CHIEF EXECUTIVE OFFICER PARTICIPATION IN THEIR FIRM'S CONVERTIBLE NOTE OFFERINGS

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Abstract

Directors, shareholders, and regulators want to understand the costs and benefits of financial arrangements between the firm and its chief executive officer (CEO). This paper examines why some CEOs participate in their firm's convertible note offerings and the relationship between CEO participation and their firm's lending outcomes. The author combines data collected directly from U.S. Securities and Exchange Commission (SEC) Form 4 and other filings, Capital IQ, and Compustat for 163 firms from 2003–2020. Firms frequently claim that their CEO participates in convertible note offerings to reduce the firm's cost of debt. The author tests these claims using ordinary least squares (OLS) regression analysis and finds that note offerings have a lower interest rate and shorter time to maturity when the CEO participates. These results are consistent with the firms' claims; however, the results may only apply to small, financially constrained firms. Additional tests of abnormal returns around CEO participation suggest investors respond positively to CEO participation. This study contributes to the literature by providing novel evidence of an understudied form of CEO wealth and documenting the relationship between CEO participation and less costly debt.

Keywords: Executive Compensation, Corporate Governance, Inside Debt, Debt Contracting, Convertible Debt

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1. INTRODUCTION

Various parties seek to understand the costs and benefits of financial arrangements between the firm and its chief executive officer (CEO). Shareholders and directors want to understand how CEO ownership and inside debt holdings affect the firm so that they can properly govern the firm (Almashhadani & Almashhadani, 2022; Connelly et al., 2010; Edmans & Liu, 2011; Jensen, 2010; Kyere & Ausloos, 2021). Regulators desire to protect shareholders from CEOs they presume will try to extract rents, evidenced

by decades of regulatory action aimed at CEO compensation and insider trading (Brochet, 2010; Dicks, 2012; Murphy, 2012).

To this end, researchers have sought to understand the consequences of these arrangements. The literature provides insights into CEO ownership, trading behavior, and compensation disclosure (Edmans et al., 2023; Hasan et al., 2023). This paper contributes to this literature by studying a previously undocumented financial arrangement between the CEO and the firm: CEO participation in the firm's convertible note offerings.

To contribute to our understanding of this phenomenon, this paper seeks to answer the following question:

RQ: Why do some CEOs participate in their firm's convertible note offerings, and what is the relationship between CEO participation and the firm's lending outcomes?

Convertible notes are debt instruments that the owner can convert into stock at a conversion price set at issuance, possessing both debt and equity features. To our knowledge, past theoretical research does not provide an explanation as to why a CEO might participate in their firm's convertible note offerings. The author looks instead to an empirical source for potential explanations: firm disclosure. Firms regularly discuss their financing arrangements in U.S. Securities and Exchange Commission (SEC) filings, such as their 10-K, 8-K, and proxy statements. These disclosures include claims made about the goals of issuing convertible notes and the potential ramifications for the firm's future projects and viability.

The study forms the hypothesis of why CEOs participate in convertible note offerings by reading the statements made in Forms 10-K, 8-K, proxy statements, and Form 4 filings from a sample of firms that exhibit CEO participation. The sample is composed of 163 firms identified through an analysis of Form 4 disclosures filed from 2003–2020. While the claims made in these statements suggest that CEOs acquire convertible notes for several reasons, firms most often claim that either the CEO's participation resulted in reduced lending costs or that the purpose of CEO participation is to reduce lending costs.

To test these claims, this paper examines differences in note features between notes in which the CEO participated and those in which the CEO did not. All else equal, a lower interest rate for notes that the CEO participates in is consistent with participation reducing the firm's cost of debt. The study regresses the convertible note's interest rate on CEO participation and other determinants of the note's interest rate. The results suggest that the interest rate of notes the CEO participates in is, on average, 0.8267 percentage points (9.73%) lower than notes the CEO does not participate in.

The relationship between CEO participation and conversion risk, and CEO participation and the note's term are also tested. Conversion risk is defined as the risk to the firm that the CEO converts the notes at an unfavorable price. Test results do not provide evidence of a relationship between CEO participation and conversion risk. Note terms are shorter on average for notes in which the CEO participates, though the relationship between the note's term and CEO participation is not statistically significant after controlling for other determinants.

A key lending outcome discovered in this paper is that investors tend to react positively to CEO participation in firm convertible note offerings. This study tests how investors respond to CEO participation by studying abnormal stock returns surrounding the disclosure of CEO note acquisitions. Mean cumulative abnormal returns in the fifteen-day post-filing period are 2.94% and statistically significant. Returns in the pre-filing period are 0.12% and not statistically significant. The results are consistent with investors reacting positively to CEO participation, similar to how investors react positively to CEO equity acquisitions, discovered by Brochet (2010).

The results are consistent with the firm's claims that CEO participation is associated with a lower cost of debt. However, these results are subject to at least two limitations. First, it is impossible to distinguish between two possibilities: that CEO participation causes a lower cost of debt, and that CEOs selectively choose to participate in notes with a lower cost of debt. Second, sample firms are smaller, more highly leveraged, and in greater need of operating funds than the average publicly traded firm, limiting the results' generalizability.

This study contributes to the academic literature and practice in several ways.

To the author's knowledge, this is the first study to document and explore the phenomenon of CEOs acquiring convertible notes in the company they manage, adding to the literature on convertible debt (Batten et al., 2021; Dutordoir et al., 2023; Liao et al., 2022). It provides descriptive information on the notes, the CEOs participating in the notes, and the issuing firm's characteristics, which helps us understand the environment in which these deals occur. The findings contribute to academics' and practitioners' understanding of CEO inside debt holdings and debt contracting (Anantharaman et al., 2014; Bizjak et al., 2019; Chen et al., 2023) by demonstrating a relationship between CEO participation in convertible notes and less costly debt for the firm. Finally, this paper contributes to academics' and practitioners' understanding of the information content of insider trades and SEC Form 4 disclosures (Akey et al., 2022; Brochet, 2010; Goldie et al., 2023), confirming past research's findings that investors monitor and respond to the disclosure of Form 4 filings.

The rest of the study is structured as follows. Section 2 examines the relevant literature. Section 3 explains the methodology and discusses the research hypothesis in detail. Section 4 presents the results and Section 5 describes the main findings. Section 6 concludes the paper with recommendations, implications, and future research directions.

2. LITERATURE REVIEW

Convertible notes are debt instruments the owner can convert into equity at a predetermined price. These notes also pay interest over the life of the security until maturity. Valuation models of convertible notes break them down into a straight debt component and a call option component (Brennan & Schwartz, 1977). The note owner makes a profit by converting the note into shares of stock when the underlying stock price exceeds the conversion price and then sells the shares at the open market price. If the underlying stock price

fails to exceed the conversion price, the owner can continue collecting interest payments and receive the principal at maturity[1]. An issuer can specify note features to provide financial flexibility for themselves or participants. They can make accrued interest convertible, determine if interest is paid-in-kind, include a call feature, or issue convertible notes in tandem with warrants. Warrants are the call or put options written by the issuer of underlying securities or by a third party, entitling their holders to purchase (call) or sell (put) the underlying securities from or to the issuer or collect the price difference by cash settlement, at a predetermined price at any time during a specified period or on the specified expiry date (Chang et al., 2013).

Convertible notes make up a non-trivial portion of the market for corporate financing. Dutordoir et al. (2014) suggest that from 2000 to 2011, U.S. corporations raised $510 billion with convertible debt issues alone, compared with $1,146 billion raised with seasoned equity issues and $6,635 billion with straight debt issues.

While past theoretical work does not model CEO participation and empirical work does not provide evidence of participation, the CEO's decision to participate and the firm's decision to issue convertible notes may be related. Understanding what research tells us about the firm's decision to issue convertible notes provides important context when studying why a CEO might participate in a firm's convertible note offering.

Research provides four explanations for why a firm chooses convertible notes as a form of financing. The first explanation is that firms issue convertible debt to reduce agency costs. Green (1984) provides a theoretical model showing how convertible notes reduce agency costs that result from shareholder-debtholder conflicts. Issuing straight debt incentivizes shareholders to engage in high-risk, negative net present value (NPV) projects. Shareholders pursue these projects to shift risk to debtholders while accruing the gains from the potential upside. Debtholders respond by passing on agency costs back to shareholders. By financing with convertible notes instead of straight debt, shareholders would share the cash flows resulting from high-risk strategies with convertible debtholders, reducing their benefits. Thus, issuing convertible notes compared to straight debt reduces their incentives to engage in negative NPV projects, mitigating agency costs. Mayers (1998) suggests that convertible notes can be used to reduce management-shareholder conflicts and the associated agency costs in a sequential financing scenario.

The second explanation is that firms issue convertible debt to reduce adverse selection costs. Brennan and Kraus (1977, 1988) study the case of a firm where managers and creditors disagree on firm risk. In this instance, higher perceived risk by creditors results in them demanding a higher interest rate than managers believe reasonable. With convertible debt, the higher perceived risk by creditors translates into a higher value for the conversion option. Thus, while creditors may undervalue the credit portion of the convertible debt, they overvalue the conversion option. Managers and creditors will then find it easier to agree on a convertible debt instrument's value than a pure debt instrument. Empirical evidence from Dong et al. (2017) supports this theory.

Stein (1992) and Mayers (1998) present models studying the case of asymmetric information about firm value, as opposed to firm risk in the Brennan and Kraus (1987) and Brennan and Schwartz (1988) models. Known as the backdoor equity signaling model, Stein's model relies on an adverse selection argument where, in the presence of asymmetric information about the firm value, an equity offering announcement might signal to the market that the firm is overvalued. They argue that convertible notes have a smaller equity component than an equivalent equity offering, and so the market is less likely to consider convertible issuance as a signal of firm overvaluation, thereby reducing adverse selection costs. A firm would then use callable convertible debt to obtain delayed equity financing. Nyborg (1995) provides a similar argument to the backdoor equity signaling model but suggests that calling convertible debt sends a negative signal to the market. Chakraborty and Yilmaz (2011) relax the assumption made by Stein (1992) that information asymmetry is resolved at the time of the convertible debt's call. They show that when information asymmetry persists over time, managers can issue convertible notes and call them if the stock price exceeds a certain threshold to overcome adverse selection problems. More recent research by Burlacu and Jimenez-Garcès (2022) suggests that the backdoor equity model does not sufficiently justify the use of callable convertible bonds if the model's assumption that the firm can always force conversion is relaxed.

Kim (1990) provides another adverse selection cost explanation for convertible note issuance, presenting a model of a signaling equilibrium. The model suggests that the conversion ratio set by the firm is a decreasing function of expected future earnings. At the limit, firms expecting high earnings issue straight debt while firms that expect low earnings issue equity.

The third explanation for convertible note issuance is that firms are responding to firm and market conditions that make issuing seasoned equity extraordinarily costly or even impossible. Lewis et al. (2001) suggest that issuers are not necessarily choosing convertible debt to signal information, to eliminate risk-shifting problems, or to reduce overinvestment incentives. They suggest that investors are rationing investment in the seasoned equity market and using the contingent equity issue market to screen issuers. Convertible note-issuing firms would like to issue equity but cannot do so in the seasoned equity market once they are screened out, so they finance through convertible debt instead. Brown et al. (2012) provide additional empirical evidence supporting the equity rationing hypothesis.

The fourth and final explanation is the market demand for hybrid financing. De Jong et al. (2013) suggest that firms may issue convertible notes instead of other financing instruments to take advantage of a higher offering price due to increased investor demand for convertible debt. They find that the typical payoff structure of convertible notes may drive changes in investor demand for convertible notes since they may be more valuable under specific market conditions, such as in times of heightened investor risk aversion.

[1] For example, suppose you own a $1,200 note with a conversion price of $15. Prior to maturity, you could convert the note into 80 shares ($1,200 / $15 = 80). Now assume the underlying stock price jumps to $20. You could convert at $15 and sell at $20, making $5 for each share sold.

Collectively, research informs us that firms issue convertible notes for a variety of reasons. They may issue them to reduce agency costs, to reduce adverse selection costs, in response to firm conditions that make issuing equity costly, and in response to market demand for hybrid financing. The literature does not distinctly favor any of the four explanations, suggesting that these explanations could be incomplete or that convertible debt issuers are heterogeneous (Dutordoir et al., 2014).

More recent research on convertible debt demonstrates that convertible debt features and offering decisions may be determined partially by the CEO and CEO characteristics. Choi et al. (2023) find that greater risk-taking incentives in CEO compensation packages lead to fewer firm issuances of convertible debt. De Cesari et al. (2023) find that more highly educated CEOs are somewhat more likely to substitute convertibles for non-hybrid security offerings. Studying CEO participation in their firm's convertible note offerings extends the literature regarding the CEO's influence on security issuance and design.

3. RESEARCH METHODOLOGY

To examine why CEOs participate in convertible notes, it is first necessary to identify a sample of CEOs who participate in their firm's convertible note offerings by collecting and analyzing SEC Form 4 filings from 2003 to 2020. Second, it is important to collect additional SEC disclosures for sample firms and read through them to identify the firm's claims of why the CEO participated, how it might be beneficial to the firm, and any other claims related to the CEO's participation and the offering of convertible notes. Third, these claims will be used to form the hypotheses and then test them with regression models and an additional test of cumulative abnormal returns.

3.1. Data

A company insider, such as the current CEO, must file a Form 4 upon executing a transaction within two business days following the transaction date. Transactions in a company's common stock as well as derivative securities, such as options, warrants, and convertible securities, are reported on the form (SEC, 2021).

All SEC Form 4 filings filed from 2003 to 2020 were collected in the SEC's EDGAR database via a Python script developed for this project. The script processes XML tags for each Form 4 XML file and identifies convertible note acquisitions through regular expressions. Information collected from the Form 4 filings includes the report date of the filing, the trade date, the company identifying information, insider identifying information, if the insider is the CEO, the SEC transaction type code, the number of securities in the transaction, the conversion price, the exercise date, the expiration date, and the underlying security. Upon execution, the script successfully identified 410 notes from 163 unique firms that the CEO acquired from their company.

Additional information regarding the notes and the nature of these transactions from other SEC filings, including Forms 10-K and 8-K, proxy statements, and exhibits related to the purchase or grant of the notes are collected manually. CEO annual compensation data is collected from proxy statements and 10-K filings, including salary, bonus, equity grants, deferred compensation, and other details. Then firm fundamentals are collected from Compustat, stock prices from the Center for Research in Security Prices (CRSP), and other convertible note issuance information from Capital IQ. Table 1 provides summary statistics of collected data. Table 2 shows the distribution of the acquired face value of the reported convertible note acquisitions by line item on Form 4.

Table 1. Summary statistics (Part 1)

Characteristic	*N*	*Mean*	*Std. dev.*	*p10*	*p25*	*p50*	*p75*	*p90*
Descriptive sample: Firm and note characteristics when the CEO participates								
Interest rate	265	7.81	3.23	4.00	6.00	8.00	10.00	12.00
Assets	297	357.75	1,371.35	0.21	1.89	11.73	45.81	951.00
Book value	297	0.91	5.38	-1.09	-0.17	-0.01	0.99	2.22
Short-term debt	297	12.66	38.07	0.00	0.10	1.67	6.26	15.28
Long-term debt	296	128.07	422.34	0	0.11	3.37	11.40	168.38
Operating income after depreciation	297	2.38	48.74	-17.06	-8.89	-3.00	-0.13	14.90
Interest and related expense	265	13.19	38.06	0.11	0.35	1.35	4.49	17.28
End-of-year stock price	293	2.41	6.88	0.03	0.19	0.58	2.80	5.60
Interest rate test sample: CEO participates in the note								
Interest rate	121	7.45	2.83	5.00	6.00	6.25	10.00	10.00
Assets	121	790.00	2,064.22	2.20	6.03	44.57	332.28	2,955.09
Book value	121	1.91	7.70	-1.64	-0.29	0.11	2.06	3.60
Short-term debt	121	26.59	56.59	0.07	0.41	3.78	10.66	152.48
Long-term debt	121	296.62	622.48	0.81	3.00	10.91	168.38	1,611.57
Operating income after depreciation	121	13.45	74.12	-13.06	-8.13	-1.29	8.19	85.90
Interest and related expense	121	26.17	53.17	0.26	0.76	4.10	13.14	140.14
End-of-year stock price	119	4.40	10.16	0.13	0.35	2.18	5.60	8.32
Interest rate test sample: CEO does not participate in the note								
Interest rate	286	8.49	2.92	5.00	6.50	8.00	10.00	12.00
Assets	286	348.88	1,239.54	0.64	4.31	20.14	110.56	440.16
Book value	286	1.63	5.95	-0.60	-0.11	0.02	1.45	4.88
Short-term debt	286	14.59	54.00	0.18	0.70	1.99	5.91	20.82
Long-term debt	286	124.77	421.10	0.11	1.15	3.04	14.87	170.052
Operating income after depreciation	286	8.024	133.80	-17.63	-7.96	-2.25	2.79	23.50
Interest and related expense	286	13.012	34.52	0.197	0.68	1.93	8.30	22.27
End-of-year stock price	283	5.82	11.06	0.05	0.28	1.50	6.23	19.67

Table 1. Summary statistics (Part 2)

Characteristic	*N*	*Mean*	*Std. dev.*	*p10*	*p25*	*p50*	*p75*	*p90*
Cumulative abnormal returns test sample								
Price (raw, daily)	63	5.48	13.48	0.40	0.93	2.36	5.40	9.54
Price (adjusted, daily)	63	8.58	22.79	0.59	1.24	2.82	5.99	13.61
Assets	58	735.34	2,090.55	7.96	16.05	59.71	320.62	2,432.90
Book value	58	2.61	7.69	-1.54	0.07	0.86	2.71	6.01
Short-term debt	58	13.58	37.20	0.00	0.14	1.25	4.17	40.69
Long-term debt	58	201.78	450.26	0.01	3.37	15.15	103.60	648.92
Operating income after depreciation	58	10.20	83.06	-21.33	-8.13	-1.59	8.19	51.86
Interest and related expense	57	16.84	37.75	0.13	0.40	1.85	9.36	69.71
End-of-year stock price	58	5.83	14.05	0.46	1.01	2.35	6.89	10.15
Comparison sample: Compustat universe								
Assets	132,790	12,943.07	106,045.20	5.70	50.94	437.21	2,505.29	11,918.23
Book value	126,943	26,012.55	991,588.40	-0.03	0.70	5.78	14.44	26.95
Short-term debt	132,692	1,095.85	14,139.31	0.00	0.00	2.83	42.25	409.25
Long-term debt	132,402	2,508.62	37,082.97	0.00	0.00	25.65	521.95	2,856.29
Operating income after depreciation	132,058	480.71	2,826.06	-18.02	-1.76	13.21	141.55	728.84
Interest and related expense	112,425	126.80	1481.89	0	0.17	3.60	43.83	186.00
End-of-year stock price	148,848	34.52	737.17	0.56	4.25	14.89	31.84	58.22

Table 2. Direct and indirect holdings of convertible notes

Ownership type	*N*	*Mean*	*p10*	*p25*	*p50*	*p75*	*p90*
Direct	262	$1,533,474	$11,111	$47,899	$110,555	$500,000	$1,950,000
Indirect	148	$3,041,282	$18,712	$50,000	$250,000	$995,542	$5,000,000
Total	410	$2,077,756	$11,382	$50,000	$149,775	$750,000	$2,935,000

Note: This table shows the distribution of the owed principal amounts of the reported convertible note acquisitions in each Form 4 included in the CEO ownership sample. Each observation is of the principal amount of the reported transaction. Multiple transactions can be listed in a single Form 4. A holding is considered indirect if the reporting person has a pecuniary interest in the reported financial instrument, but does not personally own the instrument. 36.1% of the observed sample transactions are declared as indirect holdings in Form 4.

When a transaction is listed on Form 4, the individual filing must indicate what type of transaction took place using the SEC's transaction code list. A list of relevant transaction codes, their descriptions, and the in-sample distribution of transaction codes can be found in Table 3. The Form 4 filings indicate that the most common type of transaction used to acquire the notes is through an open market or private purchase. 45.61% of transactions in the sample report such a purchase as the transaction type. The following press release issued by iCAD ("iCAD, Inc. announces $7.0 million", 2018) gives an example of a private purchase of convertible notes. It noted that: "*iCAD, Inc. (NASDAQ: iCAD), a global medical technology company providing innovative cancer detection and therapy solutions, today announced that it has entered into definitive agreements to sell unsecured subordinated convertible debentures, due three years following issuance, to certain institutional and accredited investors, including participation by all directors and executive officers of iCAD, in a private placement with gross proceeds of approximately $7.0 million. iCAD expects to close the sale of the debentures on or about December 21, 2018, subject to the satisfaction of customary closing conditions*" (para. 1).

Table 3. Distribution of transaction types — Form 4 filings sample

Transaction code	*Description*	*N*	*Percentage*
A	Grant, award, or other acquisition pursuant to Rule 16b-3(d)	134	32.68%
G	Bona fide gift	1	0.24%
I	Discretionary transaction in accordance with Rule 16b-3(f) resulting in the acquisition or disposition of issuer securities	1	0.24%
J	Other acquisition or disposition (describe transaction)	87	21.22%
P	Open market or private purchase of non-derivative or derivative security	187	45.61%
Total		410	

Note: This table shows the transaction types of each convertible note transaction as reported on the corresponding Form 4. The sample includes 410 reported transactions by CEOs acquiring convertible notes in the firm that they manage. The sample period includes filings from 2003 to 2020. The transaction code and a brief explanation of the code, along with the number of filings of that transaction type, and the number of filings of that transaction type as a percentage of the entire sample, are presented in columns (1) to (4), respectively.

The next most common means of acquisition is a grant, award, or other acquisition pursuant to SEC Rule 16b-3(d)[2], with 32.68% of the sample composed of such transactions. Bion Environmental Technologies disclosed one such transaction between the firm and its CEO, Dominic Bassani, in the firm's 10Q filed on November 12, 2019:

"*Pursuant to the Extension Agreement, Bassani continued to defer his cash compensation ($31,000 per month) until the Board of Directors reinstates cash payments to all employees and consultants who are deferring their compensation… Bassani's salary will remain $372,000 per year, which will continue to be accrued until there is adequate cash available while negotiations proceed toward the re-instatement of a least a partial cash payment*" (Bion Environmental Technologies, Inc., 2019, p. 22).

Acquisitions filed using the "J" code compose another 21.22%. This code represents unique or complex circumstances that do not fit neatly into the SEC's listed transaction codes (see Table 3 for information on the remaining 0.5% of transaction codes). For example, on May 5, 2006, Strategic Internet Investments Inc. entered into a Loan Facility

[2] Securities Exchange Act of 1934, Section 16b-3(d) covers some of the reporting requirements of compensatory stock-based insider stock transactions, including stock option and restricted stock grants, stock option exercises, and acquisitions of stock units under non-qualified deferred compensation plans.

Agreement with C.M.B. Investments Ltd., a company controlled by Ralph Edward Shearing. Mr. Shearing was also the President and CEO of Strategic Internet Investments Inc. The company used this Loan Facility Agreement to borrow operating funds from time to time, with a 10% interest rate and repayable on demand. Whenever the firm used the credit facility for borrowing, they issued convertible debentures to C.M.B. Investments Ltd. Mr. Shearing was required to report C.M.B.'s acquisition via Form 4. Form 4 reporting one such transaction on December 31, 2007, is included at the end of the paper. Mr. Shearing filed the transaction as a "J" code transaction (see Appendix B).

3.2. Hypothesis development

Based on statements made in Forms 10-K and 8-K, proxy statements, and transaction codes listed in the Form 4 filings, sample acquisitions are sorted into two groups: 1) CEO lender acquisitions and 2) CEO compensation acquisitions. If it was unclear whether a transaction should be categorized as a lender acquisition or a compensation acquisition, it was left uncategorized.

In a CEO lender acquisition, the CEO uses their wealth to provide financing to the firm by participating in the issuance of convertible notes. For example, on May 10, 2008, Oakridge Holdings Inc. agreed to issue $505,000 aggregate principal amount of 9% convertible subordinated debentures to several people, including the CEO, for cash contributed by those people to the company[3].

In a CEO compensation acquisition, the firm grants convertible notes to the CEO as a direct form of compensation. An example of a compensation acquisition can be found in the footnotes of Form 4 filed by the CEO of Dionics Inc. on May 5, 2009:

"*Pursuant to an agreement entered into on May 1, 2009, the Reporting Person has agreed to sell, transfer and assign to the Issuer his remaining interest in a deferred compensation agreement in exchange for which the Company will pay the Reporting Person $75,000 and issue the Reporting Person a convertible promissory note in the principal amount of $225,000 which shall be due and payable in three years with 5% annual interest payable quarterly*" (Kravitz, 2009, p. 1).

In this instance, the firm effectively adjusts the CEO's compensation scheme to provide convertible debt and cash in lieu of a previously negotiated deferred compensation plan. The notes are generally reported as a part of other compensation in the summary compensation table of the proxy statement and 10-K filings. Additional information on the notes can be observed in table footnotes or as a part of the other compensation table if such a table is provided.

For the complete CEO participation sample of 410 notes, the mean face value of the acquired notes is $868,859, with a median of $134,766, and a standard deviation of $2,050,872. For 57% of the acquisitions in the sample, the CEO acquired 100% of the entire issue. In other words, the CEO was the sole lender of that particular note. Of the other observations, the CEO acquired between 0.05% and 81.19% of the issue, the sample average and median being 22.5% and 2.5%, respectively.

The claims made in the SEC filings regarding the purpose of the convertible notes suggest that CEOs acquire convertible notes for several reasons. Broadly speaking, it was found that most often firms claim that either the CEO's participation resulted in reduced lending costs, or that the purpose of CEO participation is to reduce lending costs. Lending cost reduction can be explicit, such as when CEO participation results in the firm securing a lower interest rate on the note. They can also be implicit, such as in the case of using the CEO as a lender to raise cash in order to avoid tripping loan covenants on previously issued debt. This is true for both CEO lender and CEO compensation-type acquisitions. According to claims made in SEC filings of sample firms, 65% of the sample notes were acquired by CEOs to reduce lending costs.

CEO lender acquisitions can reduce the cost of debt by providing the firm with more favorable contracting terms such as a lower interest rate or higher conversion price. For example, in one sample observation, the CEO and other executives participated in the note offering and received a conversion price of $2.94. Meanwhile, outside institutional lenders received a conversion price of $2.50 for the batch of notes issued on July 15, 2014[4]. In a separate example, the CEO purchased notes to refinance firm debt with a lower interest rate[5]. Changes to loan terms are not the only way the acquisition can reduce lending costs. One sample CEO purchased notes to provide the firm with working capital to avoid tripping loan covenants on a prior loan[6]. In another instance, the CEO agreed to a backstop agreement, a precommitment to purchase unplaced notes at issue[7]. This may reduce the costs associated with finding lenders and guarantees the firm acquires the full amount of capital desired from the issue.

CEO compensation acquisitions occur when the firm does not have sufficient cash to pay the executive's salary or deferred compensation plan. A firm that reneges on contracted CEO compensation, such as the CEOs salary, will find it challenging to retain its CEO and exposes itself to litigation risk. One solution could be issuing a convertible note in lieu of salary. Disclosures describing these arrangements include language such as "[The CEO] acquired a convertible note … in consideration of the forgiveness of accrued salary"[8]. The note will pay interest on the amount of accrued salary owed, and in the case the firm cannot pay interest or principal in cash, the CEO can convert the note into equity.

Blackwell and Kidwell (1988) suggest that when deciding on private placements of debt firms minimize the cost of issuing securities by selecting the market providing the lowest transaction costs. Issuing the note to the CEO may result in lower transaction costs than securing debt financing from an outside lender. For example, granting a note directly to the CEO might reduce costs due to

[3] https://www.sec.gov/Archives/edgar/data/73605/000106299313006383/form10k.htm

[4] Taken from the 10-K filed by Dataram Corporation on 7/29/2014 for the fiscal year ending April, 2014. See the third paragraph on page 8, under the heading Working Capital Requirements (https://shorturl.at/1ofio).

[5] See the 8-K filed by CECO Environmental Corp. on 12/1/2009, Item 1.01 (https://shorturl.at/6nTEy).

[6] See page 1, Item 1 of the 10-KSB filed by First Financial Corp. on 4/17/2006 (https://shorturl.at/7stt8).

[7] See footnote 9 of the Form 4 filed on 6/2/2020 on behalf of Stacy Locke, the President and CEO of Pioneer Energy Services Corp. (https://shorturl.at/UsidW).

[8] Taken from footnote 3 of the Form 4 filed on 12/27/2012 on behalf of Ronald W. Picket, the CEO of Clean Wind Energy Tower, Inc. (https://shorturl.at/gIv5d).

commissions if a third party was required to market and place the debt with outside investors.

Based on the statements made by the firms in their SEC filings and the above analysis of firm disclosures, the following hypothesis is formulated:

H1: The CEO may acquire convertible notes to reduce the firm's cost of debt.

3.3. Empirical test: The firm's cost of debt

The firm's cost of debt is composed of many factors (Van Binsbergen et al., 2010). In addition to the interest paid on the debt to lenders, the costs of debt include financial distress (Scott, 1976), changes in taxation (Miller, 1977), debt overhang.

Myers (1977) and agency conflicts between managers and investors (Jensen & Meckling, 1976). Firm disclosures often suggest that CEO participation results in a lower cost of debt, especially the costs of debt associated with the newly issued note. Therefore, debt costs associated with the note were analyzed by studying note features.

To test the hypothesis that the CEO participates in their firm's convertible note to reduce its cost of debt, a regression of several note features on CEO convertible note participation is performed. These features include the convertible note's interest rate, the note's term, and the note's conversion risk. The model tests for associations between the CEO's participation in a convertible note and these note features related to the firm's cost of debt.

3.3.1. Note features

The first convertible note feature that is tested is the *note's interest rate*. An issued note's interest rate directly contributes to a firm's cost of debt by increasing the firm's interest expense. A lower cost of debt could manifest as a lower interest rate on the note. Presumably, convertible notes in which the CEO participates have a lower interest rate than notes in which the CEO does not participate.

The second convertible note feature that is tested is the *note's term*. The convertible note's term can impact the firm's cost of debt by influencing the note's term premium. The term premium is the investor's compensation for bearing the risk that interest rates change over time. If market interest rates increase after an investor purchases a note, the value of their note becomes inferior to new notes issued with similar risk profiles. The term premium is the compensation the investor receives for locking up their money into a long-term investment instead of continuously rolling over their capital into new short-term notes. The term premium increases as the note's term increases (Fama, 1984); short-term notes have a lower term premium than long-term notes. A lower-term premium would contribute to a lower cost of debt for the firm. Presumably, convertible notes in which the CEO participates have a shorter term than notes in which the CEO does not participate.

The third convertible note feature that is tested is the *note's conversion risk*. Conversion risk is the risk to the firm that conversion of the notes into equity results in the firm selling equity at an unfavorable price. For example, if the market price is currently $\$15$ and the conversion price is $\$10$, the company loses out on $\$5$ per share of equity they could have sold on the open market to raise capital. This risk of conversion in-the-money is a factor that contributes to the firm's cost of debt; it can be thought of as the risk of incurring the opportunity cost of selling stock to the CEO at below market price. Following Lewis et al. (1999) and using the Black-Scholes option pricing model, calculate the delta of the convertible note as a measure of conversion risk. Delta is interpreted as the probability of converting the note in-the-money. It also measured conversion risk as the percentage change in the stock price necessary to convert in-the-money. If notes in which CEOs participate have lower conversion risk, this would be evidence consistent with CEO participation reducing the firm's cost of debt. Presumably, convertible notes in which the CEO participates have a lower conversion risk than notes in which the CEO does not participate.

3.3.2. Regression model

The empirical model, given in Eq. (1), regresses the issued note's features on a binary variable equal to 1 if the CEO participated in the note and 0 otherwise.

Tests are performed for all three note features using a pooled ordinary least squares (OLS) regression model for each observation *i*.

$$note\_feature_i = \alpha + \beta_0 * ceo\_participates_i + \sum_j \beta_j * credit\_rating\_factor_{j,i} + \sum_k \beta_k * ceo\_participates_i * credit\_rating\_factor_{k,i} + \sum_m \beta_m * industry_{m,i} + \sum_t \beta_t * year_{t,i} + \epsilon_i \quad (1)$$

Factors that control for the firm's credit rating since firms with higher credit ratings receive better lending terms than those with lower credit ratings are included (Blume et al., 1998). These factors include the firm's ability to service debt, profitability, and leverage. To proxy for the effects of leverage on the note's lending features, current liabilities and total long-term debt divided by a firm's total assets are included. Interest expense, operating income after depreciation, sales, and book value, are all scaled by total assets, a proxy for the firm's ability to service debt and profitability. Log transformations are made to interest expense, sales, long-term debt, short-term debt, and total assets to reduce the heteroskedasticity of the model residuals. Data for these proxies is collected from the Compustat database. The risk-free rate and year-fixed effects to control for macroeconomic changes in market interest rates over time are also included. The one-month Treasury bill rate from Ibbotson Associates to proxy for the risk-free rate is used. The complete set of variable definitions can be found in Appendix A.

Based on the Fama-French five industry portfolios, industry fixed effects were included. While a within-transformation model using firm fixed effects may theoretically yield more precise estimates, sample limitations prevent using a within-transformation model. Many sample firms only have one or two observations; firms do not often issue

convertible debt, and CEOs acquire that debt even less frequently. It is necessary to exclude some firms in the sample from a within-transformation model due to a lack of within-firm variation. The firm fixed effect terms often become colinear with the remaining firm observations, making the fixed effects model less efficient and less consistent than a pooled OLS model. Fama-French five industry portfolios are selected for industry fixed effects to address these limitations.

To test the relationship between CEO participation and various note features, a subsample of convertible note issues from 119 of the 163 firms is used and analyzed in subsection 3.2. All 410 notes from the original sample could not be included in the regression subsample, as some of the firms could not be successfully matched to the Capital IQ and/or Compustat database. Table 4 provides details on the sample composition of the interest rate test. The subsample includes all note issues by these firms found in the Capital IQ database during the sample period, both notes in which the CEO participated and notes in which the CEO did not participate. The regression subsample includes a total of 828 note issues, and the CEO participated in 254 of them.

Table 4. Interest rate test sample

Description	*N*	*Firms*	*CEO*	*No CEO*
Sample collected from SEC Form 4 filings.	410	163	410	-
Add observations from the Capital IQ database where the CEO did not participate.	828	119	254	574
Observations that have firm financial information present in the Compustat database.	549	100	163	386
Subsample only including notes marked as a purchase and notes in which the CEO did not participate.	480	96	94	386
Subsample only including notes marked as an award and notes in which the CEO did not participate.	442	88	56	386

Note: This table provides details on the samples used for regressing the convertible note's interest rate on CEO participation, as specified in Eq. (1). N is the total number of observations in the sample, while "Firms" is the number of unique firms in the sample. The "CEO" column represents the number of observations where the CEO participates in the convertible note. The "No CEO" column represents the number of observations where the CEO does not participate in the note. Because the Capital IQ database reports issue dates for many firm note issues as missing, it was possible to identify the fiscal year of issue but not the exact issue date. This means that notes reported in the Capital IQ database were difficult to systematically identify as unique from the notes filed in the Form 4 sample. To ensure that notes from the Capital IQ sample included in the tests are notes the CEO did not participate in, notes that show up in both the Form 4 sample and the Capital IQ sample in the same fiscal year were excluded. Thus, 254 of the 410 observations collected from Form 4 filings with the observations in which the CEO did not participate found in the Capital IQ database to form the test sample were included.

3.4. Empirical test: Investor reaction to CEO participation

To understand CEO participation in convertible notes and its impact on firm lending outcomes, how investors respond to CEO participation was analysed by studying abnormal stock returns surrounding the disclosure of CEO note acquisitions.

Research documents that convertible debt offerings generally convey unfavorable information about the issuing firms. Eckbo (1986) shows that while straight debt offerings have non-positive price effects on a firm's stock price, convertible debt offerings have significantly negative effects. Dann and Mikkelson (1984) provide evidence that shareholders earn significant negative abnormal returns at the initial announcement of a convertible debt offering and the issuance date. However, investors tend to react positively to CEO acquisitions of equity securities (Brochet, 2010). Therefore, whether CEO participation results in net negative or positive effects on the firm's valuation is unclear.

Cumulative abnormal returns surrounding the disclosure of Form 4 were examined to test investors' reactions to CEO convertible note participation. Historical returns for each sample firm's stock were calculated using adjusted daily closing prices provided by CRSP. Using the Fama-French three-factor model — Eq. (2) — expected returns over rolling windows were calculated.

$$r - R_f = \alpha + \beta_1(R_m - R_f) + \beta_2 SMB + \beta_3 HML \qquad (2)$$

where, r is the stock return, R_f is the market risk-free rate, R_m is the market return, *SMB* is the small minus big factor, and *HML* is the high minus low book-to-market equity factor, as defined in Fama and French (1993).

Rolling windows start 200 days before and end 200 days after each sample report date, excluding the 60 days before and after the report date itself.

The excess return on the market was calculated as the value-weighted return of all CRSP firms incorporated in the U.S. and listed on the New York Stock Exchange, American Stock Exchange, or NASDAQ that have a CRSP share code of 10 or 11 at the beginning of month *t*, shares and price data at the beginning of *t*, and return data for *t* minus the one-month Treasury bill rate (from Ibbotson Associates). The market return, risk-free rate, SMB, and HML factors used in the model were acquired from Kenneth French's website[9]. Fama and French (1993) provide a complete description of the return factors used in the model. Then abnormal returns were calculated as the difference between the expected returns generated by the Fama-French three-factor model — Eq. (2) — and the historical returns calculated from the CRSP data. Cumulative abnormal returns were calculated from fifteen days before each reporting date to fifteen days after. The 30-day window was chosen to provide multiple testing sub-windows to minimize the risk of Type I or Type II statistical error.

Suppose investors interpret CEO participation as the CEO acting on privately known good news. In that case, this good news could negate or dominate any negative information conveyed by the firm's decision to finance with convertible notes, and the author would expect a net positive market response to the acquisition. On the other hand, the investor response to the CEO's acquisition may be insignificant compared to the negative valuation effects of issuing convertible notes. In this case, it is expected a net negative response to the acquisition.

[9] https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

4. RESULTS

4.1. Sample firm and CEO characteristics

Firms with note-acquiring CEOs differ from most publicly traded companies in several ways. Of the 410 sample acquisitions, 297 occurred in firms also found in the Compustat database. The average total assets of these firms are approximately 5.5% of the average Compustat firm. As a percentage of total assets, the convertible note sample firms have lower short-term debt (3.5% compared to 8.5%), higher long-term total debt (36.0%compared to 19.4%), lower operating income (0.7% compared to 3.7%), and higher interest and related expense (3.7% compared to 1.0%). They also have lower end-of-year stock prices ($2.41 compared to $34.52). Overall, sample firms are smaller, more highly leveraged, and in greater need of operating funds than the average Compustat firm.

Tables 5 and 6 show the distribution of sample firms by industry. Table 5 groups firms by two-digit Standard Industrial Classification (SIC) codes, while Table 6 groups firms by Fama-French five industry portfolios. Details on the construction of the Fama-French five industry portfolios can be found on Kenneth French's website. Table 5 shows that firms are broadly represented across 27 different industries, with the greatest number coming from chemicals and allied products (22.81%), business services (16.67%), and measuring, photographic, medical, and optical goods, and clocks (8.77%).

Table 5. Industry distribution: Two-digit SIC

SIC	*Industry name*	*N*	*Percentage*
10	Metal mining	3	2.63
12	Coal mining	1	0.88
13	Oil and gas extraction	3	2.63
14	Mining and quarrying of nonmetallic minerals, except fuels	1	0.88
16	Heavy construction, except building construction, contractor	2	1.75
20	Food and kindred products	3	2.63
28	Chemicals and allied products	26	22.81
32	Stone, clay, glass, and concrete products	1	0.88
35	Industrial and commercial machinery and computer equipment	3	2.63
36	Electronic and other electrical equipment and components	8	7.02
37	Transportation equipment	1	0.88
38	Measuring, photographic, medical, and optical goods, and clocks	10	8.77
39	Miscellaneous manufacturing industries	3	2.63
42	Motor freight transportation	1	0.88
49	Electric, gas and sanitary services	1	0.88
50	Wholesale trade — durable goods	3	2.63
51	Wholesale trade — nondurable goods	1	0.88
59	Miscellaneous retail	3	2.63
60	Depository institutions	1	0.88
63	Insurance carriers	1	0.88
65	Real estate	3	2.63
67	Holding and other investment offices	1	0.88
73	Business services	19	16.67
80	Health services	6	5.26
83	Social services	1	0.88
87	Engineering, accounting, research, and management services	3	2.63
99	Nonclassifiable establishments	5	4.39
Total		114	

Note: This table shows the distribution of sample firms by industry classified by two-digit SIC codes. The sample firms included here are 114 firms matched to the Compustat database.

Table 6. Industry distribution: Fama-French five industry portfolios

SIC	*Industry name*	*N*	*Percentage*
Cnsmr	Consumer durables, nondurables, wholesale, retail, services	20	14.07
Manuf	Manufacturing, energy, and utilities	16	11.27
HiTec	Business equipment, telephone and television transmission	32	22.54
Hlth	Healthcare, medical equipment, and drugs	42	29.58
Other	Other	32	22.54
Total		142	

Note: This table shows the distribution of sample firms by industry classified by Fama-French five industry portfolios. The sample firms included here are 142 firms matched to the Compustat database. Details on the construction of the Fama-French five industry portfolios can be found on Kenneth French's website.

Lewis et al. (2001) propose that firms may issue convertible notes when firm and market conditions make issuing seasoned equity extraordinarily costly or even impossible. Given that sample firms are smaller, more highly leveraged, and in need of operating funds than the average Compustat firm, these descriptive statistics seem to be consistent with this theory. Such factors may contribute to the decision to have the CEO participate as well. If market conditions make finding favorable lending difficult, or finding any lender at all outside the firm impossible, then the CEO may potentially act as a lender to reduce the cost of debt, or simply provide access to debt when there would otherwise be none.

CEOs who acquire convertible notes from their firm markedly differ from CEOs of most publicly traded firms in their level of firm ownership. Table 7 provides summary statistics concerning the percentage of total common stock held by sample CEOs. Note that acquiring CEOs tend to hold significantly greater portions of firm equity than most CEOs of

publicly traded firms. The mean note acquiring CEO holds 17.9% of their firm's common equity. For comparison, the mean CEO of S&P Small Cap firms holds 1.94%, and the mean CEO of S&P 500 firms holds less than 1%. Approximately 11% of sample CEOs stated in their biography found in the firm's annual 10-K or proxy statement that they are founders, though it's unclear if other sample CEOs are also founders but simply did not state it in their biography. Founder CEOs and CEOs who own significant portions of firm equity likely have different managerial goals compared to an outside hire.

Table 7. Percentage of total common stock held by the CEO

Sample	*N*	*Mean*	*Std. dev.*	*p10*	*p25*	*p50*	*p75*	*p90*
Convertible note-holding CEOs	114	17.9%	18.28%	1.3%	3.65%	11.7%	24.1%	41.7%
Execucomp CEOs	16,919	1.94%	5.6%	< 1%	< 1%	< 1%	1.29%	4.2%
S&P Small Cap	4,742	3.05%	3.60%	< 1%	< 1%	< 1%	2.16%	7.53%
S&P Mid Cap	3,386	1.73%	5.51%	< 1%	< 1%	< 1%	1.04%	3.44%
S&P 500	4,274	< 1%	3.57%	< 1%	< 1%	< 1%	< 1%	1.25%
Other Execucomp	4,517	< 1%	2.16%	< 1%	< 1%	< 1%	< 1%	4.1%

Note: This table shows the percentage of firm common stock the reporting CEO owned at the end of the fiscal year and summary statistics for two samples: a sample of convertible note-holding CEOs identified via SEC Form 4 filings and a sample of CEOs from the Execucomp database. The convertible note-holding of the CEO's sample contains observations from 2006–2020. The Execucomp CEOs sample contains observations from 2010–2021. Statistics are also provided for subsamples of the Execucomp sample: S&P 500 firms, S&P Mid Cap firms, S&P Small Cap firms, and firms not in a major S&P Index.

Note acquiring CEOs are also compensated at lower levels than most publicly traded firms. This is unsurprising since these CEOs' firms tend to be smaller and firm size is strongly linked to CEO compensation levels (Gabaix & Landier, 2008; Gabaix et al., 2014). Nevertheless, the degree to which their level of compensation is limited is unusual even for small firms. Tables 8 and 9 provide summary statistics of CEO characteristics and their annual compensation for a sample of note-acquiring CEOs and a sample of Execucomp CEOs, respectively. The mean note acquiring CEO's total annual compensation is $834,418 compared to $3,620,000 for S&P Small Cap firms. The median face value of the convertible notes acquired by sample CEOs is $134,766.50, approximately 36% of the median note-acquiring CEOs' total annual compensation of $382,002. While the cash value of the note is nontrivial compared to the CEO's total annual compensation, any additional incentives that may be provided through the equity upside of the note are likely dwarfed by the CEO's enormous company stock holdings. Due to this fact, it was found unlikely that convertible notes are provided to CEOs as compensation to provide them with equity incentives.

CEOs who participate in the issuance of convertible notes are of similar ages and have similar tenure lengths compared to the CEO of the average firm in the Execucomp sample.

Table 8. CEO characteristics and annual compensation

Characteristic	*N*	*Mean*	*Std. dev.*	*p10*	*p25*	*p50*	*p75*	*p90*
Part A: CEO characteristics, 2003–2020								
Age	119	61	11	44	52	62	70	75
Tenure	115	8	8	1	2	6	11	18
Part B: CEO annual compensation, 2006–2020								
Total compensation	118	834,418	1,446,897	50,000	127,810	382,002	857,645	1,942,902
Salary	121	264,457	228,485	0	70,000	218,999	375,000	579,583
Bonus	120	46,026	158,836	0	0	0	0	111,156
Total equity awards	119	419,376	1,254,251	0	0	9,300	296,958	786,296
Stock awards	65	186,692	970,386	0	0	0	0	162,499
Option awards	66	412,400	1,226,667	0	0	0	276,506	1,057,500
Other compensation	97	72,453	196,603	0	0	3,360	23,521	288,000
Part C: CEO annual compensation, 2006–2020 (non-zero values)								
Salary	108	296,290	221,423	50,000	101,634	252,500	431,000	588,500
Bonus	20	276,157	301,854	9,500	45,374	200,000	490,262	698,200
Total Equity Awards	61	818,128	1,661,983	14,950	63,886	292,975	489,069	1,906,090
Stock Awards	11	1,103,185	2,216,844	59,177	64,718	183,899	489,069	2,933,389
Option Awards	30	907,281	1,705,331	42,551	85,886	290,842	78,6170	243,0555
Other Compensation	57	123,298	244,705	3,000	8,398	22,073	55,124	482,645

Note: This table shows CEO characteristics and CEO annual compensation for CEOs who acquired convertible notes in the company they manage. The sample includes 121 CEO-year observations from 2003–2020. Part A includes the CEO's age and CEO tenure. Part B includes annual compensation data for CEOs from 2006–2020, with the years 2003–2005 being excluded to account for changes to reported stock option values starting in 2006 due to the implementation of SFAS 123(r). Part C includes annual compensation data for CEOs from 2006–2020, only including observations with non-zero values.

Table 9. CEO characteristics and annual compensation: Execucomp sample

Characteristic	*N*	*Mean*	*Std. dev.*	*p10*	*p25*	*p50*	*p75*	*p90*
Part A: S&P Small Cap								
Age	3,794	55	8	45	50	55	59	65
Tenure	3,759	8	8	0	2	6	12	20
Salary	3,798	645,000	323,000	300,000	460,000	630,000	810,000	992,000
Bonus	3,798	179,000	678,000	0	0	0	20,000	481,000
Stock awards	3,793	1,521,000	2,271,000	0	63	827	2,074,000	3,682,000
Options awards	3,793	432,000	1,613,000	0	0	0	406,000	1,220,000
Other compensation	5	2,000	4,000	0	0	0	0	8,000
Total compensation	3,787	3,620,000	3,668,000	696,000	1,454,000	2,836,000	4,718,000	7,048,000
Part B: S&P Mid Cap								
Age	2,456	55	7	46	50	54	59	63
Tenure	2,459	8	9	0	2	5	11	19
Salary	2,459	819,000	353,000	468,000	622,000	800,000	1,000,000	1,140,000
Bonus	2,459	159,000	585,000	0	0	0	0	450,000
Stock awards	2,452	2,819,000	3,998,000	0	662,000	1,973	3,828	6,146,000
Options awards	2,452	927,000	6,405,000	0	0	0	1,000,000	2,000,000
Other compensation	7	107,000	230,000	0	0	5,000	80,000	625,000
Total compensation	2,450	6,176,000	7,860,000	1,582,000	2,924,000	5,066,000	7,685,000	11,010,000
Part C: S&P 500								
Age	2,930	56	7	47	51	55	59	63
Tenure	2,927	7	7	0	1	4	9	17
Salary	2,932	1,027,000	600,000	495,000	790,000	1,000,000	1,246,000	1,500,000
Bonus	2,932	336,000	1,279,000	0	0	0	0	660,000
Stock awards	2,930	6,205,000	12,131,000	0	1,933,000	4,500,000	7,850,000	11,964,000
Options awards	2,930	2,753,000	42,472,000	0	0	596,000	2,457,000	4,470,000
Other compensation	2	4,000	6,000	0	0	4,000	8,000	8,000
Total compensation	2,930	13,247,000	44,263	3,392,000	6,251,000	10,185,000	15,340,000	21,964,000
Part D: Full Execucomp sample								
Age	15,289	55	7	46	50	55	59	64
Tenure	15,169	7	8	0	2	5	10	18
Salary	15,321	767	421,000	360,000	518,000	738,000	975,000	1,199,000
Bonus	15,321	212	862,000	0	0	0	0	500,000
Stock awards	15,228	2,774	6,292,000	0	206,000	1,416,000	3,533,000	6,776,000
Options awards	15,228	1,089	18,881,000	0	0	0	955,000	2,457,000
Other compensation	93	150,000	803,000	0	0	0	46,000	266,000
Total compensation	15,215	6,316,000	20,371,000	978,000	1,991,000	4,144,000	7,704,000	13,181,000

Note: This table shows CEO characteristics and CEO annual compensation for a sample of CEOs from the Execucomp database. The sample includes 15,321 CEO-year observations from 2010–2021.

4.2. Evidence on the relationship between CEO participation and the firm's cost of debt

4.2.1. CEO participation and the note's interest rate

Table 10 reports the results from estimating Eq. (1) (see subsection 3.3) with the note's *interest rate* as the dependent variable. The results suggest that *CEO participation* in the note is associated with a reduction in the firm's cost of debt.

The estimated coefficient of the *CEO participation* indicator variable in column (1) is -0.8562 and is statistically significant ($p < 0.01$). This result was interpreted as the *interest rate* of notes acquired by the CEO being, on average, 0.8562 percentage points lower than notes not acquired by the CEO. The results from column (2) are from the model that includes the proxies for credit rating and the interaction effects between the credit rating proxies and *CEO participation*. The estimated coefficient of *CEO participation* is -0.8267 and is statistically significant ($p < 0.05$). For sample firms, the average *interest rate* of convertible note issues not acquired by the CEO is 8.49%. This result implies an average difference of approximately 9.73% lower *interest rate* for convertible notes in which the CEO participates compared to notes in which the CEO does not participate.

Consistent with other research (Blume et al., 1998), higher interest expense, higher sales, and a higher book value is associated with a lower *interest rate* for the firm. The reported coefficients are negative and statistically significant. The sign of operating income is negative, though not statistically significant.

While the coefficients of short and long-term debt are not statistically significant, the coefficients are both positive, which is consistent with past literature suggesting that high levels of debt increase the risk premium on corporate debt (Fisher, 1959; Kozhemiakin, 2007). The estimate of the interaction between long-term debt and *CEO participation*, however, is negative (-0.2333) and statistically significant ($p < 0.01$). When the CEO participates in the note, a 1% increase in long-term debt is associated with an additional 0.2333 percentage point decrease in the note's *interest rate*. Other interaction terms are not statistically significant.

These results can be interpreted in at least two ways. First, the negative relationship between *CEO participation* and the note's *interest rate* is consistent with the CEO choosing to participate in notes with a low *interest rate* after the note's terms have been negotiated. In this scenario, the negative estimate of the interaction term between long-term debt and *CEO participation* would suggest that CEOs choose to participate in notes with lower *interest rates* as their firm's level of long-term debt increases. Alternatively, the association could suggest that *CEO participation* in the note reduces the negotiated *interest rate*. This interpretation would be consistent with the statements made in the firm's disclosures. If this interpretation is correct, the effect is greater for firms with high levels of long-term debt. The evidence from this test alone is insufficient for me to distinguish between these two explanations.

The author also runs regressions using two subsamples. In the purchase subsample, the author includes only notes the CEO purchased and notes in

which the CEO did not participate. In the award subsample, it only included notes awarded to the CEO by the firm and notes in which the CEO did not participate. The estimate of *CEO participation* is -0.2363 for the purchase subsample (column 3); it is not statistically significant. The estimate produced by the award subsample (column 4) is -3.1770 and statistically significant ($p < 0.01$). This result suggests that the association between *CEO participation* and a lower *interest rate* is stronger when *CEO participation* occurs through an award of notes. The interaction effect found in the full sample regression between *CEO participation* and long-term debt is still present and statistically significant in the purchase subsample. However, the coefficient in the award sample is positive at 1.8857.

The results suggest that when a CEO participates in convertible notes issued by their firm, the notes tend to have a lower *interest rate*, particularly in firms with higher levels of long-term debt. This relationship is stronger for notes granted or awarded to the CEO.

Table 10. CEO convertible note participation and the note's interest rate (Dependent variable: *Interest rate*)

Transaction	***(1)*** ***All***	***(2)*** ***All***	***(3)*** ***Purchase***	***(4)*** ***Award***
CEO participation	-0.8562***	-0.8267**	-0.2363	-3.1770***
	(0.2479)	(0.3651)	(0.4782)	(0.7670)
ln(Short-term debt)		0.0140	0.0072	0.0115
		(0.0407)	(0.0425)	(0.0402)
ln(Long-term debt)		0.0470	0.0479	0.0418
		(0.0346)	(0.0357)	(0.0340)
ln(Interest expense)		-0.2078**	-0.1798*	-0.2067**
		(0.0994)	(0.1087)	(0.1035)
ln(Sales)		-0.2272***	-0.2300***	-0.2320***
		(0.0737)	(0.0746)	(0.0705)
ln(Operating income)		-0.0142	-0.0122	-0.0093
		(0.0215)	(0.0219)	(0.0220)
Book value		-0.1833***	-0.1773***	-0.1873***
		(0.0501)	(0.0496)	(0.0498)
CEO x ln(Short-term debt)		0.0232	0.0722	0.2086
		(0.1220)	(0.1064)	(0.3401)
CEO x ln(Long-term debt)		-0.2333***	-0.2715***	1.8857**
		(0.0731)	(0.0716)	(0.7992)
CEO x ln(Interest expense)		-0.0351	-0.0842	-0.7962
		(0.2330)	(0.2282)	(0.5332)
CEO x ln(Sales)		0.1513	-0.1628	0.2186
		(0.1944)	(0.2505)	(0.3408)
CEO x ln(Operating income)		-0.0334	-0.0327	-0.1783
		(0.0327)	(0.0335)	(0.1485)
CEO x Book value		0.0730	0.0167	0.2494**
		(0.0628)	(0.0717)	(0.1074)
R-squared	0.0880	0.2443	0.2509	0.2781
Observations	828	549	480	442

*Note: This table shows the results of the pooled OLS regression testing the relationship between the interest rate paid by the convertible note and the CEO acquiring the convertible note at issue. CEO participation is equal to 1 if the note issued by the firm was acquired by the CEO and 0 otherwise. Variables titled "CEO x Variable" indicate an interaction term between that variable and the CEO participation variable. The sample consists of observations taken from the years 2003–2020. Each transaction code subsample consists of only notes with the transaction type specified and notes issued but not acquired by the CEO. Standard errors are calculated using Huber-White robust standard errors. *, **, and *** indicate that results are statistically significant at the 10%, 5%, and 1% levels, respectively. All models include industry-level and fiscal year-level fixed effects.*

4.2.2. CEO participation and the note's term

Summary statistics and sample details for the note's *term* sample are provided in Table 11. For notes in which the CEO participated, the average is 1,106 (3 years). For notes in which the CEO did not participate, the average is 1,845 days (5.1 years).

Table 12 reports the results from estimating Eq. (1) with the note's *term* as the dependent variable. The estimated coefficient of the *CEO participation* indicator variable in column (1) is -653 days. Once it was added the proxies for credit ratings and interaction terms to the model, this relationship essentially disappeared; the estimated coefficient for *CEO participation* in column (2) is -70 days and not statistically significant at any conventional level.

Consistent with (Stohs & Mauer, 1996), evidence from column (2) suggests that higher long-term debt and short-term debt are associated with a longer note *term*. The estimated coefficient of long-term debt is 740 and statistically significant ($p < 0.05$), while the estimated coefficient of short-term debt is 282 ($p < 0.10$). A 1% increase in long-term debt is associated with a 740-day increase in the note's *term*. The estimated coefficient of book value (321, $p < 0.01$) suggests a positive relationship between book value and the note's *term*.

The relationships between the note's *term* and long-term debt, short-term debt, and book value change for notes in which the CEO participates. The estimated coefficient for the interaction between CEO participation and long-term debt is associated with is -692 and statistically significant ($p < 0.05$). The author estimates that when the CEO participates in the note, a 1% increase in long-term debt is associated with a 48-day increase in the note's *term* (to calculate the relationship between long-term debt and the note's term when the CEO participates, sums the coefficient of long-term debt and the coefficient of the interaction between long-term debt and CEO participation; the result is 740 – 692 = 48).

Table 11. Summary statistics for additional test samples

Sample	*N*	*Mean*	*Std. dev.*	*p10*	*p25*	*p50*	*p75*	*p90*
Panel A: Note term (days to maturity)								
Control sample	41	1.845	1.596	527	913	1.363	2.102	3.581
CEO participates	257	1.106	1.260	90	364	731	1.643	2.008
Full sample	298	1.208	1.333	94	365	809	1.825	2.529
Panel B: Delta								
Control sample	34	0.0141	0.0236	0	0.0001	0.0012	0.0132	0.0452
CEO participates	51	0.0503	0.1390	0	0.0002	0.0027	0.0171	0.1211
Full sample	85	0.0358	0.1097	0	0.0002	0.0025	0.0132	0.0494
Panel C: Price change								
Control sample	36	0.2296	0.5594	-0.3243	-0.0729	0.0128	0.4445	0.7419
CEO participates	57	0.6796	1.5754	-0.2771	-0.0610	0.0899	0.4881	2.5242
Full sample	93	0.5054	1.2955	-0.2771	-0.0729	0.0870	0.4591	1.9664
Panel D: One-month Treasury Bill rate								
Control sample	39	0.9462	0.6992	0	0.4	0.7	1.6	2.0
CEO participates	314	0.5876	0.6530	0	0	0.3	0.9	1.8
Full sample	353	0.6272	0.6668	0	0	0.4	1	1.8
Panel E: 12-month volatility								
Control sample	35	1.1843	4.6107	0.1960	0.2301	0.2849	0.4258	1.0025
CEO participates	74	0.6796	1.6853	0.1850	0.2532	0.3331	0.4296	1.0025
Full sample	109	0.8405	2.9443	0.1850	0.2440	0.3228	0.4269	1.0025

Note: This table shows summary statistics from the samples used for tests in Tables 12 and 13. CEO participates indicates observed notes where the CEO participated in the convertible note's offering. All observations are from firms that had a CEO who participated in at least one note offering in the sample period. Since the Capital IQ database reports issue dates for many of the firm note issues as missing, it was hand-collected a subsample of 41 issue dates from the firm's SEC filings for the subsample of notes the CEO does not participate in. This subsample was used for the note term test and the calculation of delta in the delta test.

Table 12. CEO convertible note participation and the note's term (Dependent variable: *Term*, days)

Transaction	***(1)*** ***All***	***(2)*** ***All***	***(3)*** ***Purchase***	***(4)*** ***Award***
CEO participation	-653*	-70	-362	-132
	(368)	(367)	(383)	(631)
ln(Short-term debt)		282*	338*	343*
		(149)	(186)	(197)
ln(Long-term debt)		740**	840**	876**
		(296)	(341)	(379)
ln(Interest expense)		-488*	-465	-541
		(278)	(346)	(359)
ln(Sales)		-46	-65	-132
		(97)	(117)	(127)
ln(Operating income)		-8	-8	-12
		(10)	(9)	(15)
Book value		321***	319***	342***
		(81)	(88)	(104)
R_f		118	323	-108
		(593)	(702)	(906)
CEO x ln(Short-term debt)		-257*	-327*	-371*
		(149)	(191)	(207)
CEO x ln(Long-term debt)		-692**	-777**	-915**
		(297)	(344)	(412)
CEO x ln(Interest expense)		388	379	551
		(282)	(350)	(377)
CEO x ln(Sales)		17	32	149
		(103)	(130)	(174)
CEO x ln(Operating income)		19	31**	-41
		(13)	(13)	(75)
CEO x Book value		-301***	-309***	-317**
		(82)	(90)	(139)
CEO x R_f		56	362	-14
		(513)	(518)	(609)
R-squared	0.1349	0.3741	0.5831	0.4561
Observations	296	198	119	104

*Note: *, **, and *** indicate that results are statistically significant at the 10%, 5%, and 1% levels, respectively. All models include industry-level and fiscal year-level fixed effects.*

The estimates for the short-term debt and book value interaction terms have similar moderating effects. The estimated coefficient for the interaction between CEO participates and short-term debt is -257 and statistically significant ($p < 0.10$). The estimated coefficient for the interaction between CEO participates and book value is -301 and statistically significant ($p < 0.01$).

Results from the purchase (column 3) and award (column 4) subsamples are similar to the results from the full sample. The estimated coefficients for short-term debt, long-term debt, book value, and their interaction terms in both subsamples are all of similar magnitudes, signs, and levels of statistical significance. Of note here is that while there were differences between the purchase and award subsamples in the interest rate tests (see Table 10), there are no meaningful differences in the results between the subsamples in the note's *term* tests.

The results suggest that the associations between the note's *term* and short-term debt, long-term debt, and book value are much weaker for notes in which the CEO participates, leading to shorter *term*s when the CEO participates. Fama (1984) shows that notes with a shorter *term* have a lower *term* premium resulting in a lower cost of debt. However, these results alone do not indicate if *CEO participation* is the driver behind these mitigated relationships. The CEO may participate when the normal debt contracting process begins to break down, and other factors become more critical in debt contracting than those documented by Stohs and Mauer (1996) and other research.

4.2.3. CEO participation and the note's conversion risk

Summary statistics and sample details for the note's *conversion risk* sample are provided in Table 11. For notes in which the CEO participated, the mean delta is 0.0503 and the *price change* is 0.6796. For notes in which the CEO did not participate, the mean delta is 0.0141 and the *price change* is 0.2296.

The author reports the results in Table 13 from estimating Eq. (1) with proxies for the note's *conversion risk* as the dependent variable. Panel A includes results obtained using the note's *delta* as the dependent variable.

Table 13. CEO convertible note participation and the note's conversion risk

Transaction	*Panel A: Dependent variable — Delta*				*Panel B: Dependent variable — Price change*			
	(1) All	*(2) All*	*(3) Purchase*	*(4) Award*	*(5) All*	*(6) All*	*(7) Purchase*	*(8) Award*
CEO participation	0.0189	0.1200	0.0541	0.0623	0.4988	1.5268	2.7627	-1.1356
	(0.0247)	(0.0814)	(0.2548)	(0.0624)	(0.4159)	(1.0187)	(3.3131)	(0.9907)
ln(Short-term debt)		0.0115	0.0066	0.0108		0.0050	-0.1315	-0.0752
		(0.0136)	(0.0143)	(0.0089)		(0.2431)	(0.2923)	(0.1276)
ln(Long-term debt)		0.0131	0.0043	-0.0001		-0.2561	-0.4242	-0.3603
		(0.0200)	(0.0188)	(0.0103)		(0.3466)	(0.3828)	(0.2101)
ln(Interest expense)		-0.0179	-0.0208	-0.0244		0.5271	0.6447	0.4727
		(0.0267)	(0.0278)	(0.0159)		(0.4348)	(0.7391)	(0.3418)
ln(Sales)		-0.0143	-0.0111	-0.0248		-0.0429	0.0045	-0.0265
		(0.0114)	(0.0152)	(0.0228)		(0.2110)	(0.2841)	(0.1564)
ln(Operating income)		-0.0013	-0.0002	-0.0000		-0.0024	0.0062	0.0082
		(0.0009)	(0.0014)	(0.0005)		(0.0110)	(0.0231)	(0.0056)
Book value		0.0069	0.0029	0.0004		0.1121	0.0734	0.0666
		(0.0072)	(0.0091)	(0.0039)		(0.0802)	(0.1537)	(0.0568)
Volatility		-0.0023	0.0049	-0.0019		0.0211	0.0953	0.0174
		(0.0022)	(0.0075)	(0.0015)		(0.0215)	(0.0586)	(0.0229)
R_f		0.2070**	0.1701	0.0803		0.0032	-0.7993	0.4660
		(0.0984)	(0.1191)	(0.0524)		(0.9681)	(2.1461)	(0.6740)
CEO x ln(Short-term debt)		-0.0414	-0.1604	-0.0191		0.0358	-1.3091	0.5854*
		(0.0312)	(0.1225)	(0.0211)		(0.3170)	(1.6812)	(0.2926)
CEO x ln(Long-term debt)		-0.0919	-0.1817	0.0099		-0.0093	-1.0065	-0.5258
		(0.0608)	(0.1554)	(0.0313)		(0.5213)	(1.7856)	(0.5086)
CEO x ln(Interest expense)		0.1925*	0.5446	0.0061		0.5652	5.4248	1.4902
		(0.1121)	(0.4384)	(0.0602)		(0.8491)	(4.7067)	(1.0426)
CEO x ln(Sales)		0.0471	0.2231	-0.0043		0.0889	1.2408	0.7879
		(0.0282)	(0.2216)	(0.0371)		(0.3704)	(2.0161)	(0.5359)
CEO x ln(Operating income)		-0.0008	-0.0043	-0.0005		-0.0248	-0.0997	-0.0100
		(0.0014)	(0.0051)	(0.0019)		(0.0227)	(0.0924)	(0.0247)
CEO x Book value		-0.0088	-0.0046	0.0068		-0.1576	-0.1221	-0.2265**
		(0.0091)	(0.0102)	(0.0084)		(0.0988)	(0.1980)	(0.1036)
CEO x Volatility		0.0250	-0.3345	-0.1216		-0.1847	-8.3386	4.9089
		(0.0165)	(0.8565)	(0.1705)		(0.1241)	(7.1048)	(3.0674)
CEO x R_f		-0.0846*	-0.0992	-0.0187		-0.8932	-0.7302	-0.1772
		(0.0466)	(0.0960)	(0.0344)		(0.6458)	(1.4632)	(0.3757)
R-squared	0.4200	0.7656	0.8043	0.9678	0.9670	0.5295	0.6823	0.8879
Observations	85	79	52	54	95	83	55	54

*Note: This table shows the results of two pooled OLS regressions. Panel A shows the results of testing the relationship between the convertible note's delta and the CEO acquiring the convertible note at issue. Delta is calculated using the Black-Scholes call option pricing formula. Panel B shows the results of testing the relationship between the convertible note's required stock return to convert the note in-the-money and the CEO acquiring the convertible note at issue. Price change is defined as the stock return required to convert the note in-the-money. CEO participation is equal to 1 if the note issued by the firm was acquired by the CEO and 0 otherwise. The sample consists of observations taken from the years 2003–2020. Each transaction code subsample consists of only notes with the transaction type specified and notes issued but not acquired by the CEO. Standard errors are calculated using Huber-White robust standard errors. *, **, and *** indicate that results are statistically significant at the 10%, 5%, and 1% levels, respectively. All models include industry-level and fiscal year-level fixed effects.*

The author interprets a high delta as a high probability of converting the note in-the-money, representing a high *conversion risk*. In column (1), the coefficient of *CEO participation* is positive at 0.0189, but it is not statistically significant at any conventional level. Column (2) shows results for the model, including the credit rating proxies and interactions. The coefficient of *CEO participation* is 0.12, but again not statistically significant.

Panel B of Table 13 includes results from using *price change*, a measure of the percentage change in stock price necessary to convert in-the-money, as the dependent variable. All else equal, the author interprets a low *price change* as a high *conversion risk*. In column (5), the coefficient of *price change* is positive at 0.4988, and column (6) shows results for the model, including the credit rating proxies and interactions; the estimate for *price change*'s coefficient is 1.5268. Neither of these estimates is statistically significant.

The evidence provided by these tests does not support a relationship between *CEO participation* and *conversion risk*. First, the delta test yields a coefficient interpreted as *conversion risk*

increasing when the CEO participates, while the *price change* test yields the opposite result. Second, neither test produces statistically significant coefficients.

Results from the purchase and award subsamples for the delta test can be found in columns (3) and (4), while subsample results for the *price change* test can be found in columns (7) and (8). The samples used for these tests are small and therefore lack statistical power, making it difficult to draw inferences. The author provides these results for completeness and to be consistent with the interest rate and term tests.

An alternative explanation of the relationship between the note's interest rate and *CEO participation* discussed in subsection 4.2.1 is that the CEO is more likely to participate in convertible notes that are more equity-like, substituting a higher interest rate for a greater probability of conversion in-the-money. If this were the case, the author would expect *CEO participation* to be associated with a lower interest rate as well as higher *conversion risk*.

For the delta test (Panel A, column (2) of Table 13), the estimated coefficient of the risk-free rate variable is positive at 0.207 and statistically significant ($p < 0.05$). Assuming that the risk-free rate and the note's interest rate are related, a positive relation between the risk-free rate and *conversion risk* suggests that the firm may trade off higher *conversion risk* for a lower interest rate. However, the results suggest that the relationship between the risk-free rate and the *conversion risk* is notably weaker when the CEO participates. The coefficient on the interaction term between *CEO participation* and the risk-free rate is negative at -0.0846 and statistically significant ($p < 0.10$). This evidence is inconsistent with *CEO participation* driving a substitution effect that trades off compensation through a higher interest rate for a higher likelihood of conversion.

4.3. Investor reaction to CEO participation

Figure 1 shows the mean cumulative abnormal returns surrounding the Form 4 report dates. The mean cumulative abnormal returns tend to fluctuate around zero in the days leading up to the report date. After the filing date, disclosing that the CEO participated in the convertible note, mean cumulative abnormal returns are consistently positive.

Table 14 shows cumulative abnormal returns calculated over three-day, seven-day, and fifteen-day windows before and after the report date. The most robust statistical results are from the fifteen-day window. Mean cumulative abnormal returns in the 15-day post-filing period are 2.94% and statistically significant ($p < 0.10$), compared to 0.12% in the pre-filing period, which is not statistically significant. Three-day mean cumulative abnormal returns (CARs) are 1.5% in the post-period with lower standard errors than their pre-period counterparts, though they are not statistically significant. Seven-day mean CARs are estimated at 0.66% in the post-period but are not statistically significant.

Figure 1. Cumulative abnormal returns surrounding Form 4 filings

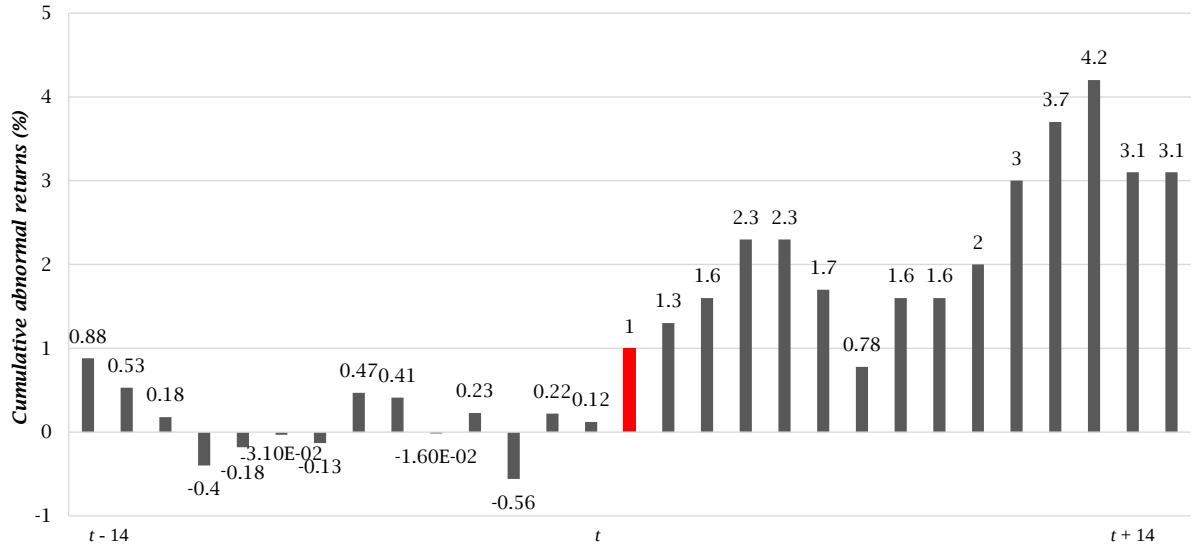


Table 14. Cumulative abnormal returns: Pre- and post-Form 4 filings

CAR window	*Pre-filing*				*Post-filing*			
	Mean	*Std. err.*	*t*	*P > |t|*	*Mean*	*Std. err.*	*t*	*P > |t|*
3-day CAR	-0.1058	0.7377	-0.1435	0.556	1.505	1.4712	1.0232	0.155
7-day CAR	0.2531	1.2569	0.2014	0.420	0.6603	1.6606	0.3976	0.346
15-day CAR	0.1228	2.1036	0.0584	0.476	2.9461	2.1622	1.3625	0.089*

*Note: This table shows mean cumulative abnormal returns for three, five, and 15-day windows before and after the Form 4 report dates disclosing the firm's CEO acquiring convertible notes. The post-filing windows include the report date in the window, while the pre-filing windows do not. The sample consists of 63 observations taken from the years 2003–2020. Stock price data was provided by CRSP. Expected returns used in the derivation of abnormal returns were calculated using the Fama-French three-factor model (Eq. (2), see Fama and French (1993) for details), with data downloaded from Kenneth French's website. * indicates that results are statistically significant at the 10% level.*

5. DISCUSSION OF THE RESULTS

The author finds that CEOs participate in notes either by purchasing them in an offering or receiving them as a grant or award. Firms with note-participating CEOs tend to be smaller and have lower stock prices compared to most publicly traded firms.

They also, as a percentage of total assets, have more long-term debt, lower operating income, and higher interest expense. Their CEOs own larger percentages of firm equity and receive less annual compensation than most publicly traded firms.

Overall, my findings suggest a relationship between CEO participation in the note and a lower note interest rate, especially in firms with higher levels of long-term debt. This relationship is stronger for notes granted or awarded to the CEO. The findings also suggest that the associations between the note's term and short-term debt, long-term debt, and book value are much weaker for notes in which the CEO participates, leading to shorter terms when the CEO participates. A lower interest rate and a shorter term represent a lower cost of debt to the firm. The findings, therefore, support an association between CEO participation in the note and a lower cost of debt. However, the evidence is insufficient to support if CEO participation caused the lower cost of debt or if the CEO chose to participate in notes that resulted in a lower cost of debt to the firm ex-post negotiations. Results may also be limited to smaller, more highly leveraged, financially distressed firms, which may limit their generalizability.

The results of the investor reaction to CEO participation test are consistent with investors reacting positively to the disclosure of CEO participation. The positive effect of the CEO acquiring the notes outweighs the previously documented negative effect of convertible debt issuance found by Dann and Mikkelson (1984) and Eckbo (1986). This finding is also consistent with previous findings that use event studies and demonstrate investors react positively to CEO equity acquisitions disclosed in Form 4 filings (Brochet, 2010; Goldie et al., 2023).

6. CONCLUSION

The purpose of this study was to take an important first step in understanding this previously undocumented financial relationship between the firm and its CEO, why it happens, and how it affects the firm. The author attempts to answer these questions while recognizing the limitations of the results. The regression analysis provides evidence insufficient to differentiate between two possibilities: that CEO participation causes a lower cost of debt, and that CEOs selectively choose to participate in notes with a lower cost of debt. For this reason, the author strives to avoid making causal inferences and wishes to emphasize the associative nature of the regression analysis.

Although the study attempts to test the firm's claims and find associative evidence consistent with these claims, firm disclosures may not be honest or accurate as to why CEOs choose to participate. A stronger economic theory of CEO note participation may provide a more robust motivation, but the development of this theory is left to future research.

Additionally, sample firms are smaller, more highly leveraged, and in greater need of operating funds than the average publicly traded firm. While the sample size has a sufficient number of observations to satisfy the law of large numbers, the small sample size increases the risk of sampling bias. These two facts may limit the generalizability of the study's conclusions beyond firms that share the characteristics of sample firms.

Despite these limitations, this study provides novel and consequential insights for academics, regulators, shareholders, and managers on this unique financial relationship between CEOs and their firms. Prior studies of inside debt focus on pensions because of their debt-like payoff structure (Edmans & Liu, 2011; Hasan et al., 2023). This paper sheds light on an explicit form of inside debt, the convertible note. As firms continue to look for new and innovative means of improving the effectiveness of their corporate governance practices, they should consider how CEO holdings of firm convertible notes might impact their firm, including the evidence presented here. Future research should focus on understanding how CEO participation may affect other features and incentives of convertible debt, such as loan covenants and CEO risk-taking.

REFERENCES

Akey, P., Grégoire, V., & Martineau, C. (2022). Price revelation from insider trading: Evidence from hacked earnings news. *Journal of Financial Economics, 143*(3), 1162–1184. https://doi.org/10.1016/j.jfineco.2021.12.006

Almashhadani, H. A., & Almashhadani, M. (2022). An overview of recent developments in corporate governance. *International Journal of Business and Management Invention*, *11*(5), 39–44. https://www.researchgate.net/publication/360682586

Anantharaman, D., Fang, V. W., & Gong, G. (2014). Inside debt and the design of corporate debt contracts. *Management Science*, *60*(5), 1260–1280. https://doi.org/10.1287/mnsc.2013.1813

Batten, J. A., Khaw, K. L.-H., & Young, M. R. (2021). Convertible debt and asset substitution of multinational corporations. *Journal of Corporate Finance, 67*, Article 101843. https://doi.org/10.1016/j.jcorpfin.2020.101843

Bion Environmental Technologies, Inc. (2019). *Form 10-Q.* https://www.sec.gov/Archives/edgar/data/875729/000107997319000569/bion_10q-093019.htm

Bizjak, J. M., Kalpathy, S. L., & Mihov, V. T. (2019). Performance contingencies in CEO equity awards and debt contracting. *The Accounting Review, 94*(5), 57–82. https://doi.org/10.2308/accr-52317

Blackwell, D. W., & Kidwell, D. S. (1988). An investigation of cost differences between public sales and private placements of debt. *Journal of Financial Economics, 22*(2), 253–278. https://doi.org/10.1016/0304-405X(88)90071-2

Blume, M. E., Lim, F., & MacKinlay, A. C. (1998). The declining credit quality of us corporate debt: Myth or reality? *The Journal of Finance, 53*(4), 1389–1413. https://doi.org/10.1111/0022-1082.00057

Brennan, M. J., & Schwartz, E. S. (1977). Convertible bonds: Valuation and optimal strategies for call and conversion. *The Journal of Finance, 32*(5), 1699–1715. https://doi.org/10.1111/j.1540-6261.1977.tb03364.x

Brennan, M. J., & Schwartz, E. S. (1988). The case for convertibles. *Journal of Applied Corporate Finance, 1*(2), 55–64. https://doi.org/10.1111/j.1745-6622.1988.tb00166.x
Brennan, M., & Kraus, A. (1987). Efficient financing under asymmetric information. *The Journal of Finance, 42*(5), 1225–1243. https://doi.org/10.1111/j.1540-6261.1987.tb04363.x
Brochet, F. (2010). Information content of insider trades before and after the Sarbanes-Oxley Act. *The Accounting Review*, *85*(2), 419–446. https://doi.org/10.2308/accr.2010.85.2.419
Brown, S. J., Grundy, B. D., Lewis, C. M., & Verwijmeren, P. (2012). Convertibles and hedge funds as distributors of equity exposure. *The Review of Financial Studies, 25*(10), 3077–3112. https://doi.org/10.1093/rfs/hhs088
Burlacu, R., & Jimenez-Garcès, S. (2022). Why do firms issue callable convertible bonds? A critique of the "backdoor equity financing" theory. *Journal of Banking & Finance, 144*, Article 106636. https://doi.org/10.1016/j.jbankfin.2022.106636
Chakraborty, A., & Yilmaz, B. (2011). Adverse selection and convertible bonds. *The Review of Economic Studies*, *78*(1), 148–175. https://doi.org/10.1093/restud/rdq002
Chang, E. C., Luo, X., Shi, L., & Zhang, J. E. (2013). Is warrant really a derivative? Evidence from the Chinese warrant market. *Journal of Financial Markets, 16*(1), 165–193. https://doi.org/10.1016/j.finmar.2012.04.003
Chen, X., Cheng, Q., Lo, A. K., & Wang, X. (2023). CEO contractual protection and debt contracting. *Journal of Business Finance & Accounting, 50*(9–10), 1671–1714. https://doi.org/10.1111/jbfa.12664
Choi, D., Lee, J., & Yi, H.-C. (2023). Managerial risk-taking incentives and debt diversity: Evidence from FAS 123R. *Finance Research Letters, 58*(Part B), Article 104388. https://doi.org/10.1016/j.frl.2023.104388
Connelly, B. L., Hoskisson, R. E., Tihanyi, L., & Certo, S. T. (2010). Ownership as a form of corporate governance. *Journal of Management Studies*, *47*(8), 1561–1589. https://doi.org/10.1111/j.1467-6486.2010.00929.x
Dann, L. Y., & Mikkelson, W. H. (1984). Convertible debt issuance, capital structure change and financing-related information: Some new evidence. *Journal of Financial Economics*, *13*(2), 157–186. https://doi.org/10.1016/0304-405X(84)90022-9
De Cesari, A., Dutordoir, M., & Mehmood, Z. (2023). The impact of CEO education on convertible bond issuance. *The European Journal of Finance, 29*(12), 1382–1405. https://doi.org/10.1080/1351847X.2022.2131450
de Jong, A., Duca, E., & Dutordoir, M. (2013). Do convertible bond issuers cater to investor demand? *Financial Management*, *42*(1), 41–78. https://doi.org/10.1111/j.1755-053X.2012.01222.x
Dicks, D. L. (2012). Executive compensation and the role for corporate governance regulation. *The Review of Financial Studies*, *25*(6), 1971–2004. https://doi.org/10.1093/rfs/hhs055
Dong, M., Dutordoir, M., & Veld, C. (2017). Why do firms really issue convertible bonds? Evidence from the field. *Critical Finance Review, 7*(1), 111–164. https://doi.org/10.1561/104.00000048
Dutordoir, M., Lewis, C., Seward, J., & Veld, C. (2014). What we do and do not know about convertible bond financing. *Journal of Corporate Finance, 24*, 3–20. https://doi.org/10.1016/j.jcorpfin.2013.10.009
Dutordoir, M., Pappas, K., Xu, A. L., & Zeng, C. C. (2023). Covenants in convertible bonds: Boon or boilerplate? *Journal of Corporate Finance, 80*, Article 102392. https://doi.org/10.1016/j.jcorpfin.2023.102392
Eckbo, B. E. (1986). Valuation effects of corporate debt offerings. *Journal of Financial Economics*, *15*(1–2), 119–151. https://doi.org/10.1016/0304-405X(86)90052-8
Edmans, A., & Liu, Q. (2011). Inside debt. *Review of Finance*, *15*(1), 75–102. https://doi.org/10.1093/rof/rfq008
Edmans, A., Gosling, T., & Jenter, D. (2023). CEO compensation: Evidence from the field. *Journal of Financial Economics*, *150*(3), Article 103718. https://doi.org/10.1016/j.jfineco.2023.103718
Fama, E. F. (1984). Term premiums in bond returns. *Journal of Financial Economics, 13*(4), 529–546. https://doi.org/10.1016/0304-405X(84)90014-X
Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, *33*(1), 3–56. https://doi.org/10.1016/0304-405X(93)90023-5
Fisher, L. (1959). Determinants of risk premiums on corporate bonds. *Journal of Political Economy, 67*(3), 217–237. https://doi.org/10.1086/258172
Gabaix, X., & Landier, A. (2008). Why has CEO pay increased so much? *The Quarterly Journal of Economics, 123*(1), 49–100. https://doi.org/10.1162/qjec.2008.123.1.49
Gabaix, X., Landier, A., & Sauvagnat, J. (2014). CEO pay and firm size: An update after the crisis. *The Economic Journal*, *124*(574), F40–F59. https://doi.org/10.1111/ecoj.12084
Goldie, B., Jiang, C., Koch, P., & Wintoki, M. B. (2023). Indirect insider trading. *Journal of Financial and Quantitative Analysis*, *58*(6), 2327–2364. https://doi.org/10.1017/S0022109022001119
Green, R. C. (1984). Investment incentives, debt, and warrants. *Journal of Financial Economics, 13*(1), 115–136. https://doi.org/10.1016/0304-405X(84)90034-5
Hasan, M. M., Hossain, A., & Hossain, T. (2023). CEO inside debt holdings and credit ratings. *Journal of Contemporary Accounting & Economics, 19*(1), Article 100337. https://doi.org/10.1016/j.jcae.2022.100337
iCAD, Inc. announces $7.0 million private placement of unsecured subordinated convertible debentures. (2018, December 20). *GlobeNewswire*. https://www.globenewswire.com/news-release/2018/12/20/1670198/0/en/iCAD-Inc-Announces-7-0-Million-Private-Placement-of-Unsecured-Subordinated-Convertible-Debentures.html
Jensen, M. C. (2010). Value maximization, stakeholder theory, and the corporate objective function. *Journal of Applied Corporate Finance, 22*(1), 32–42. https://doi.org/10.1111/j.1745-6622.2010.00259.x
Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X
Kim, Y. O. (1990). Informative conversion ratios: A signalling approach. *Journal of Financial and Quantitative Analysis*, *25*(2), 229–243. https://doi.org/10.2307/2330826
Kozhemiakin, A. V. (2007). The risk premium of corporate bonds. *The Journal of Portfolio Management, 33*(2), 101–109. https://doi.org/10.3905/jpm.2007.674796
Kravitz, B. L. (2009). Form 4. Statement of changes in beneficial ownership. https://www.sec.gov/Archives/edgar/data/29006/000094583609000016/xslF345X03/primary_doc.xml
Kyere, M., & Ausloos, M. (2021). Corporate governance and firms financial performance in the United Kingdom. *International Journal of Finance & Economics*, *26*(2), 1871–1885. https://doi.org/10.1002/ijfe.1883
Lewis, C. M., Rogalski, R. J., & Seward, J. K. (1999). Is convertible debt a substitute for straight debt or for common equity? *Financial Management*, *28*(3), 5–27. https://www.researchgate.net/publication/5054962

Lewis, C. M., Rogalski, R. J., & Seward, J. K. (2001). The long-run performance of firms that issue convertible debt: An empirical analysis of operating characteristics and analyst forecasts. *Journal of Corporate Finance, 7*(4), 447–474. https://doi.org/10.1016/S0929-1199(01)00035-9

Liao, Y., Huang, P., & Ni, Y. (2022). Convertible bond issuance volume, capital structure, and firm value. *The North American Journal of Economics and Finance, 60*, Article 101673. https://doi.org/10.1016/j.najef.2022.101673

Mayers, D. (1998). Why firms issue convertible bonds: The matching of financial and real investment options. *Journal of Financial Economics*, *47*(1), 83–102. https://doi.org/10.1016/S0304-405X(97)00038-X

Miller, M. H. (1977). Debt and taxes. *The Journal of Finance*, *32*(2), 261–275. https://doi.org/10.2307/2326758

Murphy, K. J. (2012). The politics of pay: A legislative history of executive compensation. In R. S. Thomas & J. G. Hill (Eds.), *Research handbook on executive pay*. Edward Elgar Publishing. https://doi.org/10.4337/9781781005101.00007

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics, 5*(2), 147–175. https://doi.org/10.1016/0304-405X(77)90015-0

Nyborg, K. G. (1995). Convertible debt as delayed equity: Forced versus voluntary conversion and the information role of call policy. *Journal of Financial Intermediation, 4*(4), 358–395. https://doi.org/10.1006/jfin.1995.1015

Scott, J. H., Jr. (1976). A theory of optimal capital structure. *The Bell Journal of Economics, 7*(1), 33–54. https://doi.org/10.2307/3003189

Stein, J. C. (1992). Convertible bonds as backdoor equity financing. *Journal of Financial Economics, 32*(1), 3–21. https://doi.org/10.1016/0304-405X(92)90022-P

Stohs, M. H., & Mauer, D. C. (1996). The determinants of corporate debt maturity structure. *Journal of Business, 69*(3), 279–312. https://doi.org/10.1086/209692

U.S. Securities and Exchange Commission (SEC). (2021, January 26). *Updated investor bulletin: Insider transactions and Forms 3, 4, and 5.* Investor.gov. https://www.investor.gov/introduction-investing/general-resources/news-alerts/alerts-bulletins/investor-bulletins-69

Van Binsbergen, J. H., Graham, J. R., & Yang, J. (2010). The cost of debt. *The Journal of Finance, 65*(6), 2089–2136. https://doi.org/10.1111/j.1540-6261.2010.01611.x

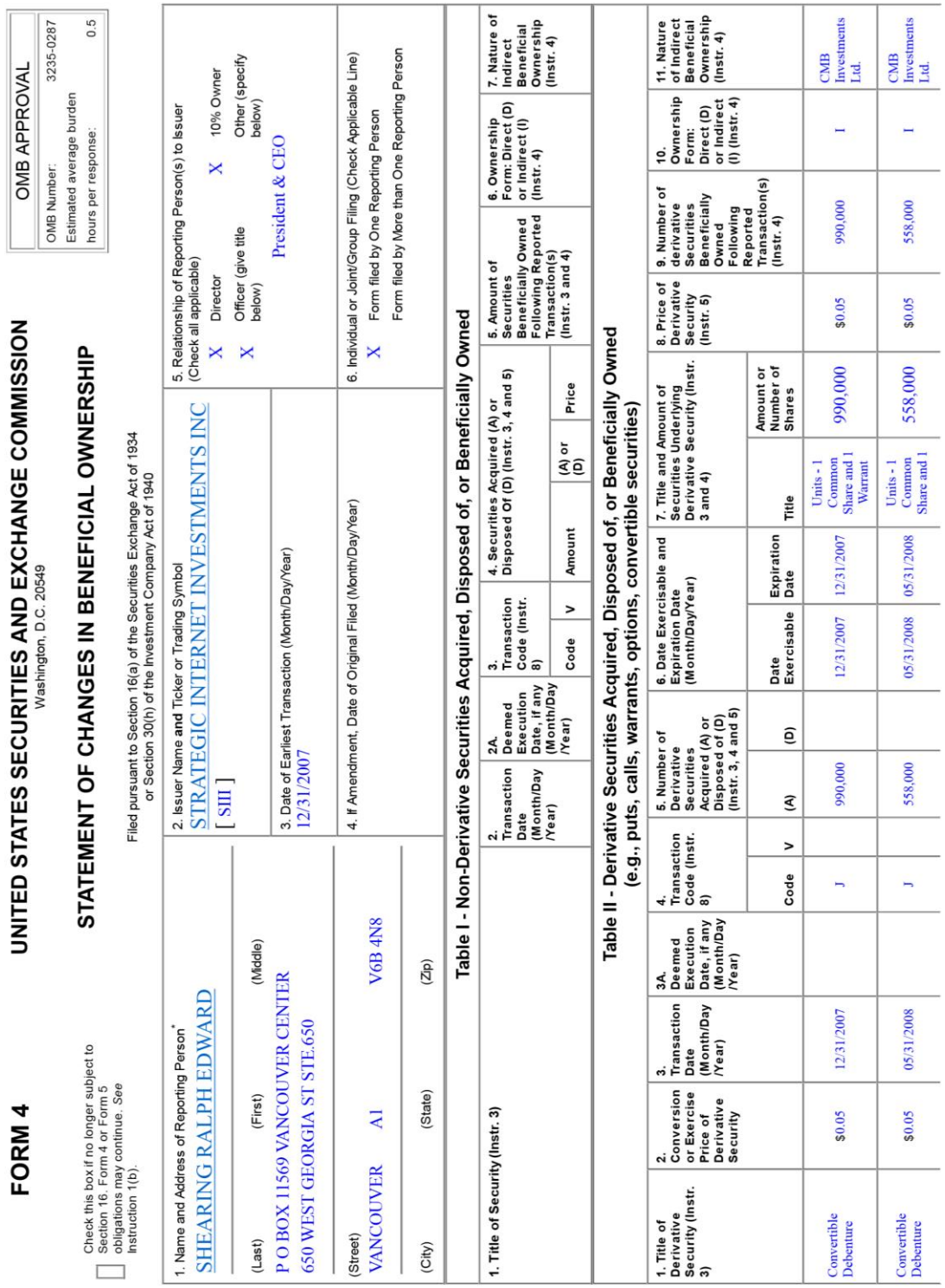
APPENDIX A. VARIABLE DESCRIPTIONS

Variable	*Definition*	*Unit*
	Firm characteristics	
Total assets	The total value of assets reported on the balance sheet.	$ millions
Book value	Book value per share, calculated using fiscal year-end data and represented the liquidation value of owner's equity divided by the number of common shares outstanding.	$ millions
Short-term debt	Debt in current liabilities. This includes short-term notes and other debt due within one year.	$ millions
Long-term debt	Debt obligations were due more than one year from the company's balance sheet date.	$ millions
Interest expense	Periodic expense to the company of securing short- and long-term debt.	$ millions
Sales	Gross sales, the amount of actual billings to customers for regular sales completed during the period, reduced by cash discounts, trade discounts, and returned sales and allowances for which credit is given to customers.	$ millions
Operating income	Operating income after depreciation. This represents the operating income of a company after deducting expenses for cost of goods sold, selling, general, and administrative expenses, and depreciation.	$ millions
Stock price	The company's stock price at the end of the fiscal year.	Dollars
Volatility	The 12-month volatility of the firm's daily stock price, calculated using daily stock prices over 252 trading-day rolling windows. The reported figures are annualized.	Decimal
	CEO characteristics	
Age	The CEO's age during the fiscal year.	Years
Tenure	The number of years the CEO has been the current CEO, measured at fiscal year-end.	Years
Total compensation	The CEO's total annual compensation is reported in the summary compensation table of the 10-K.	Dollars
Salary	The CEO's annual salary compensation as reported reported in the summary compensation table of the 10-K.	Dollars
Bonus	The CEO's cash bonus compensation was awarded for the fiscal year as reported in the summary compensation table of the 10-K.	Dollars
Total equity awards	The CEO's total equity award compensation was awarded for the fiscal year as reported in the summary compensation table of the 10-K. This includes both stock and option awards.	Dollars
Stock awards	The CEO's stock award compensation was awarded for the fiscal year as reported in the summary compensation table of the 10-K.	Dollars
Option awards	The CEO's option award compensation awarded for the fiscal year as reported in the summary compensation table of the 10-K.	Dollars
Other compensation	The CEO's other compensation awarded for the fiscal year is reported in the summary compensation table of the 10-K.	Dollars
	Note features	
Interest rate	The coupon rate of the convertible note.	Percent
Term	The number of days from the note's issue to the note's maturity.	Days
Delta	Calculated using the Black-Scholes option model for a call option. A measure of the sensitivity of the convertible portion of the note's value to changes in stock price. It is a proxy for the probability that the note's conversion feature will finish in-the-money.	Probability
Price change	Calculated as the required stock return to convert the note in-the-money. Daily stock prices are used.	Decimal
R_f	The interest rate on a one-month Treasury Bill is used to proxy for the risk-free rate.	Percent

APPENDIX B. SEC FORM 4 FILING EXAMPLE

This Appendix contains an example of an SEC Form 4 filing. This form was filed on behalf of Ralph Edward Shearing of Strategic Internet Investments Inc. on July 29, 2008. Strategic Internet Investments Inc.'s CIK number is 53320, and this filing's accession number is 0001266422-08-000001. The form can be viewed on the SEC's website by accessing EDGAR, the Electronic Data Gathering, Analysis, and Retrieval system.

Figure B.1. Example of SEC Form 4 filing (Page 1)



FORM 4 — **UNITED STATES SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

OMB APPROVAL
OMB Number: 3235-0287
Estimated average burden hours per response: 0.5

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP
Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

☐ Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. *See* Instruction 1(b).

1. Name and Address of Reporting Person*
SHEARING RALPH EDWARD
(Last) (First) (Middle)
P O BOX 11569 VANCOUVER CENTER
650 WEST GEORGIA ST STE.650
(Street)
VANCOUVER A1 V6B 4N8
(City) (State) (Zip)

2. Issuer Name and Ticker or Trading Symbol
STRATEGIC INTERNET INVESTMENTS INC
[SIII]

3. Date of Earliest Transaction (Month/Day/Year)
12/31/2007

4. If Amendment, Date of Original Filed (Month/Day/Year)

5. Relationship of Reporting Person(s) to Issuer (Check all applicable)
X Director — X 10% Owner
X Officer (give title below) — Other (specify below)
President & CEO

6. Individual or Joint/Group Filing (Check Applicable Line)
X Form filed by One Reporting Person
Form filed by More than One Reporting Person

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1. Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)		6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4)		8. Price of Derivative Security (Instr. 5)	9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4)	10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	11. Nature of Indirect Beneficial Ownership (Instr. 4)
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares				
Convertible Debenture	$0.05	12/31/2007		J		990,000		12/31/2007	12/31/2007	Units - 1 Common Share and 1 Warrant	990,000	$0.05	990,000	I	CMB Investments Ltd.
Convertible Debenture	$0.05	05/31/2008		J		558,000		05/31/2008	05/31/2008	Units - 1 Common Share and 1	558,000	$0.05	558,000	I	CMB Investments Ltd.

Figure B.2. Example of SEC Form 4 filing (Page 2)

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned
(e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 3)	2. Conversion or Exercise Price of Derivative Security	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if any (Month/Day/Year)	4. Transaction Code (Instr. 8)		5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)		6. Date Exercisable and Expiration Date (Month/Day/Year)		7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4)		8. Price of Derivative Security (Instr. 5)	9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4)	10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	11. Nature of Indirect Beneficial Ownership (Instr. 4)
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title	Amount or Number of Shares				
										Warrant					
Stock Options	$0.2083	05/31/2008		D			720,000	09/05/2003	09/05/2008	Common Shares	720,000	$0.2083	0	I	CMB Investments Ltd.
Stock Options	$0.15	06/01/2008		A		1,250,000		06/01/2008	06/01/2013	Common Shares	1,250,000	$0.15	1,250,000	I	CMB Investments Ltd.

Explanation of Responses:

Remarks:

6. The Expiration Date of the Convertible Debentures is not specified in the Convertible Loan Facility Agreement but is defined as the "Maturity Date" or the day upon which the Lender makes demand upon the Borrower for repayment of the Principal Sum or elects to convert the Principal Sum in to Units. 7. The Units consist of one Common Share without par value and one transferable Share Purchase Warrant. 11. On May 5,2006 SIII entered into a Loan Facility Agreement with CMB Investments Ltd., a company controlled by Ralph Edward Shearing, whereby SIII would, from time to time, borrow operating funds from CMB, with interest at a rate of 10% and repayable on demand. The Lender, CMB, has the right to convert all or part of the principal sum into units of SIII each unit consisting of one Common Share and one transferable Share Purchase Warrant exerciseable at the applicable conversion rate which is calculated at a discount to the average closing price of the shares for ten days preceding a loan advance. Accrued interest is not convertible. As at July 29, 2008 CMB had advanced a total of $77,400 which can be converted into 1,548,000 units at a conversion price of $0.05 per unit.

RALPH EDWARD SHEARING 07/29/2008

** Signature of Reporting Person Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

* If the form is filed by more than one reporting person, *see* Instruction 4 (b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations *See* 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *see* Instruction 6 for procedure.

Persons who respond to the collection of information contained in this form are not required to respond unless the form displays a currently valid OMB Number.