



# Does organization capital increase firm risk? Evidence from firms with human resource executives<sup>☆</sup>

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## ABSTRACT

We investigate whether and how organization capital affects firm risk using the presence of human resource executives (HREs) in top management teams as an indicator of superior human resource management, a specific component of organization capital. Based on a comprehensive sample of the largest firms in the U.S., we find that the stock market performance of firms with HREs is significantly worse than that of other firms at the worst times for the market. We also find that firms with HREs are more likely to be poor stock-market performers at the worst times for the market even if we control for other factors known to affect firm risk. The results suggest that firms with HREs and thus greater stock of organization capital are fundamentally riskier than other firms.

## 1. Introduction

In their influential study, Eisfeldt and Papanikolaou (2013) develop a theoretical model in which the outside option of the key talent determines shareholders' share of firm cash flows and as a result, renders firms with high organization capital riskier from shareholders' perspective. This prediction has important implications for the effects of organization capital, an increasingly recognized key production factor (Boubake et al., 2021), and the determination of firm risk, a classic issue in business and economics. However, up to date, there has been relatively little empirical evidence on the link between organization capital and firm risk.

This lack of empirical evidence is possibly due to the challenge of measuring organization capital. As an intangible asset, organization capital is notoriously known to be hard to gauge (Tronconi and Marzetti, 2011). Some studies (e.g., Lev et al., 2009; Eisfeldt and Papanikolaou, 2013) have used a firm's capitalized sales, general, and administrative (SG&A) expense as a proxy for organization capital. However, accounting practices governing the exact composition of SG&A expense vary across industries and the SG&A expense typically contains components that are unrelated to organization capital (Li et al., 2018).

To circumvent the challenge of measuring organization capital as a whole, we focus on a specific component of organization capital, human resource management (HRM). HRM is the strategic approach to effectively and efficiently managing employees to gain a competitive advantage and is therefore widely viewed as a component of organization capital (e.g., Black and Lynch, 2005). As a proxy for superior HRM, we follow Chadwick et al. (2016) and use the presence of human resource executives (HREs) in top management teams (TMTs). HREs are believed to have superior ability in HRM and are relatively expensive. Thus, the presence of an HRE suggests that the firm emphasizes HRM and is more likely to adopt optimal HRM practices (Chadwick et al., 2016). As a result, firms

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with HREs on average should have greater stock of organization capital than their peers.

To identify fundamentally risky firms, we adopt Lakonishok et al. (1994) model-free approach. The rationale of this approach is that riskier firms should perform worse in extremely bad states of the world. Accordingly, we classify the bottom 25% of sample firms with the lowest annual stock returns in each of the stock market's five worst years in our sample period as risky firms. In essence, this risk measure is based on the response of an individual firm's stock returns to market returns and thus captures largely the systematic component of the firm's equity risk. As Lakonishok et al. (1994) point out, their model-free approach not only makes it possible to avoid the use of asset pricing models that might be incomplete in identifying risk factors but also provides a reliable indicator of how risky a firm is "even when conventional measures of risk such as beta and standard deviation do not show it" (Lakonishok et al., 1994, p. 1569).

Using a comprehensive sample of nearly all firm-year observations jointly listed in the ExecuComp and Compustat databases from 1992 to 2020, we find that firms with HREs have significantly lower stock returns in extremely bad states of the world although they are typically large and mature firms on average. We also find that firms with HREs are more likely to be poor stock-market performers at bad times for the stock market even if we control for other factors known to affect firm risk. Overall, these results suggest that firms with HREs are riskier than other firms from the perspectives of equity (stock) holders, which is consistent with the notion that firm risk increases with organization capital.

Our work contributes to the literature in several ways. First, we provide novel evidence on the link between organization capital and firm risk and thus contribute to a better understanding of the two critical constructs. Second, our study is among the first to link HRM in general and HREs in particular to firm risk and thus contributes significantly to an extensive and growing literature on the human factor in business. Third and finally, our study contributes to an extant risk management literature by identifying HRM as a new and potentially important factor that affects firm risk.

## 2. Data

### 2.1. Sample construction

Our sample consists of 50,393 firm-year observations jointly listed in the ExecuComp and Compustat databases from 1992 to 2020 that have non-missing values for several key firm characteristics (i.e., firm size, market to book, ROA, and leverage). As common practice, we exclude extremely small firms (i.e., firms with annual sales of \$20 million or less).

We use ExecuComp to identify firms with HREs, who are among the highest-paid executives listed in the database. We classify an executive as an HRE if the title of the executive contains the term "human resource". The typical titles of the HREs in our sample are "Senior Vice President of Human Resources" and "Chief Human Resources Officer and Executive Vice President". The average ratio of HRE total pay to CEO total pay in our sample is 0.323 with a standard deviation of 0.277. By comparison, Barron and Waddell (2003) find in a sample for the period of 1992–2000 that the average ratio of non-CEO executive pay to CEO pay is 0.556 with a standard deviation of 0.300. These statistics are consistent with the fact that HREs are usually not the top paid non-CEO executives; however, they do suggest that HREs have substantial importance and power in their firms.

We use Compustat to obtain the relevant accounting information for the firms in our sample. Out of 50,393 firm-year observations,

**Table 1**  
Firm characteristics and HREs.

	Non-HRE firms (1)	HRE firms (2)	Difference: (1)–(2)	t(z)-statistic
Size	7.252 7.143	7.516 7.455	–0.264*** –0.312***	–9.826 8.850
Market to book	3.160 2.140	2.780 2.119	0.380 0.021	0.358 0.670
ROA	0.033 0.039	0.028 0.041	0.005* –0.002*	1.857 1.790
R&D	0.024 0.000	0.022 0.000	0.002** 0.000	2.950 0.000
Net CAPX	0.009 0.000	0.004 –0.001	0.005*** 0.001***	7.345 43.310
Leverage	0.172 0.133	0.181 0.152	–0.009*** –0.019***	3.354 5.610
Business segments	1.120 1.000	1.200 1.000	–0.080*** 0.000	9.880 0.000
Sales Herfindahl	0.270 0.184	0.327 0.251	–0.057*** –0.067***	13.690 20.990

In this table we test the mean and median (below the mean) differences in firm characteristics between HRE and non-HRE firms in the full sample that covers the period of 1992–2020. *Size* is the natural logarithm of total sales. *Market to book* is the ratio of the market value of assets divided by the book value of assets at the beginning of the year. *ROA* is net income before extraordinary items divided by total assets at the beginning of the year. *R&D* is R&D expenditures scaled by total assets (missing values are set to be zero). *Net CAPX* is the difference between capital expenditures and sales of property, plant, and equipment divided by total assets (missing values are set to be zero). *Leverage* is total liabilities divided by total assets. *Business segments* are the number of business segments reported in the Compustat Segment Database. *Sales Herfindahl* is the sum of the squared ratios of segment sales to total sales. \*\*\*, \*\*, and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

3679 (or 7.3%) have an HRE among the top executives reported in the ExecuComp database. As we show in Table 1, firms with HREs are generally larger and more diversified than non-HRE firms.

## 2.2. Control variables

Following prior work (e.g., Low, 2009), we control for a set of variables that are known to affect firm risk. *Firm size* is the natural logarithm of total sales at the beginning of the year. A negative relation between firm size and firm risk is well documented in the literature. *Market-to-book* is the ratio of the market value of assets divided by the book value of assets at the beginning of the year. As in previous studies (e.g., Low, 2009), we use *Market-to-book* as a proxy for investment opportunities and we expect it to be negatively related to firm risk. *ROA* is net income before extraordinary items divided by total assets at the beginning of the year. As a profitability measure, *ROA* is negatively related to firm risk.

*R&D* is R&D expenditures scaled by total assets (missing values are set to be zero). *Net capital expenditures* are the difference between capital expenditures and sales of property, plant, and equipment divided by total assets (missing values are set to be zero). As indicators of corporate investment, *R&D* and *Net capital expenditures* usually increase firm risk. *Leverage* is total liabilities divided by total assets, which is generally believed to increase firm risk. *Business segments* are the number of business segments reported in the Compustat Segment Database. Finally, *Sales Herfindahl* is the sum of the squared ratios of segment sales to total sales. As measures of corporate diversification, *Business segments* and *Sales Herfindahl* are widely believed to affect firm risk but the direction of this effect is unclear (e.g., Thomas, 2002). Table 1 provides summary statistics for the key variables in our sample as well as the mean and median (in parentheses) differences in firm characteristics between firms with and without HREs.

## 3. Results

Table 2 examines the mean and median differences in stock returns between firms with and without HREs in the worst years of the stock market in our sample period. The results clearly indicate that HRE firms have significantly lower stock returns than non-HRE firms at the worst times for the stock market, which is consistent with the notion that firms with HREs are fundamentally riskier than non-HRE firms. We interpret this result as indicating that firm risk increases with organization capital.

To control for other factors that might affect firm risk, we regress the nonparametric risk measure on HRE presence in Table 3. Here, we use data in the five worst years for the stock market in our sample period. The dependent variable is a dummy variable that equals one if firm stock return is in the bottom quartile of a particular year and zero otherwise. Given the dichotomous nature of the dependent variable, we estimate the regressions through probit and logit. We only report the probit results because both methods produce qualitatively the same results. As we show in Table 3, we find a significant and positive relation between HRE presence and the dependent variable. This result suggests that firms with HREs are more likely to perform poorly at the worst times, which is again consistent with the notion that firm risk is positively related to organization capital.

In our setting, reverse causality appears to be unlikely because firms with HREs are typically larger, more diversified, and thus less risky. However, we cannot rule out the possibility that a hidden factor could affect both firm risk and the presence of HREs at the same time. To further address the concern about endogeneity, we match HRE firms with non-HRE firms. In doing so, we find, for every firm-year observation with an HRE, a matching firm in the same industry (based on Fama-French 49 industry classifications), in the same year, and with the closest size. We find that based on matched firms, the effects of interest in Tables 2 and 3 become relatively weaker, which is not surprising; for example, the coefficients on the HRE dummy in Table 3 become 0.142 and 0.145, respectively. However, the signs of these effects do not change. Perhaps more important, the effects of interest remain statistically significant at either 5% or 10% levels in both Tables 2 and 3 in every case except for the median difference in S&P 500 index returns in Panel A of Table 2. Overall, the matching results are generally consistent with the results in the full sample.

## 4. Conclusion

In this paper we find that firms with HREs are fundamentally riskier than non-HRE firms. This result represents new evidence on a

**Table 2**  
Stock market performance of firms with HREs in the worst states of the world.

Panel A: The worst five years for the stock market based on the S&P 500 index				
	HRE firm (1)	Non-HRE firm (2)	Difference: (1) – (2)	t(z)-statistic
Annual stock returns	–0.152	–0.072	–0.080***	–3.11
	–0.199	–0.144	–0.055**	–2.47
Panel B: The worst five years for the stock market based on the CRSP equally-weighted index				
	HRE firm (1)	Non-HRE firm (2)	Difference: (1) – (2)	t(z)-statistic
Annual stock returns	–0.169	–0.105	–0.064***	–3.11
	–0.194	–0.147	–0.047**	–2.45

In this table we test the mean and median (below the mean) differences in annual stock returns between HRE firms and non-HRE firms in the worst five years for the stock market between 1992 and 2020. Based on S&P 500 index returns, the worst five years are 2008, 2002, 2001, 2000 and 2018. Based on CRSP equally-weighted index returns, the worst five years are 2008, 2018, 2000, 2002 and 2011. \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

**Table 3**

The likelihood of firms with HREs becoming particularly poor performers in the worst states of the world.

Variables	In the worst five years based on the S&P 500 index	In the worst five years based on the CRSP equally-weighted index
HRE dummy	0.202*** (0.062)	0.226*** (0.058)
Size	−0.072*** (0.012)	−0.064*** (0.011)
Market to book	−0.000 (0.000)	−0.000 (0.000)
ROA	−0.975*** (0.078)	−1.538*** (0.108)
R&D	5.119*** (0.345)	4.693*** (0.340)
Net CAPX	1.783*** (0.413)	1.667*** (0.416)
Leverage	1.041*** (0.097)	0.973*** (0.096)
Business segments	0.046 (0.046)	0.067 (0.044)
Sales Herfindahl	0.391*** (0.069)	0.407*** (0.067)
Industry dummies	Yes	Yes
Year dummies	Yes	Yes
Constant	−0.469*** (0.103)	−0.566*** (0.100)
Observations	8911	9253
Pseudo $R^2$	0.137	0.146

In this table, we investigate the impact of the presence of HREs on the likelihood of firms becoming particularly poor performers in the worst states of the world. In doing so, we estimate a probit model using data from the worst five years for the stock market between 1992 and 2020. The dependent variable is a dummy variable that equals one if a firm's annual stock return is in the bottom quartile of a particular year and zero otherwise. *HRE dummy* is an indicator variable that takes the value of one if the firm reports an HRE and zero otherwise. Definitions of other variables are in Table 1. Standard errors are in parentheses. \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

positive link between organization capital and firm risk. It is also consistent with previous evidence that the presence of HREs increases firm value (Chadwick et al., 2016). Given that firm value increases with firm risk for large and mature firms (Shin and Stulz, 2000), the value of firms with HREs, which are typically large and mature firms, should increase if the presence of HREs increases firm risk.

A caveat of our analysis is that the presence of HREs might only be a coarse measure of firms' strategic emphasis on HRM, although this measure makes it possible to explore a large sample. Future research using alternative measures of HRM or organization capital would prove to be fruitful.

## Data Availability

The authors do not have permission to share data.

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