Relative Levels of CEO Inside Debt and the Impact of Hedging on Shareholder Value

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Abstract

This study examines the question of whether poorly diversified CEOs with high levels of inside debt engage the firm in costly hedging activity to reduce personal risk exposure at the expense of shareholder wealth. This study utilizes multifactor asset pricing regressions on the returns from self-financing portfolios of hedging firms that are long firms with high levels of CEO inside debt and short those with low levels. When these returns are value-weighted there is no evidence of significant abnormal returns, suggesting in aggregate hedging activity is not carried out at shareholder expense. Using equally-weighted returns that emphasize the typical smaller firms, however, result in significant negative abnormal returns, suggesting these firms lack the managerial sophistication and economies of scale to hedge efficiently, but still engage in costly hedging activity to mitigate CEOs' personal risks at the expense of shareholders. In all models, high CEO debt firms are less risky than their counterparts, mostly in terms of market, size, and profitability risks as evidenced with significant factor loadings.

Keywords: inside debt, hedging, derivatives, multifactor models, return anomalies

1. Introduction

CEO pension benefits and other deferred compensation, referred to as CEO inside debt holdings, represent unsecured liabilities of the firm. In their seminal paper, Jensen and Meckling (1976) demonstrate how CEO compensation using inside debt can mitigate conflicts between bondholders and shareholders. CEOs who receive equity-based compensation, such as stock options, have an incentive to risk-shift toward riskier assets, thus increasing the wealth of shareholders at the expense of bondholders. The introduction of inside debt to the CEOs compensation package, however, has the effect of more closely aligning the CEO's incentives with those of the bondholders. The higher the CEO's ratio of inside debt to equity-based compensation, the more closely the CEO's incentives will be aligned with the bondholders and thus incentivizing the CEO to reduce overall firm riskiness.

Consistent with the predictions of Sundaram and Yermack (2007), numerous empirical studies have examined the presence of CEO inside debt and its influence on managerial incentives regarding the firm's financing and investing decisions. For example, Cassell, Huang, Sanchez, and Stuart (2012) find a positive relationship between CEO inside debt and firm diversification and asset liquidity, as well as a negative relationship between CEO inside debt and future stock volatility, leverage, and R&D expenditures. Phan (2014) examines announcement returns for mergers and acquisitions, and finds higher bondholder and lower shareholder returns for acquirers with higher levels of CEO inside debt. Dhole, Manchiraju, and Suk (2016) find a lower incidence of earnings management activities for firms with higher levels of CEO inside debt. Finally, Srivastav, Armitage, and Hagendorff (2014) show that banking firms with higher CEO inside debt levels have more conservative payout policies toward equity holders.

While the impact of CEO inside debt on many firm decisions have been examined, one omission in the current literature is in examining the role of CEO inside debt on the impact of firms' hedging decisions. Smith and Stulz (1985) contend that the structure of CEO compensation impacts the firm's decision to hedge. Srinivasan (2024) finds that firms with higher levels of inside debt are more likely to use derivative securities (hedge). This is consistent with inside debt influencing the level of CEO risk aversion and the firm's movement toward less risky policies and investments. An important question that has not been addressed, however, is whether CEOs with high inside debt engage in these hedging policies at the expense of shareholder value as measured by risk-adjusted stock returns.

If financial markets are efficient, transactions costs are zero, and the other classic Modigliani and Miller (1958) assumptions all hold, then hedging should be a zero NPV proposition for the firm and therefore have no impact upon firm value. If managers are poorly diversified, however, firms may still engage in hedging activity even if hedging is a negative NPV proposition for the shareholders, because hedging is costly to implement, requires managerial sophistication, or requires large economies of scale to implement [Smith and Stulz (1985), Dolde (1993), Nance, Smith, and Smithson (1993)]. Hedging may also be a positive NPV proposition if hedging strategies reduce the costs of financial distress, thereby increasing firm value [Smith and Stulz (1985)].

While several studies, such as Allayannis and Weston (2001) have documented a positive relationship between hedging and relative firm value as measured by Tobin's Q, there is only limited evidence regard the impact of hedging on the market value of equity as measured by risk-adjusted stock returns. One exception is Nelson, Moffitt, and Affleck-Graves (2005), who find significant positive risk-adjusted returns for firms that hedge currency and risk-adjusted returns for firms that hedge interest rates and commodities that are insignificantly different from zero. They further document that these significant positive risk-adjusted returns are limited to large firms hedging currency, supporting the need for managerial sophistication and economies of scale to hedge effectively [Dolde (2003), Nance, Smith, and Smithson (2003)].

This study examines the question of whether CEOs with high levels of inside debt engage the firm in hedging activity to reduce personal risk exposure at the expense of shareholder value using a calendar-time portfolio approach like that of Nelson, Moffitt, and Affleck-Graves (2005). Specifically, this paper examines a self-financing portfolio of firms using derivatives that is long high CEO inside debt firms and short low CEO inside debt firms. To control for variations in risk between the high and low CEO inside debt firms, this study risk-adjusts the calendar-time portfolio returns using the latest multifactor asset pricing models.

2. Sample

Following Sundaram and Yermack (2007) and Wei and Yermack (2011), using the Compustat Execucomp database, I calculate the relative CEO inside debt ratio for all CEO/firm observations with available data from 2012 through 2022. Specifically, the CEO inside debt ratio is calculated as:

$$CEO\ Inside\ Debt\ Ratio = \frac{Deferred\ Compensation + Present\ Value\ of\ Pensions}{CEO\ Shares\ \times Price + Estimated\ Value\ of\ Unexercised\ Options} \tag{1}$$

Next, each firms' debt ratio is calculated as:

$$Firm\ Debt\ Ratio = \frac{Debt\ in\ Current\ Liabilities + Long\ Term\ Debt}{Shares\ Outstanding\ \times Price} \tag{2}$$

Finally, the relative CEO inside debt ratio is calculated as:

$$Relative\ CEO\ Inside\ Debt\ Ratio = \frac{CEO\ Inside\ Debt\ Ratio}{Firm\ Debt\ Ratio} \tag{3}$$

This process generates 20,527 firm/year observations representing 2,409 unique firms.

Accounting Standards Update (ASU) 2011-11, as revised by ASU 2013-01, requires firms to disclose their offsetting asset and liability positions in derivative securities. Starting in September 2013, the Compustat database began reporting both the current and long-term derivative assets and liabilities by aggregating these derivative assets and liabilities across all derivative types. Although this data allows the identification of firms that hedge, because of the aggregation, it does not allow the identification of the specific types (currency, interest rate, or commodity) of hedging activity each firm is engaging in.

Following both Nelson et al (2005) and Nelson (2023), I identify a sample of firms that hedge by first selecting all U.S. incorporated firms from the Compustat database with fiscal year ends from September 2013 through December 2023 that have non missing total assets. This sample of firms is then merged with the Center for Research in Security Prices (CRSP) database, where all observations other than common stock (share codes 10 and 11) are removed. All financial firms (SIC codes 6000-6999) and Utilities (SIC codes 4900 – 4999) are also removed. For each remaining observation, the variables, derivative assets – current (DERAC), derivative liabilities – current (DERLC), derivative assets – long term (DERALT), and derivative liabilities – long term (DERLLT) are examined and observations with nonzero values for any of these variables are identified as hedging firms.

Table 1. Mean (Median) Values for Variables of Interest for Hedging Sample

Variable of Interterest	All Sample Firms Using Derivatives	Firms with High Levels of Inside Debt	Firms with Low Levels of Inside Debt	P-Value on Test of Differences
Relative CEO Inside Debt Ratio	0.2369	0.7273	0.0000	0.0001
	(0.0385)	(0.2989)	(0.0000)	0.0001
CEO Age in Years	57.1	57.3	56.3	0.0001
	(57.0)	(58.0)	(56.0)	0.0001
Total Assets (Millions)	15,751.5	27,670.3	10,260.5	0.0001
	(4,409.7)	(9,194.2)	(2,759.4)	0.0001
Market Value of Equity (Millions)	20,991.8	37,154.1	15,959.0	0.0001
	(4,564.7)	(11,196.0)	(3,085.5)	0.0001
Book-to-Market	1.12	2.39	0.39	0.3364
	(0.33)	(0.33)	(0.31)	0.0260
Total Q	1.37	1.37	1.55	0.0008
	(0.96)	(1.00)	(1.01)	0.9680
Return on Assets	0.0407	0.0603	0.0249	0.0001
	(0.0495)	(0.0610)	(0.0408)	0.0001
Return on Equity	0.1188	0.1708	0.0796	0.5667
	(0.1181)	(0.1436)	(0.0989)	0.0001
Investments to Assets	0.1015	0.0637	0.1461	0.0001
	(0.0382)	(0.0298)	(0.0555)	0.0001
N	5,894	1,772	2,134	

Notes: The inside debt ratio is the ratio of the CEO's debt ratio calculated using the Compustat Execucomp Database as the present value of both total pension benefits and deferred compensation divided by the sum of the CEO's stock holdings and the estimated value of the CEO'S unexercised stock options divided by the firm's debt ratio calculated as the sum of long-term debt and debt in current liabilities divided by the market value of the total shares outstanding. High level inside debt firms were selected where the inside debt ratio was greater than or equal to the 70th percentile for the sample and the Low level inside debt ratio firms were selected where the inside debt ratio was less than or equal to the 30th percentile. There are multiple months where the 30th percentile for the inside debt ratio was equal to zero leading to more firms being placed into the low level inside debt portfolio. Total Q as defined by Peters and Taylor (2017) and was downloaded from the WRDS website. Investment to Assets was calculated as the change in total assets divided by total assets. All accounting data was downloaded from the Compustat North American Database. Reported p-values are the result of T-test on the differences in Means and Wilcoxon two sample test on the medians.

The final sample is the intersection from merging the CEO inside debt sample with the hedging firm sample, resulting in 6,403 firm/year observations representing 1,082 unique firms. For each year in this sample, the 30th and 70th percentile of the relative CEO inside debt ratio are calculated. Firms with relative CEO inside debt levels at or above the 70th percentile are classified as high inside debt firms and those at or below the 30th percentile are classified as low inside debt firms. In multiple years, the 30th percentile for the relative CEO inside debt ratio was equal to zero, resulting in a higher number of low inside debt firm / year observations (N = 2,134) as compared to their high inside debt counterparts (N = 1,772). Some descriptive statistics for several variables of interest are provided for both the high and low inside debt classifications are provided in Table 1.

The results presented in Table 1 show that CEOs with high relative levels of inside debt are significantly older and manage significantly larger firms in terms of both total assets and market capitalization. The high level inside debt firms also tend to be significantly more profitable in terms of both return on assets and return on equity, but have significantly lower levels of investment. These results are consistent with the high level inside debt firms being more closely aligned with "value" stocks and low level inside debt firms being more aligned with "growth" stocks as further evidenced by a significantly lower mean Total Q and a significantly higher median book-to-market ratio for the high inside debt firms. Taken together, these results suggest that the high and low inside debt firms are likely to have significantly different overall risk characteristics.

3. Methodology

I follow a similar methodology to that used by Nelson et al in setting up monthly calendar-time portfolios. I construct separate calendar-time portfolios for both high CEO inside debt hedging firms and low CEO inside debt hedging firms. If a firm has been identified as using derivatives during the firm's fiscal year, then that firm is classified as a hedger for all 12 months of that fiscal year. Each month the 30th and 70th percentiles of the relative CEO inside debt are calculated based upon the prior fiscal year's calculations. This provides the CEO inside debt levels for the start of the current hedging year. The calendar-time portfolios are rebalanced monthly to account for changes in CEO inside debt and hedging designations. I then calculate both the monthly value-weighted and equally-weighted returns on both the high and low CEO inside debt portfolios and then calculate the monthly returns on a zero-investment self-financing portfolio that is long hedging firms with high CEO inside debt and short hedging firms with low CEO debt, yielding $R_{High_t} - R_{Low_t}$, which is then used as the dependent variable in the following asset pricing regressions: [Fama and French (1993, 2015, 2018) and Carhart (1997):

$$R_{High_t} - R_{Low_t} = \alpha + \beta_{MKT}(R_{M_t} - R_{f_t}) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \varepsilon_t \quad (4)$$

$$R_{High_t} - R_{Low_t} = \alpha + \beta_{MKT}(R_{M_t} - R_{f_t}) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \beta_{UMD}UMD_t + \varepsilon_t \quad (5)$$

$$R_{High_t} - R_{Low_t} = \alpha + \beta_{MKT}(R_{M_t} - R_{f_t}) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \beta_{RMW}RMW_t + \beta_{CMA}CMA_t + \varepsilon_t \quad (6)$$

$$R_{High_t} - R_{Low_t} = \alpha + \beta_{MKT}(R_{M_t} - R_{f_t}) + \beta_{SMB}SMB_t + \beta_{HML}HML_t + \beta_{RMW}RMW_t + \beta_{CMA}CMA_t + \beta_{UMD}UMD_t + \varepsilon_t \quad (7)$$

Where $R_M - R_f$ is the market excess return factor, SMB is a size factor calculated as the return on portfolios of **s**mall firms **m**inus **b**ig firms, HML is a value / growth factor calculated as the return on portfolios of **h**igh book-to-market firms **m**inus **l**ow book-to-market firms, RMW is a profitability factor calculated as the return on portfolios with **r**obust profitability **m**inus **w**eak profitability, CMA is an investment factor calculated as the return on portfolios of firms with **c**onservative levels of investment **m**inus **a**ggressive levels of investment, and UMD is a momentum factor calculated as the return on portfolios of firms with high prior returns (**u**p) **m**inus firms with low prior returns (**d**own). The intercept term (α) in each of these asset pricing regressions is the primary variable of interest since it provides a measure of the monthly risk-adjusted abnormal performance.

In addition to the various Fama and French regressions, for robustness I also employ the Hou, Xue, and Zhang (2015) q-factor model and the Hou, Mo, Xue, and Zhang (2021) Augmented q-factor model by running the following asset pricing regressions:

$$R_{High_t} - R_{Low_t} = \alpha + \beta_{MKT}(R_{M_t} - R_{f_t}) + \beta_{ME}ME_t + \beta_{IA}IA_t + \beta_{ROE}ROE_t + \varepsilon_t \quad (8)$$

$$R_{High_t} - R_{Low_t} = \alpha + \beta_{MKT}(R_{M_t} - R_{f_t}) + \beta_{ME}ME_t + \beta_{IA}IA_t + \beta_{ROE}ROE_t + \beta_{EG}EG_t + \varepsilon_t \quad (9)$$

Where $R_M - R_f$ is the market excess return factor, ME is a size factor calculated as the difference in average returns between small firm portfolios and big firm portfolios, IA is an investment factor calculated as the difference in average returns between low investment portfolios and high investment portfolios, ROE is a profitability factor calculated as the difference in average returns between high ROE portfolios and the low ROE portfolios, and EG is an expected growth factor calculated as the difference in average returns between high expected growth portfolios and low expected growth portfolios. Once again, the intercept term (α) in each of these asset pricing regressions is the primary variable of interest since it provides a measure of the monthly risk-adjusted abnormal performance.

4. Results

Results from the Fama and French (1993) three-factor and Carhart (1997) four-factor regressions are reported in Table 2. In all cases the monthly regressions were run over the period from October 2012 through December 2023. For each regression, the dependent variable is the return on a zero-investment self-financing portfolio that is long hedging firms with high CEO inside debt and short hedging firms with low CEO debt. Because different weighting schemes can be used to examine different aspects of risk-adjusted abnormal returns [Loughran and Ritter (2000)], and consistent with Nelson et al (2005), the analysis is performed using both the value-weighted portfolio returns to examine the impact in aggregate and the equally-weighted portfolio returns to examine the impact on an average or typical firm. The mean (median) for the non-risk adjusted monthly value-weight return is -0.273% (-0.333%) and the equally-weight return is -0.287% (0.045%). The intercepts from the regressions provide a risk-adjusted measure of the return associated with the decision of high relative CEO inside debt firms to hedge relative to low relative inside debt firms.

The results presented in Table 2 suggest that there is no significant risk-adjusted abnormal performance associated with firms having high relative levels of CEO inside debt decision to hedge. In other words, there results suggest that, while their hedging activity may benefit the CEO by reducing overall risk, this activity does not appear to be carried out at the expense of shareholder value. It is worth noting, however, that high level CEO debt firms tend to be significantly less risky, as evidenced by significantly lower loadings on the market factor. For the value-weighted results, we observe significantly higher factors loadings on the HML (value / growth) and UMD (momentum) factors. For the equally weighted results, we observe no significant differences in the HML or UMD factors, but note a significantly lower loading on the SMB (size) factor.

One potential concern in the results of Table 2 are the significantly large loadings on the HML (value / growth) factor in the regressions run on value-weighted returns. Fama and French (2015) contend that the HML factor is a noisy proxy for expected returns since these returns also respond to investment and earnings forecasts. They introduce a more robust five-factor model that includes factors based upon investment (CMA) and profitability (RMW). They contend that these two new factors capture the risk exposures related to value / growth, making the HML factor redundant. They further show that their five-factor model outperforms both the earlier three and four-factor models. In Table 3, the regression results of the Fama and French (2015) five-factor and the Fama and French (2018) six-factor model, which includes the addition of a momentum factor (UMD), are presented.

Table 2. Results of Fama and French (1993) three and Carhart (1997) four factor regressions on the portfolio returns of high minus low inside debt firms that hedge

Portfolio	Intercept						
Weighting	Coefficient	Std Error	R_m - R_f	SMB	HML	UMD	Adj R^2
	-0.00010	0.00236	-0.23268	-0.09918	0.36414		0.2664
	(0.9647)		(0.0001)	(0.2814)	(0.0001)		
Value							
	-0.00075	0.00232	-0.18204	-0.05515	0.41670	0.17592	0.2941
	(0.7472)		(0.0020)	(0.5484)	(0.0001)	(0.0135)	
	-0.00258	0.00162	-0.07408	-0.48730	0.05878		0.3608
	(0.1141)		(0.0533)	(0.0001)	(0.1899)		
Equal							
	-0.00244	0.00163	0.04062	-0.49693	0.04729	0.04937	0.3589
	(0.1381)		(0.0380)	(0.0001)	(0.3167)	(0.4375)	

Notes: The dependent variables in these regressions are the differences in the monthly value or equally weighted portfolio returns from October 2012 through December 2023 for portfolios of firms identified as having high inside debt ratios (70th percentile) and firms identified as having low inside debt ratios (30th percentile). All firms in the sample are U.S. firms identified as using derivatives based on the annual reporting required under FASB ASC topic 815. The factors used in this regression were downloaded from WRDS. P-values in ().

Table 3. Results of Fama and French five and six factor regressions on the portfolio returns of high minus low inside debt firms that hedge

Portfolio Weighting	Alpha Coefficient	Alpha Std Error	R_m - R_f	SMB	HML	CMA	RMW	UMD	Adj R^2
	-0.00094	0.00223	-0.20014	0.05169	0.10462	0.55774	0.15584		0.3493
	(0.6759)		(0.0004)	(0.6112)	(0.2402)	(0.0001)	(0.2058)		
Value									
	-0.00146	0.00221	-0.16607	0.10081	0.15955	0.50578	0.19244	0.14942	0.3674
	(0.5107)		(0.0039)	(0.3272)	(0.0818)	(0.0002)	(0.1171)	(0.0305)	
	-0.00293	0.00159	-0.10957	-0.35280	0.16110	-0.14884	0.3105		0.3943
	(0.0675)		(0.0059)	(0.0001)	(0.0118)	(0.1193)	(0.0005)		
Equal									
	-0.00291	0.00160	-0.11071	-0.35443	0.15928	-0.14711	0.3093	-0.15735	0.3897
	(0.0719)		(0.0076)	(0.0001)	(0.0169)	(0.1311)	(0.1210)	(0.0006)	

Notes: The dependent variables in these regressions are the differences in the monthly value or equally weighted portfolio returns from October 2012 through December 2023 for portfolios of firms identified as having high inside debt ratios (70th percentile) and firms identified as having low inside debt ratios (30th percentile). All firms in the sample are U.S. firms identified as using derivatives based on the annual reporting required under FASB ASC topic 815. The factors used in this regression were downloaded from WRDS. P-values in ().

Consistent with the results from Table 2, the loadings on the market factor presented in Table 3 show that high level CEO debt firms are significantly less risky as evidenced by the significantly lower loadings on the market factor. The results on the value-weighted portfolio returns seem to support the Fama and French (2015) contention that the value / growth (HML) factor is a noisy proxy, with the magnitude of these factor loadings being much smaller and at best only marginally significant in these regressions. It appears that the difference in the HML factor loadings is primarily driven by the large and high significant loadings on the investment (CMA) factor, indicating that high CEO inside debt firms are significantly more conservative in their investment policies.

The equally-weighted portfolio results from Table 3 present a slightly different picture than their value-weighted counterparts. Most importantly, the equally-weighted results show marginally significant risk-adjusted abnormal returns of approximately -29 basis points attributable to high level CEO inside debt hedging firms. While the value-weighted returns are dominated by the firms with the largest market capitalization, smaller firms are counted the same as their large counterparts in the equally-weighted results, giving us more insight into the impact on average or typical firms. The significant abnormal performance observed suggests that the typical smaller hedging firm with high CEO inside debt lacks the managerial sophistication and economies of scale of their larger counterparts, but still engage in hedging activities even at the expense of shareholder value. Additionally, unlike the results presented in Table 2, the equally-weighted results from Table 3 show significant positive loadings on the “noisy” value / growth (HML) factor, and unlike the value-weighted results, they show insignificant loadings on the investment (CMA) factors and significant loadings on the profitability (RMA) factor.

One potential explanation for these marginally significant risk-adjusted abnormal returns in the equally weighted results is that they are related to the significant loadings on the value / growth (HML) and momentum (UMD) factors. Hoe, Xue, and Zhang (2014) propose a new asset pricing model inspired by the neoclassical q-theory of investment that they dub the q-factor model. They find that their investment factor is highly correlated with and appears to explain the returns on the Fama and French HML factor, while the HML factor is unable to explain the returns on their investment factor. Furthermore, they contend that their profitability factor is highly correlated with the Carhart momentum (UMD) factor and explains the UMD returns, while the UMD factor is unable to explain the returns on their profitability factor. They then suggest that both the HML and UMD factors are essentially noisy proxies for their investment and profitability factors. Hou, Mo, Xue, and Zhang (2021) further augment the original q-factor model with an additional factor based upon expected growth and show that this new model out performs not only the original q-factor model, but all the various Fama and French models as well. The results of both the q-factor regressions and augmented q-factor regressions are provided in Table 4.

The results for the value-weight portfolio returns, presented in Table 4, are consistent with the result for the previous Fama and French regressions. First, the risk-adjusted abnormal returns are not significantly different from zero, once again suggesting that, while their hedging activity may benefit the CEO by reducing overall risk, this activity does not appear to be carried out at the expense of shareholder value. The factor loadings are also consistent across models, showing that hedging firms with high relative levels of CEO inside debt have lower overall market, size, investment, and profitability risk than their low CEO inside debt counterparts. Surprisingly, the equally-weighted portfolio results are also consistent with those presented in Table 3, even after removal of the “noisy” HML and UMD factors from the models. With the equally-weighted results, we observe significant negative risk-adjusted abnormal returns of approximately -37 basis points per month. This significant abnormal performance observed suggests that the typical smaller hedging firm with high CEO inside debt lack the managerial sophistication and economies of scale of their larger counterparts, but still engage in hedging activities even at the expense of shareholder value. Once again, consistent with the Fama and French models presented in Table 3, we also observe significant loadings on the size (ME) and profitability (ROE) factors. In the augmented model, the expected growth factor (EG) was insignificant in both the value and equally-weighted results.

Table 4. Hou, Xue, and Zhang (2015) q-Factor and Hou, Mo, Xue, and Zhang (2021) Augmented q-Factor Regressions on the portfolio returns of high minus low inside debt firms that hedge

Portfolio Weighting	Alpha Coefficient	Alpha Std Error	R_m - R_f	ME	IA	ROE	EG	Adj R^2
	-0.00183	0.00224	-0.14828	0.16183	0.58226	0.22641		0.3651
	(0.4154)		(0.0081)	(0.0791)	(0.0001)	(0.0114)		
Value								
	-0.00195	0.00227	-0.14415	0.17534	0.60327	0.19937	0.05000	0.3608
	(0.3936)		(0.0121)	(0.0824)	(0.0001)	(0.0979)	(0.7374)	
	-0.00375	0.00166	-0.02778	-0.34507	0.07817	0.24369		0.3561
	(0.0258)		(0.4982)	(0.0001)	(0.2299)	(0.0003)		
Equal								
	-0.00368	0.00169	-0.03005	-0.35250	0.06660	0.25857	-0.02752	0.3515
	(0.0309)		(0.4761)	(0.0001)	(0.4061)	(0.0042)	(0.8036)	

Notes: The dependent variables in these regressions are the differences in the monthly value or equally weighted portfolio returns from October 2012 through December 2023 for portfolios of firms identified as having high inside debt ratios (70th percentile) and firms identified as having low inside debt ratios (30th percentile). All firms in the sample are U.S. firms identified as using derivatives based on the annual reporting required under FASB ASC topic 815. The factors used in this regression were downloaded from https://global-q.org/factors.html. P-values in ().

5. Summary and Conclusions

This study examines the extent to which CEOs with high relative levels of inside debt may engage in hedging activity to reduce CEOs’ personal risk exposures at the expense of shareholder value. This question is address though examination of a sample of 6,403 firm/year observation, consisting of 1,082 unique firms that were identified as engaging in hedging activities and which had the necessary data available to calculate the relative CEO inside debt levels. Using this sample, both value and equally-weighted zero investment self-financing portfolios were constructed that are long high CEO inside debt hedging firms and short low CEO inside debt hedging firms. In comparing the raw non-risk adjusted monthly returns, the high CEO debt firms, on average, returned 27 basis points less per month than their low CEO debt counterparts.

An examination of the value-weighted portfolio returns using six different multifactor asset pricing models showed no evidence of significant risk-adjusted abnormal returns, suggesting that, in aggregate, while hedging activity may benefit poorly diversified CEOs by reducing their overall risk, this activity does not appear to be carried out at the expense of shareholders. This result is consistent with larger hedging firms possessing the managerial sophistication and economies of scale to hedge efficiently and effectively. Consistent with the theorical predictions and empirical findings of earlier studies, results suggest that high CEO inside debt firms are less risky, on average, than their low CEO inside debt counterparts. Specifically, high CEO inside debt firms have lower overall market, size, investment, and profitability risk than their low CEO inside debt counterparts.

Since different weighting schemes can be used to examine different aspects of abnormal performance, the analysis was also performed on the equally weighted portfolio returns to estimate the impact on the average or typical firm. Contrary to the value-weighted results, an examination of the equally-weighted calendar-time portfolio returns using the six different multifactor asset pricing models show significant negative risk-adjusted abnormal returns, suggesting that the poorly diversified CEO of the typical smaller firm may benefit themselves through costly hedging activities, even at a cost to shareholder value. This result is consistent with these smaller firms lacking the managerial sophistication and economies of scale of their larger counterparts to efficiently and effectively hedge. Like the value-weighted results, the equally-weighted results also suggest the high CEO inside debt firms tend to be less risky that their low CEO inside debt counterparts. Specifically, they tend toward lower market, size, and profitability risk, while the reduction in investment related risk appears to be driven more by the larger hedging firms.

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