.020	-0.088	-0.067
	(0.068)	(0.108)	(0.888)	(1.279)	(0.039)	(0.055)	(0.056)	(0.083)
UAI (Founders) x # of Origins	0.005**		0.025		-0.000		0.002	
	(0.002)		(0.031)		(0.001)		(0.002)	
# of Origins	-0.002		-0.012		-0.000		-0.001*	
	(0.001)		(0.014)		(0.001)		(0.001)	
UAI (Founders) x Dispersion in UAI		0.854		11.993*		0.201		0.238
		(0.593)		(7.160)		(0.315)		(0.462)
Dispersion in UAI		-0.300		-5.285		-0.133		-0.144
		(0.283)		(3.405)		(0.145)		(0.219)
State and Ind FE	x	x	x	x	x	x	x	x
Obs.	1,848	1,848	1,170	1,170	1,848	1,848	1,848	1,848
Adj. R^2	0.060	0.059	0.217	0.219	0.324	0.324	0.300	0.298

Panel B: Clustering Standard Errors (S. E.) by Largest Origin: Investment Policies

This table compares the effect of founders' UAI on firm fixed effects in investment policies, as in Panel A of Table 8, without clustering of standard errors (Columns (1), (3), (5), (7)) or clustered by the largest origin (by frequency of the nationality in the NY passenger lists) associated with a founder's last name (Columns (2), (4), (6), (8)). We focus on the subsample of firms with only one founder, so we can clearly identify the largest origin for a founder at a firm. Definitions of the variables are provided in Appendix B. All regressions include controls and a constant term as in Panel A of Table 8. ***, **, * denote significance at 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Acquisition FE				R&D FE			
UAI (Founders)	-0.115**	-0.115***	-0.086*	-0.086***	-2.329***	-2.329***	-1.801***	-1.801***
	(0.045)	(0.036)	(0.049)	(0.032)	(0.635)	(0.700)	(0.648)	(0.505)
S.E. clustered by origin		x		x		x		x
State and Ind FE			x	x			x	x
Obs.	1,278	1,278	1,278	1,278	783	783	783	783
Adj. R^2	0.004	0.004	0.042	0.042	0.015	0.015	0.260	0.260

Panel C: Clustering Standard Errors (S. E.) by Largest Origin: Financial Policies

This table compares the effect of founders' UAI on firm fixed effects in financial policies, as in Panel B of Table 8, without clustering of standard errors or clustered by the largest origin associated with a founder's last name.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cash FE				Leverage FE			
UAI (Founders)	0.113***	0.113***	0.058**	0.058	-0.082*	-0.082	0.021	0.021
	(0.030)	(0.041)	(0.027)	(0.036)	(0.044)	(0.053)	(0.040)	(0.032)
S.E. clustered by origin		x		x		x		x
State and Ind FE			x	x			x	x
Obs.	1,278	1,278	1,278	1,278	1,278	1,278	1,278	1,278
Adj. R^2	0.011	0.011	0.281	0.281	0.002	0.002	0.276	0.276