


**Please cite the Published Version**

Owusu, Andrews, Kwabi, Frank, Ezeani, Ernest  and Owusu-Mensah, Ruth (2022) CEO tenure and cost of debt. Review of Quantitative Finance and Accounting, 59 (2). pp. 507-544. ISSN 0924-865X

**DOI:** <https://doi.org/10.1007/s11156-022-01050-2>

**Publisher:** Springer Verlag

**Version:** Accepted Version

**Downloaded from:** <https://e-space.mmu.ac.uk/629869/>

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# CEO Tenure and Cost of Debt

## Abstract

In this study, we investigate the relationship between CEO tenure and cost of debt. Using a sample of the FTSE All-Share Index firms listed on the London Stock Exchange for the period 2009 to 2018 and the ordinary least squares regression (OLS) estimation method, we find that cost of debt is higher for firms with CEOs in their early tenure in office than those in their later tenure in office. Further analysis shows that board independence attributes including (1) the proportion of independent directors on the board, (2) full (100 per cent) independent audit committee members, and (3) a lead independent director representation on the board interact with CEO early tenure in office to reduce cost of debt due to the board's effective monitoring ability when the CEO is new and risk-seeking. Our study extends CEO tenure and corporate outcomes in general and in particular CEO risk-taking incentives and cost of debt literature, and has important implications for firms seeking to raise finance from the debt market when their CEO is new as well as identifying the control mechanisms that they need to put in place to lower the cost of debt.

**Keywords** CEO tenure · Cost of debt · Board independence

**JEL classification** F3 · G1 · K4

## **1 Introduction**

Several firms around the globe inherently and culturally use debt financing to meet their financing needs. Jensen and Meckling (1976) contend that corporate managers working in the interests of shareholders or in their own interests can divert the funds from the original purpose at the expense of debtholders. Chief Executive Officer (CEO) tenure in office has been the subject of several studies (Hambrick and Fukutomi 1991; Miller and Shamsie 2001; Henderson et al. 2006; Luo et al. 2014; Ali and Zhang 2015; Chen et al. 2019; Mitra et al. 2020). However, our knowledge of the differential impact of the CEO's tenure under different circumstances, particularly, CEO's early tenure in office and later tenure in office on cost of debt is surprisingly missing in the existing literature.

Examining the differential impact of CEO tenure on cost of debt is important for a number of reasons. First, the existing literature has distinctively focused on the impact of CEO tenure on (1) firm performance (Hambrick and Fukutomi 1991; Miller and Shamsie 2001; Henderson et al. 2006), (2) earnings management (Ali and Zhang 2015), (3) corporate social responsibility (CSR) performance (Chen et al. 2019) and (4) audit fees (Mitra et al. 2020), while disregarding the likelihood of the differential impact of the CEO's tenure under different circumstances, particularly, CEO's early tenure and later tenure in office on cost of debt. Importantly, understanding the differential impact of the CEO tenure on cost of debt is of interest to both academics and practitioners because previous literature suggests that while CEOs in their early tenure in office are risk-seeking, they become risk-averse as they progress in their tenure (Hambrick and Fukutomi 1991; Miller 1991; Levinthal and March 1993; Miller and Shamsie 2001; Wu et al. 2005; Luo et al. 2014). Therefore, debtholders are more likely to consider the CEO's attitude towards risk during their career cycle in their default risk assessment. If debtholders identify differential risk to the tenure of the CEO, then such differential impact on cost of debt is expected because managerial risk-taking increases cost of debt (Shi 2003; Bradley and Chen 2015; Chen et al. 2016).

Second, existing research on the impact of CEO risk-taking incentives on cost of debt typically focuses on CEO stock-based compensation to proxy CEO incentives. For example, Shaw (2012) finds a positive association between the number of shares and options held by the CEO and cost of debt. In addition, while he finds that higher sensitivities of CEO stock and option portfolios to share price (delta) decreases cost of debt, he reports no association between such sensitivities to stock return volatility (vega) and cost of debt<sup>1</sup>. A significant limitation of Shaw's (2012) study, however, is that he failed to exploit the possible impact of other CEO risk-taking incentives emanating from, for example, his or her career cycle. Given the differential risk to the career cycle of the CEO (Hambrick and Fukutomi 1991; Miller 1991; Levinthal and March 1993; Miller and Shamsie 2001; Wu et al. 2005; Luo et al. 2014), examining the impact of CEO tenure on cost of debt provides more insights into and understanding of how debtholders determine risk premium beyond CEO risk-taking incentives associated with stock-based compensation.

In this study, we empirically investigate whether CEO tenure under different circumstances, particularly, CEO early tenure in office (i.e. first three years in office) and later tenure in office (i.e. the year prior to the turnover year of the CEO) affects cost of debt. We select these two distinct periods of the CEO career cycle for the following two main reasons. First, previous literature (Holmström 1982; Gibbons and Murphy 1992) suggests that in the early tenure in office, both board of directors and the market are uncertain about the CEOs' ability, thereby leading to a career concern problem. This in turn exerts pressure on CEOs in their early tenure in office to perform and benefit from higher future compensation, reappointments, and managerial autonomy (Fama 1980; Hermalin and Weisbach 1998), something that can motivate very risky operations. Second, it is well documented in the existing literature that CEOs in their early tenure in office are more likely to engage

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<sup>1</sup> More broadly, DeFusco et al. (1990) report a negative reaction of bond price following the announcement of the adoption of managerial stock option plan. Ortiz-Molina (2006) also documents a positive association between managerial ownership and borrowing costs, and that stock options held by the firm's top five managers have a larger effect on cost of debt than stock ownership has. Similarly, while Billet et al. (2010) document a positive (negative) market reaction to delta (vega) following the first-time award of stock options to CEOs, Knopf et al. (2002) report a positive impact of the number of shares held by the CEO on derivatives but their subsequent findings suggest a negative (positive) impact of CEO vega (delta) on derivatives.

in high risk-taking behaviour than those in their later years in office are (Miller 1991; Levinthal and March 1993; Luo et al. 2014). Consequently, CEO risk-taking incentives are likely to be a function of the CEO's career cycle. In line with this reasoning, Ali and Zhang (2015) find that the risk of earnings overstatement increases with CEOs that have had fewer years on the job. A recent work by Mitra et al. (2020) also suggests that firms with CEOs in their early tenure in office pay higher audit fees due to the high risk-taking behaviour exhibited by the new CEOs. Therefore, one would expect that firms with CEOs in their early tenure in office are more likely to pay a higher cost of debt than those in their later tenure in office pay, due to the tendency of the CEOs to engage in very risky activities such as earnings manipulation which will then be priced by debtholders and the market.

We predict a higher cost of debt for firms with CEOs in their early tenure in office than for those in their later tenure in office for several reasons. The first rationale is based on the proposition that CEOs' behaviour towards risk is a function of their tenure (Hambrick and Fukutomi 1991). Specifically, while CEOs in their early tenure in office are more risk-seeking, they are more risk-averse in their later tenure in office (Hambrick and Fukutomi 1991; Miller 1991; Levinthal and March 1993; Miller and Shamsie, 2001; Wu et al. 2005; Luo et al. 2014). To the extent that CEOs' attitude towards risk in their early tenure and later tenure in office can have both positive and negative impacts on firm performance (Miller and Shamsie 2001), we argue that debtholders will take into account the differential risk during the CEO career cycle when assessing default risk. Therefore, they are more likely to demand a risk premium in the early tenure of the CEOs in office than in their later tenure in office. Second, because CEOs are more likely to overestimate their ability in their early tenure in office to deceive the market (i.e. overstating corporate losses and expenses) and blame the previous CEOs but take credit for better reported earnings in the subsequent years (Strong and Meyer 1987; Elliot and Shaw 1988; DeAngelo 1988; Pourciau 1993), debtholders are more likely to perceive early tenure of the CEOs in office to be associated with a higher risk (Fama 1980; Gibbons and Murphy 1992; Hermalin and Weisbach 1998; Holmstrom 1999). Thus, one can predict that debtholders will demand a higher risk premium in the early tenure of the CEOs than in their later tenure in office.

We also attempt to investigate whether CEOs' behaviour towards risk during their tenure can be constrained by board independence attributes to reduce cost of debt<sup>2</sup>. Prior research suggests that board independence reduces managerial risk-taking (Bargeron et al. 2010; Ni and Purda 2012; Akbar et al. 2017) and cost of debt (Bhojraj and Sengupta 2003; Anderson et al. 2004; Ertugrul and Hegde, 2008)<sup>3</sup>. We investigate whether board independence attributes interact with CEO tenure, particularly in their early tenure in office, to reduce cost of debt than in their later tenure in office<sup>4</sup>. This is important because existing research suggests that managerial risk-taking increases cost of debt (Shi 2003; Bradley and Chen 2015; Chen et al. 2016). If board independence attributes serve as control mechanisms to constrain CEOs in their early tenure in office from pursuing excessive risk-taking, then we would expect that board independence attributes through their effective monitoring ability to alleviate the risk premium on borrowing debtholders will be in demand when the CEO is new and risk-seeking. To the best of our knowledge, this is the first study to investigate the previously unexamined joint impact of CEO tenure and board independence attributes on cost of debt.

Using a sample of the UK Financial Times Stock Exchange Group (FTSE) All Share Index firms (excluding financial firms) listed on the London Stock Exchange for the period 2009 to 2018, we find that cost of debt is higher for firms with CEOs in their early tenure in office than for those with CEOs in their later tenure in office. Our results are consistent with the interpretation that debtholders will demand a risk premium because they perceive CEOs to be associated with a higher risk in their early tenure in office than in their later tenure in office. Further analysis shows that board independence attributes interact with the CEO in their early tenure in office to reduce cost of debt. These results support debtholders' conviction that stronger independent board members constrains

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<sup>2</sup> The board independence attributes we consider in this study include the proportion of independent directors on the board, full (i.e. 100 per cent) independent audit committee members, and a lead independent director representation on the board.

<sup>3</sup> It is important to highlight that a lead independent director representation on the board – has surprisingly not been tested on managerial risk-taking or cost of debt. However, previous literature suggests that a lead independent director representation on the board improves board monitoring (Chen and Ma 2017) and investment efficiency (Rajkovic 2020). Therefore, we include a lead independent director representation on the board in our board independence attributes analysis.

<sup>4</sup> In this study, we select board independence attributes as effective monitoring mechanisms because the existing literature has found them to improve corporate governance quality (Chen and Ma 2017) and, therefore, they are more likely to restrict risk-taking behaviour during the CEO's career cycle and reduce cost of debt.

excessive managerial risk-taking through their strict supervision, direction, and effective monitoring when the CEO is new and risk-seeking, leading to a lower cost of debt. Our results are robust to an alternative cost of debt measure, other sensitivity and endogeneity tests.

This study contributes to the existing literature in four distinct and important ways. First, we contribute to the stream of literature by showing the systematic differences between CEOs in their early tenure in office and in their later tenure in office in relation to cost of debt. Specifically, this study is related to the literature on the determinants of cost of debt (Sengupta 1998; Dhaliwal et al. 2011; Aslan and Kumar 2012) and the debt-contracting value of accounting information (Ball et al. 2008). Our study is the first to directly link the differential impact of the CEO tenure under different circumstances, particularly, CEOs in their early tenure and later tenure in office and cost of debt.

Second, this study contributes to the CEO tenure literature. Despite several studies on the effects of CEO tenure on (1) firm performance (Hambrick and Fukutomi 1991; Miller and Shamsie 2001; Henderson et al. 2006), (2) earnings management (Ali and Zhang 2015), (3) CSR performance (Chen et al. 2019), and (4) audit fees (Mitra et al. 2020), there is still much debate over the systematic differences between CEOs in their early tenure and later tenure in office concerning their risk attitude, and how they are perceived by debtholders (Axelson and Bond 2009). We contribute to the debate on whether the risk associated with CEOs in their early tenure and later tenure in office is priced by debtholders. Our study provides new insights and also enhances our understanding of the cost of debt in the early tenure and the later tenure of the CEOs in office. We show that cost of debt is greater for firms with CEOs in their early tenure in office than in their later tenure in office.

Third, even though a number of studies have examined the impacts of managerial risk-taking incentives proxied by stock-based compensation on corporate outcomes in general (DeFusco et al. 1990; Knopf et al. 2002; Ortiz-Molina 2006; Billet et al. 2010) and in particular CEO risk-taking incentives measured by stock-based compensation on cost of debt (Shaw 2012), we add to these studies by showing new evidence on how the differential risk to the career cycle of the CEO affects cost of debt. To the best of our knowledge, this is the first study to provide direct empirical evidence

on the cost of debt effect of CEO risk-taking incentives measured by the differential risk to the tenure of the CEO.

Finally, we contribute to the existing literature on board independence and cost of debt (Bhojraj and Sengupta 2003; Anderson et al. 2004; Ertugrul and Hegde 2008). To the best of our knowledge, this study is the first to provide direct empirical evidence on the previously unexamined joint effect of CEO tenure and board independence attributes on cost of debt. Overall, our evidence is important because it shows that board independence attributes are effective in lowering cost of debt for firms with CEOs in their early tenure in office.

The remainder of the paper is organised as follows. Section 2 reviews the related literature and sets out our hypotheses. Section 3 describes the sample, data and variables. Section 4 provides our empirical models. Section 5 presents the empirical results. Section 6 undertakes additional analyses, whilst section 7 concludes the paper.

## **2 Related literature review and hypotheses development**

Prior research has documented that CEO tenure is related to organisational outcomes, including firm performance, earnings management, CSR performance, and audit fees. In the first of such research, Hambrick and Fukutomi (1991) examine the dynamics of the CEO's tenure in office and find an inverted U-shaped relationship between CEO's tenure and firm performance. Building on from Hambrick and Fukutomi's (1991) seminal work, Miller and Shamsie (2001) undertake a longitudinal study in the film industry and report that CEO tenure increases firm performance for the first eight to ten years after which firm performance begins to decline. Using two different samples from the stable branded foods industry and the dynamic computer industry, Henderson et al. (2006) find that CEO tenure improves firm performance with a downturn occurring only among a few CEOs after 10-15 years in the stable branded foods industry. They however find that CEOs perform better when they start their jobs in the dynamic computer industry but firm performance declines across their tenures in their later years of appointment. Ali and Zhang (2015) examine changes in CEOs'



incentive to manage their firms' reported earnings during their tenure and find that earnings overstatement is greater for firms with CEOs in their early tenure in office than in their later tenure in office. Chen et al. (2019) report that CSR performance is significantly higher for firms with CEOs in their early tenure in office than in their later tenure in office, while Mitra et al. (2020) find that audit fees are higher when the CEO has had fewer years on the job.

The above discussion shows that CEO tenure is related to a number of organisational outcomes. However, the literature has largely focused on the impact of CEO tenure on organisational outcomes such as, for example, firm performance, earnings management, CSR performance, and audit fees. Surprisingly, our knowledge of the likelihood of the differential impact of the CEO tenure under different circumstances, particularly, CEO early tenure and later tenure in office on cost of debt is limited. Understanding how cost of debt is affected by the CEO's tenure is of interest to both academics and practitioners because previous literature suggests that although CEOs in their early tenure in office are risk-seeking they become risk-averse when they progress in their tenure (Hambrick and Fukutomi 1991; Miller 1991; Levinthal and March 1993; Miller and Shamsie 2001; Wu et al. 2005; Luo et al. 2014). Therefore, debtholders are more likely to consider the CEO's attitude towards risk during their tenure in their default risk assessment. If debtholders identify differential risk to the tenure of the CEO, then such differential impact on cost of debt is expected.

The existing literature also offers evidence that CEOs with fewer years on the job try to favourably influence the market's perception about their ability through earnings overstatement (Ali and Zhang 2015). This suggests that debtholders are aware that earnings manipulation is more likely to occur in the early tenure of the CEOs than in their later tenure in office and this will compel them to demand risk premium leading to an increase in cost of debt when the CEO is new. The literature has also generally hypothesised that new CEOs that have unexpected executive changes tend to overstate expenses and attribute them to the previous CEO (Elliot and Shaw, 1988; Pourciau 1993). Other studies also show that CEOs overstate their earnings to boost their final year's pay (Dechow and Sloan, 1991; Cheng 2004; Kalyta 2009).

Gibbons and Murphy (1992) contend that the market remains uncertain about the ability of the new CEO even if the CEO appointment is an internal promotion or appointment within the organisation. The explanation for this is that the required skills at the lower level are completely different from the skills set needed to be a successful CEO. Indeed, debtholders are uncertain about the ability of a new CEO and, therefore, they are likely to demand a risk premium. Furthermore, debtholders do not have access to the past performance records of the new CEOs to evaluate their ability and this has implications for cost of debt when the CEO is new.

Another strand of research argues that new CEOs have concerns about being labelled as “low ability” managers if they report poor financial outcomes, and therefore, they tend to overstate earnings to announce their superior ability to the market (Oyer 2008; Axelson and Bond 2009). However, Desai et al. (2006) contend that the market may detect earnings overstatement; specifically, that the detection by debtholders is more likely to lead to a higher cost of debt.

Importantly, a number of studies have also examined the impacts of managerial risk-taking incentives measured by stock-based compensation on corporate outcomes (e.g., DeFusco et al. 1990; Knopf et al. 2002; Ortiz-Molina 2006; Billet et al. 2010; Shaw 2012). Of particular interest to this study is the work of Shaw (2012) that examined how cost of debt is influenced by CEO risk-taking incentives measured by stock-based compensation. His most important finding is that the number of shares and options held by the CEO increases the cost of debt<sup>5</sup>. Even though this evidence suggests that cost of debt is related to CEO risk-taking incentives, the impact of CEO risk-taking incentives associated with his or her career cycle on cost of debt is unclear in the existing literature. We extend Shaw’s (2012) study by investigating whether the differential risk to the CEO tenure is priced by debtholders and the market.

Building on from the forgoing discussion, and to the extent that CEOs with fewer years on the job are more willing to take risks than they are in their later tenure in office, we would expect

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<sup>5</sup> Shaw (2012) also finds competing results when the sensitivities of CEO stock and option compensation portfolios to stock price (delta) and stock return (vega) volatility are used to proxy CEO risk-taking incentives.

debtholders to demand a higher risk premium leading to an increase in cost of debt when the CEO is new and risk-seeking. Accordingly, we propose our first hypothesis as follows:

**H<sub>1</sub>: Cost of debt is higher for firms with CEOs in their early tenure in office than those in their later tenure in office.**

We also investigate the previously unexamined joint impact of CEO tenure and board independence attributes on cost of debt. Previous literature suggests that board independence reduces managerial risk-taking (Bargeron et al. 2010; Ni and Purda 2012; Akbar et al. 2017) and cost of debt (Bhojraj and Sengupta 2003; Anderson et al. 2004; Ertugrul and Hegde 2008). Our study seeks to elucidate whether CEOs' behaviour towards risk during their tenure can be constrained by board independence attributes to reduce cost of debt. This is important because prior research has documented that managerial risk-taking increases cost of debt (Shi 2003; Bradley and Chen 2015; Chen et al. 2016). To the extent that CEOs in their early tenure in office are risk-seeking but become risk-averse when they progress in their tenure (Hambrick and Fukutomi 1991; Miller 1991; Levinthal and March 1993; Miller and Shamsie 2001; Wu et al. 2005; Luo et al. 2014), we would expect CEOs in their early tenure in office to be constrained by effective independent board members from engaging in excessive risk-taking, leading to a lower cost of debt.

In addition, because board independence constrains managerial risk-taking (Bargeron et al. 2010; Ni and Purda 2012; Akbar et al. 2017), debtholders are likely to be convinced that greater independence of the board is more likely to improve the control mechanisms which will then limit any excessive risk-taking when the CEO is new. Therefore, debtholders are more likely to demand a lower risk premium arising from better control mechanisms that alleviate their concerns. Further evidence shows that debtholders consider and value the independence of the board as an effective risk management tool. In particular, Anderson et al. (2004) show that cost of debt is negatively associated with board independence. Bhojraj and Sengupta (2003) find that bond yields on new debt

issues relate inversely to the proportion of outside directors, whilst Ashbaugh-Skaife et al. (2006) document that corporate credit ratings are positively associated with board independence.

Collectively, because managerial risk-taking increases cost of debt (Shi 2003; Bradley and Chen 2015; Chen et al. 2016), we would expect board independence attributes such as the proportion of independent directors on the board, full (i.e. 100 per cent) independent audit committee members, and a lead independent director representation on the board to serve as control mechanisms to constrain CEOs in their early tenure in office from pursuing excessive risk-taking such as earnings overstatement. As previously discussed and hypothesised, we would expect cost of debt to be higher in the early tenure of CEOs than in their later tenure in office. If indeed board independence reduces managerial risk-taking and cost of debt, then we would expect board independence attributes to alleviate the risk premium on borrowing that debtholders will demand when the CEO is new and risk-seeking. Accordingly, we propose our second hypothesis as follows:

**H2: The positive association between CEOs' early tenure in office and cost of debt is weaker for firms with greater board independence attributes.**

### **3 Sample, data and variables**

#### **3.1 Sample and data sources**

To investigate whether CEOs' tenure under different circumstances, particularly, CEOs in their early tenure and later tenure in office affect cost of debt and the moderating role of board independence attributes in reducing cost of debt, we construct our sample by first identifying the FTSE All Share Index firms listed on the London Stock Exchange for the period 2009-2018. Given that CEO tenure and cost of debt are critical to our study, the study period 2009-2018 is influenced by the CEO tenure and cost of debt data availability<sup>6</sup>. We collect our data from two distinct sources: (1) Bloomberg database for CEO tenure, board characteristics and cost of debt data, and (2) Thomson Reuters

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<sup>6</sup> Even though our study period is restricted from 2009 to 2018 due to CEO tenure and cost of debt data availability from the Bloomberg terminal, the ten-year period is a suitably long and sustained period to investigate this important and interesting topic.

Worldscope database for the financial data. We then merge the data from these two sources from 2009 to 2018 yielding a total sample of 6,130 firm-year observations. Consistent with previous literature (Pittman and Fortin 2004; Joni et al. 2020), we exclude 1,014 firm-year observations from the financial services industry due to the fact that it is difficult to reconcile their financial statements' data with those of non-financial firms. In addition, we exclude 2,180 firm-year observations with missing CEO tenure, board characteristics, cost of debt, and financial data. We further delete 156 firm-year observations that have not been listed throughout the sample period. The final sample for our empirical analysis includes 278 unique firms leading to 2,780 firm-year observations. Finally, we winsorised all our continuous variables at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to minimise the effect of outliers in our sample firms.

### 3.2 Dependent variable

Our dependent variable of interest in this study is cost of debt (*CoD*), which is measured as the after-tax weighted average cost of debt for the security calculated using government bond rates, a debt adjustment factor, the proportion of short and long-term debt to total debt, and stock's effective tax rate. As mentioned above, we download our cost of debt variable directly from the Bloomberg terminal and it is calculated using the following estimation model:

$$CoD = [(SD/TD) \times (CS \times AF)] + [(LD/TD) \times (CL \times AF)] \times [1 - TR] \quad (1)$$

where

CoD = Cost of debt

SD = Short- term Debt

TD = Total Debt

CS = Pre-Tax Cost of Short-term Debt

AF = Debt Adjustment Factor<sup>7</sup>

CL = Pre-Tax Cost of Long-term Debt

TR = Effective Tax Rate

We acknowledge that a number of studies have also used the realised interest costs as an alternative cost of debt (Pittman and Fortin 2004; Francis et al. 2005; Lorca et al. 2011; Tran 2014; Joni et al. 2020), which is measured as interest expense in the year scaled by interest-bearing debt. In contrast to our dependent variable of interest, *CoD*, which takes into account the average yield spread and current economic conditions, the realised interest costs measure is considered to be too noisy due to the effect of borrowings and non-adjustment for the new bond issue (Pittman and Fortin 2004; Shaw 2012). Despite its shortcomings, though, we use the realised interest costs as an alternative cost of debt to undertake a sensitivity analysis.

### 3.3 CEO tenure and board independence variables

To test hypothesis 1, our first test variable of interest is CEOs in their early tenure (*CEOETN*) in office. To measure *CEOETN*, we follow existing literature (Ali and Zhang 2015; Mitra et al. 2020) and use a dummy variable that is set to one for the first three years of a firm's CEO in office, and zero otherwise<sup>8</sup>. Our second test variable of interest for hypothesis 1 is CEO final year (*CEOFYR*) in office. Consistent with previous literature (Dechow and Sloan 1991; Kalyta 2009; Ali and Zhang 2015; Mitra et al. 2020), we measure *CEOFYR* as a dummy variable that is set to one for the year prior to the turnover year of a firm's CEO, and zero otherwise.

To test hypothesis 2, our first primary board independence attribute of interest is the proportion of independent directors on the board (*BRDInd*). We follow previous literature (see Lorca

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<sup>7</sup> In calculating the cost of debt, Bloomberg use the debt adjustment factor that captures the average yield spread between corporate bonds for a given credit class and the government bonds.

<sup>8</sup> We employ the first three years of a firm's CEO in office to proxy CEO early tenure because it is well documented in the existing literature (e.g., Ali and Zhang 2015; Mitra et al. 2020) that CEOs are likely to engage in very risky operations during this period of their career cycle than in their later years in office and debtholders are likely to factor this period in when determining their risk premium. Hence, we define CEO's early tenure to capture the first three years in office.

et al. 2011; Shaw 2012; Bradley and Chen 2015; Owusu and Weir 2018; Ezeani et al. 2022) and measure *BRDInd* as a percentage of independent directors to the total board size. The second measure of board independence attribute of interest for hypothesis 2 is the full independent audit committee members (*IndAC*). Consistent with Bradley and Chen (2015), we measure *IndAC* as a dummy variable that is set to one if all the audit committee members are independent directors, and zero otherwise. The third measure of board independence attribute of interest for hypothesis 2 is a lead independent director representation on the board (*IndLead*). We follow previous literature (Chen and Ma 2017; Rajkovic 2020) and measure *IndLead* as a dummy variable that is set to one if a firm has a lead independent director on the board, and zero otherwise.

### 3.4 Control variables

To disentangle the impact of CEO tenure as well as the joint effect of CEO tenure and board independence attributes on cost of debt, we include a number of control variables. Specifically, we follow previous literature and include a number of CEO characteristics that have been found to influence CEOs' behaviour during their tenure in office towards risk-taking (Bradley and Chen 2015; Harjoto and Laksmana 2018), credit ratings (Ashbaugh-Skaife et al. 2006), and cost of debt (see Lorca et al. 2011; Shaw 2012; Kabir et al. 2013). First, we include CEO duality (*CEODUALITY*) as a proxy for CEO power measured as a dummy variable that is set to one if one person occupies the position of the CEO and the chairman, and zero otherwise. Second, because CEOs younger than those older ones close to retirement are more likely to engage in high risk-taking behaviour (Cheng 2004), we control for CEO age (*CEOAGE*) which is measured as the natural logarithm of the CEO age in years. Third, given that the number of shares and options held by a CEO may influence his or her risk-taking behaviour and the resulting impact on cost of debt (Shaw 2012), we include CEO ownership (*CEOWN*) which is measured as the percentage of outstanding shares owned by the CEO and share options held (*SHAREOPT*) measured as the number of unexercised share options linked to the CEO as the percentage of outstanding shares. Fourth, we control for CEO compensation (*CEOCOMP*)

because previous literature suggests that it affects excessive risk-taking and cost of debt (Shaw 2012; Kabir et al. 2013). *CEOCOMP* is measured as the natural logarithm of the total CEO compensation<sup>9</sup>. Finally, because women are considered more risk-averse than men in business decision-making (Jianakoplos and Bernasek 1998; Charness and Gneezy 2012; Owusu et al. 2022), we control for CEO gender (*FEMCEO*) which is measured as a dummy variable that is set to one if the CEO is a female, and zero otherwise.

In addition to the CEO characteristics, we account for a number of managerial risk-taking measures that affect cost of debt (Shi 2003; Anderson et al. 2004; Shaw 2012; Bradley and Chen 2015; Chen et al. 2016). The first control variable that we account for is equity volatility (*VOLAT*) to proxy managerial risk-taking which is measured as the natural logarithm of the standard deviation of the daily stock returns for at least 360 days a year. The second control variable that we include under this category is the capital expenditure (*CAPEX*) which is measured as capital expenditure for the year scaled by total assets, with missing values coded as zeros. Our last control variable that we account for under this category is research and development expenses (*R&D*) which is measured as the research and development expenses scaled by total assets, with missing values coded as zeros<sup>10</sup>.

Further, we include firm-level characteristics that have been found to have a significant impact on cost of debt (Bhojraj and Sengupta 2003; Anderson et al. 2004; Pittman and Fortin 2004; Ashbaugh-Skaife et al. 2006; Ertugrul and Hegde 2008; Lorca et al. 2011; Shaw 2012; Tran 2014; Bradley and Chen 2015; Joni et al. 2020; Elamer et al. 2021). Our first control variable that we account for is the return on assets (*ROA*) to proxy firm performance. *ROA* is measured as the net income scaled by lagged total assets. The second control variable that we include is the market-to-book value (*MTBV*) which is measured as the market capitalisation scaled by the book value of common equity. Our third control variable we account for is firm size (*SIZE*) which is measured as

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<sup>9</sup> The components of the CEO compensation include salary, bonus, pension, and other awards (but excluding share options).

<sup>10</sup> Although our sample size reduced to 2,033 firm-year observations for *CAPEX* and 1,988 firm-year observations for *R&D* when missing values are not coded as zero, our results (untabulated) from these reduced samples are qualitatively similar to the main results reported in Table 3.



the natural logarithm of the total assets. The fourth control variable that we include is leverage (*LEV*) to proxy higher risk-taking, which is measured as the total debt scaled by the sum of total debt plus common equity. Our fifth control variable that we account for is the interest cover (*INTCOV*) which is measured as the earnings before interest and taxes scaled by total interest paid. The sixth control variable that we include is the differences in the assets structure of a firm (*TANGIBILITY*) which is measured as the net property, plant and equipment scaled by total assets. Our seventh control variable that we account for is the credit condition (*Z-score*) which is measured as a composite score indicating a distance to financial default estimated from Altman's Z-score. The eighth control variable that we include is the firm age (*FIRMAGE*) which is measured as the natural logarithm of the number of years from the date of incorporation. Finally, because cost of debt may vary across years and industries, we control for year (*YEAR\_FE*) and industry (*IND\_FE*) fixed effects.

#### 4 Empirical models

To test whether cost of debt is higher for firms with CEOs in their early tenure in office than those in their later tenure in office ( $H_1$ ), we follow managerial risk-taking incentives and cost of debt literature (e.g., Ortiz-Molina 2006; Shaw 2012) and estimate the following baseline ordinary least squares (OLS) regression model:

$$CoD_{jt} = \alpha + \beta_1.CEOETN_{jt} + \beta_2.CEOFYR_{jt} + \beta_3.Ctls_{jt} + \beta_4.YEAR\_FE_t + \beta_5.IND\_FE_j + \epsilon_{jt} \quad (2)$$

where  $j$  and  $t$  refer to firm and year, respectively. Our dependent variable, *CoD*, represents the cost of debt. The independent variables of interest, *CEOETN* and *CEOFYR*, are the CEOs in their early tenure in office and the CEOs in their final year in office. *Ctls* is a vector of the control variables that include CEO characteristics, managerial risk-taking incentives, and firm-level characteristics as defined in subsection 3.4. *YEAR\_FE* and *IND\_FE* are year and industry fixed effects, respectively.

To test whether board independence attributes attenuate the positive relationship between CEOs' early tenure in office and cost of debt ( $H_2$ ), we expand Equation (2) by including board independence attributes and estimate the following OLS regression model:

$$CoD_{jt} = \alpha + \beta_1 CEOETN_{jt} + \beta_2 BIA_{jt} + \beta_3 CEOETN_{jt} \times BIA_{jt} + \beta_4 Ctls_{jt} + YEAR\_FE_t + IND\_FE_t + \epsilon_{jt} \quad (3)$$

With the exception of *BIA*, all variables in Equation (3) are as defined above. *BIA* represents board independence attributes – the proportion of independent directors on the board (*BRDInd*), full (i.e. 100 per cent) independent audit committee members (*IndAC*), and a lead independent director representation on the board (*IndLead*). The main variable of interest, *CEOETN* × *BIA*, represents the interaction between CEO early tenure in office and board independence attributes.

#### 4.1 Empirical Analyses

#### 4.2 Descriptive statistics

Panel A of Table 1 provides the descriptive statistics for the full sample of 2,780 firm-year observations. The mean (median) CEO tenure of our sample firms is around eight years (five years) in office. The cost of debt has an average of 2.22 per cent, which is slightly lower than the 2.46 per cent reported by Bradley and Chen (2015) across the US listed firms. On average, about 19 per cent of our sample firms are CEOs in their early tenure in office, whilst 5 percent of our sample firms are CEOs in their final year in office. On average, around 1.5 per cent of our sample firms have one person occupying the CEO and the board chair positions. The average CEO age of our sample firms is around 52 years, whilst about 6 per cent of our sample firms have female CEOs. On average, the CEOs own around 1.3 per cent and 0.5 per cent options, respectively, of the outstanding shares of our sample firms. The mean CEO pay is around £3,032,468. As Panel A of Table 1 shows, the average board independence attributes – the proportion of independent directors on the board (*BRDInd*), full

independent audit committee members (*IndAC*), and a lead independent director representation on the board (*InLead*) are 59 per cent, 82 percent, and 77 per cent, respectively. The data provide evidence of a high prevalence of board independence attributes of the UK boards.

In Panel B of Table 1, we report the test for differences in board and firm-level characteristics between CEOs in their early tenure in office and CEOs in their other years in office. As Panel B indicates, firms with CEOs in their early tenure in office pay a higher cost of debt than firms with CEOs in their other years in office. This evidence suggests that our prediction in hypothesis 1 is supported. On average, firms with CEOs in their early tenure in office have more female CEOs, less CEO shares and options, receive greater CEO pay, more proportion of independent board members, greater independent audit committee membership, more independent lead director representation on the board, perform better, less tangibility, larger in size and more older than those firms with CEOs in their other years in office. The results also show that firms with CEOs in their early tenure in office have greater debt intensity, greater managerial risk-taking behaviour and more R&D risk as opposed to firms with CEOs in their other years in office. This finding is consistent with the argument that CEOs with fewer years on the job engage in high risk-taking behaviour (Ali and Zhang 2015; Mitra et al. 2020), suggesting that the higher cost of debt associated with CEOs in their early tenure in office may be driven by their attitude towards high risk-taking when they are new<sup>11</sup>.

**[Insert Table 1 here]**

#### 4.3 Correlation analysis

As a key check to identify and address multicollinearity issues, Table 2 presents the pairwise correlation between the cost of debt measure, CEO early tenure, CEO final year, board independence attributes, and the control variables employed in our baseline regressions. As Table 2 shows, we find that *CEOETN* is positively and significantly associated with *CoD*. This initial results show that there is a positive association between CEOs in their early tenure in office and cost of debt. We also find

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<sup>11</sup> The results (untabulated) from further test for differences between firms with CEOs in their early tenure in office and those in their final year in office are qualitatively similar to the reported results under Panel B of Table 1.

that *CEOFYR* is positively associated with *CoD* but statistically insignificant. The board independence attributes (i.e. *BRDInd*, *IndAC*, *IndLead*) are all negatively and significantly associated with *CoD*. Most of the control variables continue to hold expected correlation signs with *CoD*. As Table 2 indicates, the highest correlation coefficient of 0.56 between *Z-score* and *Lev* is less than the 0.80 threshold that previous literature suggests may indicate a multicollinearity issue (see Sharma et al. 2017; Owusu et al. 2022). As an additional check for the potential impact of multicollinearity in our regression models, we calculate the variance inflation factor (VIF) values from our baseline regressions and the highest VIF is 2.86 for *TANGIBILITY*. The VIF of 2.86 is lower than the 10 threshold that may be a concern for multicollinearity (Lardaro 1993; Kennedy 2008; Owusu et al. 2022). Overall, both the correlation coefficients and the VIF values suggest that multicollinearity is less likely to affect our empirical results.

**[Insert Table 2 here]**

#### 4.4 Main regression results

##### 4.4.1 *Cost of debt in the early tenure and final tenure of CEOs in office*

Table 3 reports the baseline regression results from estimating Equation (2). In Model 1, we regress cost of debt (*CoD*) on the key test variables, including *CEOETN* and *CEOFYR*, without the control variables but we include the year and industry fixed effects. In Model 2, we re-estimate Equation (2) and include all the control variables together with the year and industry fixed effects. The results in Models 1 and 2 of Table 3 indicate that the coefficient on *CEOETN* continues to be positive and statistically significant at the 1 per cent level. Although the coefficient on *CEOFYR* continues to be positive in Models 1 and 2 of Table 3, it is not statistically significant. These results suggest that cost of debt is higher in the CEOs' early tenure in office than in their later tenure in office. The signs and the significance levels of a number of control variables are generally consistent with the existing literature (Cheng 2004; Ertugrul and Hegde 2008; Lorca et al. 2011; Shaw 2012; Kabir et al. 2013; Bradley and Chen 2015; Chen et al. 2016). For example, whereas *CEOAGE*, *FEMCEO*, *CEOCOMP*,

*ROA*, *SIZE*, *INTCOV*, *TANGIBILITY* and *Z-score* are negative and statistically significant in Model 2 of Table 3, *SHAREOPT*, *VOLAT*, *LEV*, *R&D* and *FIRMAGE* are positive and statistically significant. Our results are also economically significant. In particular, CEOs in their early tenure in office increase cost of debt from 3.74 per cent (Model 2 of Table 3 – 0.083/2.220) to 4.78 per cent (Model 1 of Table 3 – 0.106/2.220) of the cross-sectional mean of the cost of debt measure in Table 1. These results confirms the recent findings of Ali and Zhang (2015) and Mitra et al. (2020) regarding the deferential risk associated with the two time periods of the CEO career cycle by showing that debtholders factor in this risk when determining their borrowing cost.

To provide validation for the use of the first three years as a cut-off point in measuring CEO early tenure (*CEOETN*), we follow Ali and Zhang (2015) and re-estimate Equation (2) with each of the first five years of CEOs in office as the key test variable of interest (i.e. *CEOETN1*, *CEOETN2*, *CEOETN3*, *CEOETN4*, *CEOETN5*) instead of *CEOETN*. As in Ali and Zhang (2015), *CEOETN1* is measured as a dummy variable that is set to one for the first year in office of a firm's CEO, and zero otherwise. Similarly, the second year and up to the fifth year in office of a firm's CEO are measured using dummy variables that are set to one for each year in office, and zero otherwise. In Model 3 of Table 3, we re-estimate Equation (2) by regressing cost of debt on each of the first five years of CEOs in office without the control variables but we include the year and industry fixed effects. In Model 4 of Table 3, we re-estimate Equation (2) by regressing cost of debt on each of the first five years of CEOs in office along with all the control variables, year and industry fixed effects. The results in Models 3 and 4 of Table 3 show that the coefficients on *CEOETN1* and *CEOETN2* continue to be positive and statistically significant, whilst the coefficients on *CEOETN3*, *CEOETN4* and *CEOETN5* continue to be positive but insignificant. Our results suggest that the cost of debt is higher only in the first and second years of the CEOs tenure in office.

Taken together, our results of a higher cost of debt in the early tenure of the CEOs in office than in their later tenure in office are consistent with hypothesis 1, and support the argument that debtholders will demand a higher risk premium in the CEOs' early tenure in office than in their later

tenure in office. The explanation for this is that CEOs in their early tenure in office are more willing to take risks such as engaging in earnings overstatement to favourably influence debtholders about their superior ability than they are willing to take in their later tenure in office and debtholders are aware of this. Hence, they demand a higher cost of debt when the CEO is new and risk-seeking. These results imply that both the stock-based compensation measures employed in Shaw (2012) and the CEO tenure measures used in this study provide insights and enhance our understanding of the cost of debt effect of CEO risk-taking incentives.

**[Insert Table 3 here]**

#### 4.4.2 *Non-linearity effect of CEO tenure on cost of debt*

Previous literature suggests a non-linear relationship between CEO tenure (1) and firm performance (Hambrick and Fukutomi 1991), and (2) audit fees (Mitra et al. 2020). While Hambrick and Fukutomi (1991) find an inverted U-shaped relationship between CEO tenure and firm performance, Mitra et al. (2020) find a U-shaped relationship between CEO tenure and audit fees. Given that our main results show that cost of debt is higher for firms with CEOs in their early tenure in office than those in their later tenure in office, and that the results persist in the first two years during the CEOs' tenure in office, we test the non-linearity effect of CEO tenure on cost of debt to establish whether the relationship between CEO tenure and cost of debt is non-linear. As in Mitra et al. (2020), we re-estimate Equation (2) by replacing *CEOETN* and *CEOFYR* with a continuous CEO tenure (*CEOTenure*) variable and the quadratic form of *CEOTenure*<sup>2</sup>.

Using our cost of debt measure (*CoD*) as the dependent variable, the results are tabulated in Table 4. As Table 4 indicates, the coefficient on *CEOTenure* is positive and statistically significant at the 1 per cent level while the coefficient on *CEOTenure*<sup>2</sup> is negative and statistically significant at the 5 per cent level. These results show that the relationship between CEO tenure and cost of debt is an inverted U-shaped, implying that cost of debt increases with CEOs tenure but with the passage of time, it decreases in their later tenure in office. The results also corroborate Hambrick and Fukutomi

(1991) inverted U-shaped CEO tenure-performance relationship. Our findings provide further support to our main results and the related hypothesis 1 that cost of debt is higher for firms with CEOs in their early tenure in office than with those in their later tenure in office.

**[Insert Table 4 here]**

#### 4.4.3 *Board Independence attributes, CEOs early tenure and cost of debt*

In this subsection, we test whether board independence attributes interact with CEOs in their early tenure in office to reduce cost of debt. Building on from the positive impact of CEOs in their early tenure in office on cost of debt, we would expect that CEOs' behaviour towards risk during their tenure can be constrained by board independence attributes to reduce cost of debt. In Table 5, we report our regression results from estimating Equation (3). Our results show that the coefficients on the interaction terms *CEOETN*×*BRDInd* in Model 1, *CEOETN*×*IndAC* in Model 2, and *CEOETN*×*IndLead* in Model 3 are negative and statistically significant at the 5 per cent or better level. These results suggest that board independence attributes constrain CEOs' behaviour towards risk in their early tenure in office to reduce cost of debt. In addition, we re-estimate Equation (3) by replacing *CEOETN* with *CEOFYR* in the interaction term but the results (untabulated) across all the three board independence attributes are insignificant, implying that the cost of debt is not affected by CEOs in their later tenure in office for firms with board independence attributes in place. The signs and the significance levels of the coefficient estimates of the control variables are largely consistent with those reported earlier under subsection 5.3.1. Our results are broadly consistent with both board independence-managerial risk-taking literature (Bargeron et al. 2010; Ni and Purda 2012; Akbar et al. 2017) and board independence-cost of debt literature (Bhojraj and Sengupta 2003; Anderson et al. 2004; Ertugrul and Hegde 2008), which suggest that board independence attributes are measures of governance control that are capable of limiting managerial risk-taking behaviour with a corresponding reduction in cost of debt.

Overall, our results of a lower cost of debt when board independence attributes constrain CEOs' behaviour towards risk in their early tenure in office are consistent with hypothesis 2, and support the view that debtholders are encouraged by board independence attributes as control mechanisms when the CEO is new and risk-seeking. These results explain why debtholders will demand a lower risk premium from firms that have effective monitoring mechanisms in place through greater board independence attributes.

**[Insert Table 5 here]**

#### 4.5 Endogeneity test

So far, our main results in subsections 5.3 and 5.4 suggest that cost of debt is higher for firms with CEOs in their early tenure in office than with those in their later tenure in office and that board independence attributes are effective control mechanisms in lowering cost of debt for firms with CEOs in their early tenure in office. However, our results may be subject to endogeneity issues because an omitted variable such as, for example, the previous year cost of debt may affect the current year cost of debt and CEO career cycle simultaneously. Thus, we address the potential endogeneity concerns using two approaches. First, because the current year cost of debt may be affected by the previous year cost of debt, we follow Anderson et al. (2004) and include cost of debt from the previous year ( $CoD_{t-1}$ ) in Equations (2) and (3) to control for endogeneity caused by simultaneity and our results are reported in Table 6. As Panel A (Model 1) of Table 6 indicates, the coefficient on *CEOETN* remains positive and statistically significant at the 1 per cent level, whereas the coefficient on *CEOFYR* remains positive but statistically insignificant. In Panel A (Model 2), the coefficients on *CEOETN1* and *CEOETN2* continue to be positive and statistically significant at the 1 per cent level, while the coefficients on *CEOETN3*, *CEOETN4* and *CEOETN5* show no significant impact on cost of debt. In Panel B of Table 6, the coefficients on the interaction terms *CEOETN* × *BRDInd* in Model 1, *CEOETN* × *IndAC* in Model 2, and *CEOETN* × *IndLead* in Model 3 continue to be negative and



statistically significant. These results show that our initial results reported under Tables 3 and 5 remain unchanged after controlling for simultaneity bias.

Second, we consider the issue of causality between CEO tenure and cost of debt. Even though it is possible for causality between CEO tenure and cost of debt to run from the former to the latter, it is more likely that cost of debt could affect CEO tenure. To address this concern, we follow previous CEO tenure literature (Chen et al. 2016) and employ the instrumental variable (IV) estimation method. Given that the first stage of the two-stage least squares (2SLS) regression requires a valid instrument, we follow Chen et al.'s (2016) suggestions and apply the instrument to each of the main test variables, *CEOETN* and *CEOFYR*, using the industry average of CEO tenure from the previous year (*CEOTenure\_INDAVG*)<sup>12</sup> together with all the control variables in Equation (2). The results from estimating the second stage of the 2SLS using the “ivregress” STATA command are reported in Table 7. In Model 1, the coefficient on *IV\_CEOETN* is positive and statistically significant at the 1 per cent level, while in Model 2, the coefficient on *IV\_CEOFYR* is positive but insignificant. In addition, we follow Lorca et al. (2011) and perform Durbin-Wu-Hausman test of Endogeneity for the CEO tenure variables. Our results from the Durbin-Wu-Hausman test reported at the bottom of Models 1 and 2 of Table 7, with all p-values greater than 0.1, do not reject the non-endogeneity hypothesis<sup>13</sup>. Overall, our results from using 1-year lagged cost of debt and IV estimation method reduce the possibility that our main results are influenced by endogeneity.

[Insert Table 6 here]

[Insert Table 7 here]

## 5 Additional analyses

### 5.1 The moderating effect of alternative governance controls

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<sup>12</sup> Chen et al. (2016) argue in their study that the industry average of the CEO tenure from the previous year may affect a firm's CEO tenure but it is not likely to be related to the outcome variable. We follow a similar assumption and use *CEOTenure\_INDAVG* as our instrumental variable.

<sup>13</sup> In our second approach of addressing endogeneity, we could not find any valid instrument for the interaction terms (i.e. CEO tenure and the board independent attributes) and, therefore, we use other governance controls to further check the robustness of our results in subsection 6.1.

In addition to the endogeneity test, we undertake checks to confirm whether our results in subsection 5.3.3 are sensitive to other governance controls when the CEO is new and risk-seeking. In particular, we follow the existing literature and use female director representation on the board and institutional ownership as two alternative governance controls to explore their effect on *CEOETN-CoD* relationship because both of them affect risk-taking behaviour and cost of debt.

#### *5.1.1 Effect of female directors on CEO tenure-cost of debt relationship*

Existing literature documents that women are more risk-averse than men (Jianakoplos and Bernasek, 1998; Charness and Gneezy, 2012; Adam and Funk, 2012). Indeed, Adam and Funk (2012) argue that female directors' approach to risk-taking is different from that of their male colleagues. If female directors are more risk-averse than their male colleagues, then one can argue that they may be good monitors of managerial risk-taking behaviour. As such, debtholders are likely to perceive female director representation on the board as a strong governance control to constrain managerial risk-taking, thereby leading to a reduction in cost of debt. Usman et al. (2019) and Pandey et al. (2020) provide empirical evidence to support this view by showing that female director representation on the board reduces cost of debt. To the extent that female directors are more risk averse (Adams and Funk 2012) and their presence on the board reduces cost of debt (Usman et al. 2019; Pandey et al. 2020), we would expect female director representation on the board to limit CEOs in their early tenure in office from engaging in very risky operations and, as a result, reduce cost of debt.

Using the percentage of female director representation on the board (*PctFemDir*) as an alternative governance control over CEO risk-taking behaviour, we re-estimate Equation (3) by interacting CEO early tenure with the percentage of female directors on the board (*CEOETN* × *PctFemDir*) and report our results in Table 8. In Model 1 of Table 8, the coefficient on *CEOETN* × *PctFemDir* is negative and statistically significant at 5 per cent, implying that board gender diversity is an effective monitoring mechanism in lowering cost of debt for firms with CEOs

in their early tenure in office. This finding provides robust support to our earlier results reported in subsection 5.3.3.

#### 5.1.2 *Effect of institutional ownership on CEO tenure-cost of debt relationship*

Previous empirical evidence has shown that institutional ownership constrains CEOs in their early tenure in office from engaging in very risky operations such as earnings overstatement (Ali and Zhang 2015). It has also been documented that institutional ownership is associated with lower cost of debt and higher ratings on newly issued bonds (Bhojraj and Sengupta 2003; Elyasiani et al. 2010). These results show that debtholders recognise the effective monitoring role of institutional shareholders and, as a result, they factor this in when assessing the default risk of firms with larger proportions of institutional ownership. Given that institutional ownership has the capacity to constrain CEOs' risk-taking in their early tenure in office (Ali and Zhang 2015), we would expect cost of debt to be lower because debtholders are likely to demand a lower risk premium when a firm has a greater proportion of outstanding shares held by institutional investors.

To test this proposition, we follow the existing literature (Ali and Zhang, 2015) and use institutional ownership (*INSTOWN*) as an alternative governance control, which is defined as a percentage of a firm's outstanding shares held by institutional investors. We re-estimate Equation (3) by interacting CEO early tenure with institutional ownership ( $CEOETN \times INSTOWN$ ) and our results are reported in Table 8. As Model 2 of Table 8 shows, the coefficient on  $CEOETN \times INSTOWN$  is negative and statistically significant at 5 per cent. The result suggests that governance control other than board independence attributes is effective in lowering cost of debt for firms with CEOs in their early tenure in office. Although our sample size reduced to 1,996, this result provides robust support to our earlier results reported in subsection 5.3.3.

**[Insert Table 8 here]**

## 5.2 Using an alternative cost of debt measure

As discussed in subsection 3.2, we test whether our main results are sensitive to an alternative cost of debt (*ACoD*) measure. We follow previous literature (Pittman and Fortin 2004; Francis et al. 2005; Lorca et al. 2011) and measure *ACoD* as interest expense in the year scaled by interest-bearing debt. We re-estimate Equations (2) and (3) using *ACoD* as the dependent variable and report our results of CEOs in their early tenure and final year in office (Panel A) and the interaction between board independence attributes and CEOs in their early tenure in office (Panel B) in Table 9. As Panel A (Models 1 and 2) of Table 9 shows, CEOs in their early tenure (final year) in office continue to have positive (positive) and significant (insignificant) impact on the alternative cost of debt measure, evidence consistent CEO risk-taking incentives and cost of debt literature (Shaw, 2012). We also find in Panel B (Models 1, 2 and 3) of Table 9 that board independence attributes interact with CEOs in their early tenure in office to reduce cost of debt. These results suggest that our previous regression results reported under Table 3 (Models 1 and 2) and Table 5 (Models 1, 2 and 3) are not sensitive to the alternative measure of cost of debt.

**[Insert Table 9 here]**

## 5.3 Other tests

First, our analyses thus far have focused on the CEOs in their early tenure in office and their final year in office. However, the CEOs' tenure after five years in office may have a different impact on cost of debt than that found in their final year in office. Therefore, we follow Mitra et al. (2020) and construct a new CEO tenure (*CEOLTN*) variable using a dummy variable that is set to one if CEO tenure is greater than the sample median of five years, and zero otherwise. We re-estimate Equation (2) by replacing *CEOFYR* with the *CEOLTN*. The results (Appendix 1) show that the coefficient on *CEOLTN* is positive but statistically insignificant, providing support to our main findings that cost of debt is not affected by CEOs in their later tenure in office.

Second, to address the concerns of unobserved, time-invariant firm-level heterogeneity, we re-estimate Equations (2) and (3) by controlling for firm-level fixed effects in addition to the year and industry effects. Our results from all the regression models (Appendix 2) provide robust support to our main results reported under Tables 3 and 5. Third, our main results could also be impacted by the absence of institutional ownership because firms with institutional ownership are subject to greater monitoring (Ashbaugh et al. 2003; Ali and Zhang 2015), which could affect cost of debt. To address this concern, we re-estimate Equations (2) and (3) by including institutional ownership as a control variable, which is measured as a percentage of a firm's outstanding shares held by institutional investors (Mahoney and Roberts 2007; Ali and Zhang 2015). Our results (Appendix 3) are qualitatively similar to the main results reported under Tables 3 and 5.

We therefore conclude that our main results are not sensitive to the alternative governance controls, alternative measure of CEO later tenure, unobserved, time-invariant firm-level heterogeneity, and greater monitoring by institutional investors.

## **6 Conclusion**

In this study, we investigate whether CEO tenure under different circumstances, particularly, CEOs in their early tenure in office and their later tenure in office affect cost of borrowing, and the moderating role of board independence attributes in reducing cost of borrowing. Although previous literature has investigated the effect of CEO tenure on, for example, (1) firm performance (Hambrick and Fukutomi 1991; Miller and Shamsie 2001; Henderson et al. 2006), (2) earnings management (Ali and Zhang, 2015), (3) corporate social responsibility (CSR) performance (Chen et al. 2019), and (4) audit fees (Mitra et al. 2020), our knowledge of the differential impact of the CEO's tenure on cost of debt and the moderating role of board independence attributes in reducing cost of debt during the CEO's tenure is surprisingly limited. Because debtholders are convinced that CEOs in their early tenure in office are willing to take risk and in particular engage in earnings overstatement to favourably influence the market about their superior ability than is the case in their later tenure in

office, we predict that cost of debt is higher for firms with CEOs in their early tenure in office than for those in their later tenure in office, and that board independence attributes are effective monitoring mechanisms in constraining CEOs' risk-taking behaviour when they are new to lower cost of debt.

Using a sample of the FTSE All Share Index firms listed on the London Stock Exchange for the period 2009 to 2018, we find that cost of debt is higher for firms with CEOs in their early tenure in office than in their later tenure in office. The explanation for this is that CEOs in their early tenure in office are willing to take risks in the form of earnings overstatement to favourably influence debtholders about their superior ability than in their later tenure in office and debtholders are aware of this, hence, they demand a higher cost of debt when the CEO is new and risk-seeking. Further analysis shows that cost of debt is lower for firms that have effective monitoring mechanisms in place through greater board independence attributes. We find that board independence attributes attenuate the positive relationship between CEOs early tenure in office and cost of debt. Our findings are robust to an alternative cost debt measure, other sensitivity analysis, and endogeneity tests

Our study provides some insights and enhances our understanding on how cost of debt is affected during the CEO's tenure. The policy implication of our study is that firms seeking to raise finance from the debt market should consider enhancing their board independence attributes when the CEO is new and risk-seeking because greater board independence attributes influence debtholders default risk assessments to reduce cost of debt. In addition, the study will provide firms with some insights on how their cost of debt might be affected during the CEO tenure and the control mechanisms that they need to put in place to convince debtholders to reduce cost of debt.

Our study is limited to the investigation of the UK firms for the period 2009 to 2018 and, therefore, the generalisation of our results to other firms outside the UK is limited. We encourage future research to extend this study to other jurisdictions where the corporate governance regulatory environment is different. In addition, the focus on the differential impacts of CEOs in their early tenure in office and their later tenure in office on cost of equity is an interesting avenue that future research may consider. Furthermore, other related research (e.g., Bhojraj and Sengupta 2003;

Anderson et al. 2004; Ortiz-Molina 2006; Shaw 2012) employs yield spread as a proxy for cost of debt. However, both our *CoD* measure and yield spread are adjusted for current economic conditions. In addition, our *CoD* measure captures average yield spread. Therefore, we employ the *CoD* measure as our primary dependent variable instead of yield spread due to data limitations. Future research may consider extending our study to other cost of debt measures such as yield spread, yield to maturity and credit rating on the new debt issue. Overall, our results show that board independence attributes are effective in lowering cost of debt for firms with CEOs in their early tenure in office but we may also have missed other omitted variables in the literature that can affect the conclusions of our results.

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## LIST OF TABLES

**Table 1**

### Descriptive Statistics and Test for Differences

#### Panel A: Descriptive Statistics for the Full Sample (n = 2,780)

Variable	Mean	Median	Std. Dev.	Q1	Q3
<i>CoD (%)</i>	2.220	2.000	1.735	0.942	3.185
<i>CEOETN</i>	0.191	0.000	0.288	0.000	0.000
<i>CEOFYR</i>	0.045	0.000	0.208	0.000	0.000
<i>CEODUALITY</i>	0.015	0.000	0.118	0.000	0.000
<i>CEOAGE</i>	3.947	3.951	0.129	3.871	4.025
<i>CEOAge (years)</i>	52.224	52.000	6.617	48.000	56.000
<i>FEMCEO</i>	0.056	0.000	0.231	0.000	0.000
<i>CEOWN (%)</i>	1.340	0.060	5.701	0.001	0.360
<i>SHAREOPT (%)</i>	0.485	0.150	2.025	0.040	0.710
<i>CEOCOMP</i>	11.722	13.867	5.188	13.199	14.616
<i>CEOComp (£m)</i>	3.032	1.311	3.001	0.821	2.546
<i>BRDInd</i>	0.590	0.600	0.141	0.500	0.700
<i>IndAC</i>	0.817	1.000	0.386	1.000	1.000
<i>IndLead</i>	0.767	1.000	0.423	1.000	1.000
<i>ROA</i>	0.054	0.055	0.101	0.022	0.099
<i>MTBV</i>	3.453	2.173	5.247	1.191	4.069
<i>SIZE</i>	7.244	7.169	1.811	6.076	8.308
<i>VOLAT</i>	3.470	3.415	0.404	3.195	3.712
<i>LEV</i>	0.224	0.191	0.196	0.060	0.330
<i>INTCOV</i>	8.699	7.856	3.459	2.883	22.947
<i>CAPEX</i>	0.039	0.0278	0.040	0.012	0.054
<i>R&amp;D</i>	0.012	0.000	0.037	0.000	0.002
<i>TANGIBILITY</i>	0.322	0.227	0.287	0.076	0.533
<i>Z-score</i>	3.662	2.739	4.992	1.750	4.014
<i>FIRMAGE</i>	3.030	2.995	1.119	2.303	3.989
<i>FIRMAGE (years)</i>	35.379	20.000	35.246	10.000	54.000

**Panel B: Test for Difference in Board and Firm-Level Characteristics**

(1) Variable	CEOs other years in office = 0		CEOs early tenure in office = 1		Diff (Mean)	Diff (Median)
	(2) Mean	(3) Median	(4) Mean	(5) Median	(Col. 2-4) <i>t</i> -stats	(Col. 3-5) <i>z</i> -stats
<i>CoD (%)</i>	2.191	1.948	2.253	2.049	-2.28**	-3.12***
<i>CEODUALITY</i>	0.016	0.000	0.003	0.000	1.56	1.57
<i>CEOAGE</i>	3.948	3.951	3.943	3.951	0.54	0.38
<i>FEMCEO</i>	0.053	0.000	0.086	0.000	-2.27**	-2.27**
<i>CEOWN (%)</i>	1.141	0.070	0.659	0.030	2.09**	4.32***
<i>SHAREOPT (%)</i>	0.618	0.170	0.195	0.080	2.80***	5.96***
<i>CEOCOMP</i>	11.688	13.844	13.233	14.142	-5.11***	-5.66***
<i>BRDInd</i>	58.535	60.000	63.155	66.667	-5.12***	-5.27***
<i>IndAC</i>	0.808	1.000	0.906	1.000	-4.05***	-4.04***
<i>IndLead</i>	0.756	1.000	0.874	1.000	-4.46***	-4.45***
<i>ROA</i>	5.388	5.237	6.111	5.815	-1.82*	-1.80*
<i>MTBV</i>	3.459	2.192	3.395	1.997	0.19	0.11
<i>SIZE</i>	7.185	7.113	7.828	7.675	-5.64***	-5.84***
<i>VOLAT</i>	3.331	3.269	3.547	3.518	-2.63***	-2.74***
<i>LEV</i>	0.203	0.179	0.255	0.226	-1.65*	-1.65*
<i>INTCOV</i>	9.939	8.924	7.438	6.449	2.03**	2.22**
<i>CAPEX</i>	0.038	0.028	0.041	0.029	-0.27	-0.71
<i>R&amp;D</i>	0.007	0.000	0.019	0.000	-2.08**	-2.10**
<i>TANGIBILITY</i>	0.336	0.247	0.291	0.202	2.04**	1.76*
<i>Z-score</i>	3.475	2.712	3.565	2.746	-0.45	-0.34
<i>FIRMAGE</i>	3.004	2.956	3.089	3.085	-1.67*	-2.11**

This table provides descriptive statistics and test for differences in board and firm-level characteristics. Cost of debt (*CoD*) data is directly downloaded from the Bloomberg Terminal, which is measured as the after-tax weighted average cost of debt for the security calculated using government bond rates, a debt adjustment factor, the proportion of short and long term debt to total debt and stock's effective tax rate. *CEOETN* is an indicator variable that is set to one for the first three years of tenure of a firm's CEO, and zero otherwise; *CEOFYR* is an indicator variable that is set to one for the year prior to the turnover year of a firm's CEO, and zero otherwise; *CEODUALITY* is an indicator variable that is set to one if one person occupies the position of the CEO and the chairman, and zero otherwise; *CEOAGE* is the natural logarithm of the CEO age in years; *FEMCEO* is an indicator variable that is set to one if the CEO is a female, and zero otherwise; *CEOWN* is the percentage of outstanding shares owned by the CEO; *SHAREOPT* is the number of unexercised share options linked to the CEO as a percentage of outstanding shares; *CEOCOMP* is the natural logarithm of the total CEO compensation; *BRDInd* is the percentage of independent directors to total board size; *IndAC* is an indicator variable that is set to one if all the audit committee members are independent directors, and zero otherwise; *IndLead* is an indicator variable that is set to one if a firm has a lead independent director on the board, and zero otherwise; *ROA* is the net income scaled by lagged total assets; *MTBV* is the market capitalisation scaled by the book value of common equity; *SIZE* is the natural logarithm of the total assets; *VOLAT* is the natural logarithm of the standard deviation of daily stock returns for at least 360 days a year; *LEV* is the total debt scaled by the sum of total debt plus common equity; *INTCOV* is earnings before interest and taxes scaled by total interest paid; *CAPEX* is the capital expenditure for the year scaled by total assets, with missing values coded as zeros; *R&D* is the research and development expenses scaled by total assets, with missing values coded as zeros; *TANGIBILITY* is the net property, plant and equipment scaled by total assets; *Z-score* is a composite score indicating a distance to financial default estimated from Altman's Z-score; and *FIRMAGE* is the natural logarithm of the number of years from the date of incorporation.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

**Table 2**  
**Correlation Matrix from Cost of Debt to SHAREOPT (n = 2,780)**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
1. COD	1.00																						
2. CEOETN	0.04***	1.00																					
3. CEOFYR	0.02	0.01	1.00																				
4. CEODUALITY	0.01	-0.03	0.04**	1.00																			
5. CEOAGE	-	-0.01	0.10***	0.13***	1.00																		
	0.11***																						
6. CEOWN	-0.04*	-0.04**	-0.01	0.22***	0.05**	1.00																	
7. CEOCOMP	-	0.09***	0.09***	-0.05**	0.20***	-	1.00																
	0.07***					0.07***																	
8. ROA	-	0.02	0.03	0.03*	-0.01	0.08***	0.05***	1.00															
	0.06***																						
9. MTBV	-	-0.01	0.01	-0.02	-	0.01	0.05**	0.27***	1.00														
	0.11***				0.06***																		
10. SIZE	0.19***	0.10***	0.07***	-0.03	0.16***	-	0.30***	0.07***	-	1.00													
						0.09***			0.11***														
11. VOLAT	0.10***	-0.03	-	0.02	-	0.10***	-	-	-	-	1.00												
			0.06***		0.16***		0.28***	0.36***	0.08***	0.33***													
12. LEV	0.38***	0.01	-0.02	0.04**	0.03	-0.04**	-0.05**	-	-	0.35***	0.09***	1.00											
								0.28***	0.23***														
13. INTCOV	-	0.02	0.01	-0.01	0.02	0.02	-0.01	0.17***	0.02	-0.03	-	-0.04**	1.00										
	0.06***										0.06***												
14. CAPEX	0.15***	0.01	-0.02	-0.03	-0.04*	0.05***	-0.02	-	-0.03	0.06***	0.14***	0.18***	0.02	1.00									
								0.08***															
15. R&D	-	0.01	-0.01	0.02	0.05**	0.01	0.01	-	0.05***	-	0.15***	-	-	-	1.00								
	0.17***							0.26***		0.26***		0.23***	0.05**	0.06***									
16. TANGIBILITY	-	-0.02	-0.03*	0.06***	0.02	0.02	0.03	-	-	0.17***	-0.04**	0.46***	-0.02	0.46***	-	1.00							
	0.30***							0.08***	0.16***						0.26***								
17. Z-score	-	0.01	0.02	0.03	-	0.06***	0.01	0.36***	0.36***	-	0.02	-	0.05***	-	0.16***	-	1.00						
	0.33***				0.08***					0.35***		0.56***		0.06***		0.26***							
18. FIRMAGE	0.08***	0.01**	0.01	0.01	0.05**	-	0.13***	0.03	-	0.09***	-	-0.01	0.02	-	-0.04*	0.03*	-	1.00					
						0.08***			0.09***		0.22***			0.10***		0.13***							
19. BRDInd	-	0.05***	0.02	-	0.02	-	0.05***	-0.02	-0.01	0.22***	-	-	-	-0.01	0.02	-	-	0.05***	1.00				
	0.02***			0.07***		0.07***					0.13***	0.05***	0.04**			0.07***	0.06***						
20. IndAC	-	0.07***	0.07***	-0.04**	0.09***	-0.02	0.45***	0.12***	0.05***	0.25***	-	0.08***	0.01	0.04**	-0.02	0.01	-0.01	0.14***	0.09***	1.00			
	0.04***										0.20***												
21. IndLead	-0.07**	0.08***	0.09***	-0.02	0.13***	-0.01	0.49***	0.18***	0.04**	0.30***	-	-	0.02	-0.05**	0.08***	0.02	-0.03	0.15***	0.02	0.54***	1.00		
											0.37***	0.02***											
22. FEMCEO	-	0.04**	0.03	-0.02	-0.04**	-	0.03	-0.01	0.01	0.08***	-	0.03	-0.01	-0.03	-	-0.04**	-	-0.04**	0.02	0.06***	0.04**	1.00	
	0.06***					0.05***					0.06***				0.08***		0.07***						
23. SHAREOPT	0.08***	-	-0.04**	0.04**	-	0.55***	-	0.07***	0.02	-	0.08***	0.02	0.01	0.07***	-	0.08***	0.04**	-	-	-	-	1.00	
		0.05***			0.09***		0.13***			0.13***					0.06***			0.09***	0.14***	0.04**	0.04**		

This table presents the pairwise correlation between the cost of debt measure, CEO early tenure, CEO final year, board independence attributes, and the control variables. See all variable definitions in Table 1.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

**Table 3**  
**Early Tenure and Final Year of CEO in Office and Cost of Debt**

<i>DEPENDENT VARIABLE: CoD</i>				
<b>Variables</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
Intercept	-2.416*** (-21.20)	-4.322*** (-3.54)	-2.404*** (-21.08)	-4.570*** (-3.91)
<i>CEOETN</i>	0.106*** (3.24)	0.083*** (3.05)	- -	- -
<i>CEOFYR</i>	0.065 (1.21)	0.039 (1.16)	- -	- -
<i>CEOETN1</i>	- -	- -	0.182*** (3.52)	0.192*** (2.94)
<i>CEOETN2</i>	- -	- -	0.073*** (5.24)	0.057** (2.05)
<i>CEOETN3</i>	- -	- -	0.138 (1.56)	0.103 (0.97)
<i>CEOETN4</i>	- -	- -	0.076 (0.67)	0.136 (1.15)
<i>CEOETN5</i>	- -	- -	0.125 (0.93)	0.033 (0.28)
<i>CEODUALITY</i>	- -	0.202 (0.67)	- -	0.193 (0.89)
<i>CEOAGE</i>	- -	-1.028*** (-3.59)	- -	-1.070*** (-3.72)
<i>FEMCEO</i>	- -	-0.417*** (-2.59)	- -	-0.428*** (-2.67)
<i>CEOWN</i>	- -	-0.004 (-0.47)	- -	-0.004 (-0.54)
<i>SHAREOPT</i>	- -	0.010** (2.19)	- -	0.011** (2.21)
<i>CEOCOMP</i>	- -	-0.022* (-1.81)	- -	-0.022* (-1.81)
<i>ROA</i>	- -	-0.012** (-2.53)	- -	-0.012** (-2.48)
<i>MTBV</i>	- -	0.007 (1.27)	- -	0.007 (1.27)
<i>SIZE</i>	- -	-0.055** (-2.13)	- -	-0.064** (-2.46)
<i>VOLAT</i>	- -	0.060** (2.48)	- -	0.055** (2.44)
<i>LEV</i>	- -	2.240*** (8.16)	- -	2.247*** (8.13)
<i>INTCOV</i>	- -	-0.001*** (-5.12)	- -	-0.001*** (-4.97)
<i>CAPEX</i>	- -	0.446 (0.37)	- -	0.391 (0.32)
<i>R&amp;D</i>	- -	0.443** (2.52)	- -	0.301** (2.07)
<i>TANGIBILITY</i>	- -	-0.814*** (-4.57)	- -	-0.802*** (-4.49)
<i>Z-score</i>	- -	-0.093*** (-6.48)	- -	-0.092*** (-6.41)
<i>FIRMAGE</i>	- -	0.064** (2.03)	- -	0.063** (1.99)
<i>YEAR_FE</i>	YES	YES	YES	YES
<i>IND_FE</i>	YES	YES	YES	YES
<i>Adj R<sup>2</sup></i>	0.185	0.336	0.185	0.337
<i>N</i>	2,780	2,780	2,780	2,780

This table reports the regression results of CEO early tenure and final year in office and cost of debt. See all variable definitions except for *CEOETN1-CEOETN5* in Table 1. *CEOETN1* is an indicator variable that is set to one for a firm's CEO first year in office, and zero otherwise; *CEOETN2* is an indicator variable that is set to one for a firm's CEO second year in office, and zero otherwise; *CEOETN3* is an indicator variable that is set to one for a firm's CEO third year in office, and zero otherwise;

*CEOETN4* is an indicator variable that is set to one for a firm's CEO fourth year in office, and zero otherwise; and *CEOETN5* is an indicator variable that is set to one for a firm's CEO fifth year in office, and zero otherwise.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.

Standard errors are clustered by both firm and year level.

**Table 4**  
**Non-Linearity Effect of CEO Tenure on Cost of Debt**

<i>DEPENDENT VARIABLE: CoD</i>		
<b>Variables</b>	<b>Coefficient</b>	<b>t-value</b>
Intercept	4.427	3.22***
<i>CEOTenure</i>	0.023	2.74***
<i>CEOTenure</i> <sup>2</sup>	-0.004	-2.32**
<i>CEODUALITY</i>	0.499	1.90*
<i>CEOAGE</i>	-1.014	-3.22***
<i>FEMCEO</i>	-0.468	-3.10***
<i>CEOWN</i>	-0.003	-0.34
<i>SHAREOPT</i>	0.012	2.23**
<i>CEOCOMP</i>	-0.026	-1.74*
<i>ROA</i>	-0.013	2.44**
<i>MTBV</i>	0.008	1.27
<i>SIZE</i>	-0.024	-1.74*
<i>VOLAT</i>	0.087	2.60***
<i>LEV</i>	2.303	7.40***
<i>INTCOV</i>	-0.001	-4.87***
<i>CAPEX</i>	0.569	0.41
<i>R&amp;D</i>	0.533	2.66***
<i>TANGIBILITY</i>	-0.796	-4.04***
<i>Z-score</i>	-0.104	-6.67***
<i>FIRMAGE</i>	0.061	1.67*
<i>YEAR_FE</i>	YES	YES
<i>IND_FE</i>	YES	YES
<i>Adj R</i> <sup>2</sup>	0.362	0.104
<i>N</i>	2,780	2,780

This table reports the regression results of non-linearity effect of CEO tenure on cost of debt. See all control and *CoD* variable definitions except for *CEOTenure* and *CEOTenure*<sup>2</sup> in Table 1. *CEOTenure* is the continuous CEO tenure variable; and *CEOTenure*<sup>2</sup> is the quadratic form of *CEOTenure*.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

Standard errors are clustered by both firm and year level.



**Table 5**  
**Effect of Board Independence Attributes on Cost of Debt in the Early Tenure of CEO in Office**

Variables	DEPENDENT VARIABLE: CoD		
	Model 1	Model 2	Model 3
Intercept	4.739*** (3.92)	4.230*** (3.49)	4.022*** (3.31)
<i>CEOETN</i>	0.079** (2.51)	0.190*** (2.59)	0.580** (2.31)
<i>CEOETN</i> × <i>BRDInd</i>	-0.048*** (-2.71)	-	-
<i>BRDInd</i>	-0.037* (-1.84)	-	-
<i>CEOETN</i> × <i>IndAC</i>	-	-0.098** (-2.29)	-
<i>IndAC</i>	-	-0.036** (-1.98)	-
<i>CEOETN</i> × <i>IndLead</i>	-	-	-0.532** (-1.99)
<i>IndLead</i>	-	-	-0.301** (-2.49)
<i>CEODUALITY</i>	0.240 (1.10)	0.195 (0.89)	0.179 (0.80)
<i>CEOAGE</i>	-1.057*** (-3.73)	-1.008*** (-3.54)	-1.013*** (-3.57)
<i>FEMCEO</i>	-0.413*** (-2.62)	-0.413*** (-2.59)	-0.409** (-2.56)
<i>CEOWN</i>	-0.004 (-0.42)	-0.004 (-0.48)	-0.005 (-0.55)
<i>SHAREOPT</i>	0.011** (2.32)	0.011** (2.20)	0.010** (2.14)
<i>CEOCOMP</i>	-0.027** (-2.14)	-0.021* (-1.82)	-0.023* (-1.91)
<i>ROA</i>	-0.013*** (-2.78)	-0.012** (-2.53)	-0.011** (-2.32)
<i>MTBV</i>	0.006 (1.04)	0.007 (1.26)	0.007 (1.29)
<i>SIZE</i>	-0.073*** (-2.62)	-0.055** (-2.14)	-0.048* (-1.89)
<i>VOLAT</i>	0.124** (1.99)	0.125** (2.01)	0.174*** (2.60)
<i>LEV</i>	2.189*** (7.88)	2.243*** (8.13)	2.188*** (8.96)
<i>INTCOV</i>	-0.001*** (-5.12)	-0.001*** (-5.10)	-0.001*** (-4.85)
<i>CAPEX</i>	0.161 (0.15)	0.142 (0.36)	0.061 (0.50)
<i>R&amp;D</i>	0.497** (2.31)	0.446** (2.20)	0.331** (2.11)
<i>TANGIBILITY</i>	-0.757*** (-4.08)	-0.810*** (-4.56)	-0.848*** (-4.75)
<i>Z-score</i>	-0.098*** (-6.79)	-0.093*** (-6.46)	-0.095*** (-6.57)
<i>FIRMAGE</i>	0.068** (2.11)	0.064** (2.02)	0.060* (1.92)
<i>YEAR FE</i>	YES	YES	YES
<i>IND FE</i>	YES	YES	YES
<i>Adj R<sup>2</sup></i>	0.327	0.336	0.338
<i>N</i>	2,780	2,780	2,780

This table reports the regression results of board independence attributes, CEO early tenure in office and cost of debt. See all variable definitions except for the interaction terms (*CEOETN*×*BRDInd*, *CEOETN*×*IndAC* and *CEOETN*×*IndLead*) in Table 1. *CEOETN*×*BRDInd* is the interaction between CEO early tenure in office and percentage of independent directors on the board; *CEOETN*×*IndAC* is the interaction between CEO early tenure in office and audit committee independence; and *CEOETN*×*IndLead* is the interaction between CEO early tenure in office and a lead independent director on the board.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.  
*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.  
Standard errors are clustered by both firm and year level.

**Table 6**  
**Using 1-Year Lagged Cost of Debt**  
**Panel A: Early and the Final Year of CEO in office**

<i>DEPENDENT VARIABLE: CoD</i>		
Variables	Model 1	Model 2
Intercept	-1.108** (-2.19)	-2.751*** (-2.90)
<i>CEOETN</i>	0.070*** (2.95)	- -
<i>CEOFYR</i>	0.045 (1.49)	- -
<i>CEOETN1</i>	- -	0.253*** (3.51)
<i>CEOETN2</i>	- -	0.085*** (2.63)
<i>CEOETN3</i>	- -	0.116 (1.25)
<i>CEOETN4</i>	- -	0.143 (1.28)
<i>CEOETN5</i>	- -	0.021 (0.23)
<i>Lagged CoD</i>	0.662*** (22.02)	0.606*** (18.85)
<i>CONTROLS</i>	YES	YES
<i>YEAR FE</i>	YES	YES
<i>IND FE</i>	YES	YES
<i>Adj R<sup>2</sup></i>	0.633	0.632
<i>N</i>	2,502	2,502

**Pane B: Board Independence Attributes and CEO Early Tenure in Office**

Variables	<i>DEPENDENT VARIABLE: CoD</i>		
	Model 1	Model 2	Model 3
Intercept	1.447** (2.57)	1.169** (2.25)	1.184** (2.27)
<i>CEOETN</i>	0.045** (2.03)	0.191*** (2.75)	0.303*** (2.90)
<i>CEOETN × BRDInd</i>	-0.034** (-2.15)	- -	- -
<i>BRDInd</i>	-0.026* (-1.91)	- -	- -
<i>CEOETN × IndAC</i>	- -	-0.126** (-2.47)	- -
<i>IndAC</i>	- -	-0.028* (-1.86)	- -
<i>CEOETN × IndLead</i>	- -	- -	-0.247*** (-2.76)
<i>IndLead</i>	- -	- -	-0.072*** (-3.18)
<i>Lagged CoD</i>	0.665*** (22.06)	0.662*** (22.05)	0.663*** (21.97)
<i>CONTROLS</i>	YES	YES	YES
<i>YEAR FE</i>	YES	YES	YES
<i>IND FE</i>	YES	YES	YES
<i>Adj R<sup>2</sup></i>	0.634	0.632	0.633
<i>N</i>	2,502	2,502	2,502

The table reports the regression results controlling for 1-year lagged cost of debt. See all variable definitions in Tables 1, 3 and 4.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.

Standard errors are clustered by both firm and year level.

**Table 7: 2SLS Regression Results**

<i>DEPENDENT VARIABLE: CoD</i>		
<b>Variables</b>	<b>Model 1</b>	<b>Model 2</b>
Intercept	-3.001** (-2.15)	-4.476*** (-2.83)
<i>IV_CEOETN</i>	1.007*** (3.17)	- -
<i>IV_CEOFYR</i>	- -	1.107 (0.75)
<i>CONTROLS</i>	YES	YES
<i>YEAR FE</i>	YES	YES
<i>IND FE</i>	YES	YES
<i>Adj R<sup>2</sup></i>	0.266	0.284
<i>N</i>	2,780	2,780
<i>Durbin (test of endogeneity)</i>	1.3608 ( <i>P</i> = 0.2434)	0.35589 ( <i>P</i> = 0.5508)
<i>Wu-Hausman F (test of endogeneity)</i>	1.3299 ( <i>P</i> = 0.2490)	0.3476 ( <i>P</i> = 0.5555)

This table reports the two-stage least squares (2SLS) regression results of CEO early tenure and final year in office and cost of debt. See all variable definitions in Tables 1. *IV\_CEOETN* and *IV\_CEOFYR* are instrumented by CEO tenure industry average (*CEOTenure\_INDAVG*) from previous year.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.

Durbin and Wu-Hausman endogeneity test are reported at the bottom of Models 1 and 2.

Standard errors are clustered by both firm and year level.

**Table 8**  
**Effect of other Governance Controls on Cost of Debt in the Early Tenure of CEO in Office**

Variables	<i>DEPENDENT VARIABLE: CoD</i>	
	Model 1	Model 2
Intercept	5.734*** (4.46)	5.182*** (3.46)
<i>CEOETN</i>	0.077* (1.93)	0.046** (2.41)
<i>CEOETN × PctFemDir</i>	-0.014** (-2.27)	- -
<i>PctFemDir</i>	-0.028** (-2.54)	- -
<i>CEOETN × INSTOWN</i>	- -	-0.006** (-2.37)
<i>INSTOWN</i>	- -	-0.005*** (-3.27)
<i>CONTROLS</i>	YES	YES
<i>YEAR FE</i>	YES	YES
<i>IND FE</i>	YES	YES
<i>Adj R<sup>2</sup></i>	0.328	0.304
<i>N</i>	2,780	1,996

This table reports the regression results of other corporate governance controls, CEO early tenure in office and cost of debt. See all variable definitions except for the interaction terms (*CEOETN×PctFemDir* and *CEOETN×INSTOWN*) in Table 1. *CEOETN×PctFemDir* is the interaction between CEO early tenure in office and percentage of female directors on the board; and *CEOETN×INSTOWN* is the interaction between CEO early tenure in office and percentage of a firm's outstanding shares held by institutional investors.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.

Standard errors are clustered by both firm and year level.

**Table 9**  
**Using an Alternative Cost of Debt**  
**Panel A: Early Tenure and the Final Year of CEO in office and Alternative Cost of Debt**

Variables	<i>DEPENDENT VARIABLE: ACoD</i>	
	Model 1	Model 2
Intercept	-0.037*** (-4.20)	-0.031** (-2.17)
<i>CEOETN</i>	0.047*** (2.92)	0.058*** (2.96)
<i>CEO FYR</i>	0.012 (0.11)	0.018 (1.16)
<i>CONTROLS</i>	NO	YES
<i>YEAR_FE</i>	YES	YES
<i>IND_FE</i>	YES	YES
<i>Adj R</i> <sup>2</sup>	0.070	0.126
<i>N</i>	2,664	2,664

**Pane B: Board Independence Attributes, CEO Early Tenure and an Alternative Cost of Debt**

Variables	<i>DEPENDENT VARIABLE: ACoD</i>		
	Model 1	Model 2	Model 3
Intercept	0.032** (2.17)	0.035*** (3.38)	4.003*** (3.02)
<i>CEOETN</i>	0.039*** (2.67)	0.048*** (3.63)	0.082*** (3.44)
<i>CEOETN</i> × <i>BRDInd</i>	-0.047*** (-3.20)	-	-
<i>BRDInd</i>	-0.048** (-2.16)	-	-
<i>CEOETN</i> × <i>IndAC</i>	-	-0.041** (-2.29)	-
<i>IndAC</i>	-	-0.037** (-1.99)	-
<i>CEOETN</i> × <i>IndLead</i>	-	-	-0.047*** (-3.19)
<i>IndLead</i>	-	-	-0.056*** (-2.92)
<i>CONTROLS</i>	YES	YES	YES
<i>YEAR_FE</i>	YES	YES	YES
<i>IND_FE</i>	YES	YES	YES
<i>Adj R</i> <sup>2</sup>	0.064	0.066	0.064
<i>N</i>	2,664	2,664	2,664

This table reports the regression results using an alternative cost of debt measure. See all variable definitions except for *ACoD* in Tables 1 and 4. *ACoD* is the alternative cost of debt defined as interest expense in the year scaled by interest-bearing debt.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.

Standard errors are clustered by both firm and year level.

**Appendix 1**  
**Alternative Measure of CEO Final Year in Office**

<i>DEPENDENT VARIABLE: CoD</i>		
<b>Variables</b>	<b>Coefficient</b>	<b>t-value</b>
Intercept	4.337***	3.56***
<i>CEOETN</i>	0.103***	3.61***
<i>CEOLTN</i>	0.056	1.50
<i>CONTROLS</i>	YES	YES
<i>YEAR_FE</i>	YES	YES
<i>IND_FE</i>	YES	YES
<i>Adj R<sup>2</sup></i>	0.362	0.104
<i>N</i>	2,780	2,664

The table reports the regression results of using an alternative measure of CEO final year in office and cost of debt. See all variable definitions except for *CEOLTN* in Table 1. *CEOLTN* is CEO long tenure defined as an indicator variable that is set to one if CEO tenure is greater than the sample median of 5 years, and zero otherwise.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

Standard errors are clustered by both firm and year level.

**Appendix 2**  
**Controlling for Firm-Level Fixed Effects**  
**Panel A: Early and the Final Year of CEO in office**

<i>DEPENDENT VARIABLE: CoD</i>		
Variables	Model 1	Model 2
Intercept	-3.590** (-2.06)	-4.192** (-2.30)
<i>CEOETN</i>	0.131** (1.98)	-
<i>CEOFYR</i>	0.080 (0.90)	-
<i>CEOETN1</i>	-	0.119** (2.28)
<i>CEOETN2</i>	-	0.055** (2.06)
<i>CEOETN3</i>	-	0.092 (1.01)
<i>CEOETN4</i>	-	0.098 (1.09)
<i>CEOETN5</i>	-	0.019 (0.16)
<i>CONTROLS</i>	YES	YES
<i>YEAR FE</i>	YES	YES
<i>IND FE</i>	YES	YES
<i>FIRM FE</i>	YES	YES
<i>Adj R</i> <sup>2</sup>	0.695	0.695
<i>N</i>	2,780	2,780

**Pane B: Board Independence Attributes and CEO Early Tenure in Office**

Variables	<i>DEPENDENT VARIABLE: CoD</i>		
	Model 1	Model 2	Model 3
Intercept	4.620*** (2.59)	3.417** (1.98)	3.444** (2.00)
<i>CEOETN</i>	0.073** (2.24)	0.210*** (2.66)	0.574** (2.33)
<i>CEOETN</i> × <i>BRDInd</i>	-0.045*** (-2.71)	-	-
<i>BRDInd</i>	-0.036* (-1.90)	-	-
<i>CEOETN</i> × <i>IndAC</i>	-	-0.103** (-1.99)	-
<i>IndAC</i>	-	-0.084** (-2.25)	-
<i>CEOETN</i> × <i>IndLead</i>	-	-	-0.409** (-2.17)
<i>IndLead</i>	-	-	-0.324*** (2.75)
<i>CONTROLS</i>	YES	YES	YES
<i>YEAR FE</i>	YES	YES	YES
<i>IND FE</i>	YES	YES	YES
<i>FIRM FE</i>	YES	YES	YES
<i>Adj R</i> <sup>2</sup>	0.695	0.695	0.695
<i>N</i>	2,780	2,780	2,780

The table reports the regression results controlling for firm-level fixed effects. See all variable definitions in Tables 1, 3 and 4.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.

Standard errors are clustered by both firm and year level.



**Appendix 3**  
**Controlling for Institutional Ownership**  
**Panel A: Early and the Final Year of CEO in office**

<b>DEPENDENT VARIABLE: CoD</b>		
<b>Variables</b>	<b>Model 1</b>	<b>Model 2</b>
Intercept	5.389*** (3.70)	5.489*** (3.75)
<i>CEOETN</i>	0.060*** (2.64)	- -
<i>CEOFYR</i>	0.049 (1.24)	- -
<i>CEOETN1</i>	- -	0.185*** (2.84)
<i>CEOETN2</i>	- -	0.056** (2.08)
<i>CEOETN3</i>	- -	0.060 (0.53)
<i>CEOETN4</i>	- -	0.129 (1.05)
<i>CEOETN5</i>	- -	0.039 (0.30)
<i>INSTOWN</i>	-0.005*** (-3.04)	-0.004*** (-3.00)
<i>CONTROLS</i>	YES	YES
<i>YEAR FE</i>	YES	YES
<i>IND FE</i>	YES	YES
<i>Adj R<sup>2</sup></i>	0.304	0.304
<i>N</i>	1,996	1,996

**Pane B: Board Independence Attributes and CEO Early Tenure in Office**

<b>Variables</b>	<b>DEPENDENT VARIABLE: CoD</b>		
	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>
Intercept	6.678*** (5.21)	5.393*** (3.79)	4.958*** (3.30)
<i>CEOETN</i>	0.059** (2.31)	0.214*** (2.62)	0.557** (1.98)
<i>CEOETN × BRDInd</i>	-0.031** (-2.66)	- -	- -
<i>BRDInd</i>	-0.025* (-1.68)	- -	- -
<i>CEOETN × IndAC</i>	- -	-0.133** (-2.50)	- -
<i>IndAC</i>	- -	-0.037* (-1.96)	- -
<i>CEOETN × IndLead</i>	- -	- -	-0.528** (-2.04)
<i>IndLead</i>	- -	- -	-0.312*** (-2.65)
<i>INSTOWN</i>	-0.004*** (-2.84)	-0.005*** (-3.03)	0.004*** (2.72)
<i>CONTROLS</i>	YES	YES	YES
<i>YEAR FE</i>	YES	YES	YES
<i>IND FE</i>	YES	YES	YES
<i>Adj R<sup>2</sup></i>	0.298	0.303	0.305
<i>N</i>	1,996	1,996	1,996

The table reports the regression results controlling for institutional ownership. See all variable definitions except for *INSTOWN* in Tables 1, 3 and 4. *INSTOWN* is defined as a percentage of a firm's outstanding shares held by institutional investors.

\*, \*\*, \*\*\* indicate significant at the 10%, 5% and 1% levels, respectively.

*t*-statistics are reported in parentheses and coefficients are on top of the parentheses.

Standard errors are clustered by both firm and year level.