ARTICLE IN PRESS
REVFIN-00412; No of Pages 12
Review of Financial Economics xxx (2017) xxx–xxx
Contents lists available at ScienceDirect
Review of Financial Economics
journal homepage: www.elsevier.com/locate/rfe

CEO inside debt and bank loan syndicate structure

Liqiang Chen [a,*], Hong Fan [b]

[a] Department of Finance, IS & MS, Sobey School of Business, Saint Mary's University, Halifax, NS B3H 3C3, Canada
[b] Department of Accounting, Sobey School of Business, Saint Mary's University, Halifax, NS B3H 3C3, Canada

ARTICLE INFO

Article history:
Received 26 November 2016
Received in revised form 8 June 2017
Accepted 9 June 2017
Available online xxxx

JEL classification:
G3
G21
G32

Keywords:
Executive compensation
Inside debt
Syndicate loans

ABSTRACT

This paper investigates the effects of a borrowing firm's CEO inside debt holdings on the structure of the firm's syndicated loans. When a borrowing firm's CEO has a higher level of inside debt holdings, syndicate loans have a larger number of lenders and are less concentrated, and lead arrangers will retain a smaller portion of loans. In addition, CEO inside debt holdings have a lesser effect on the syndicate structure when lead arrangers have a prior lending relationship with the borrowing firm or the CEOs are close to retirement, while CEO inside debt holdings have greater influence on the syndicate structure when the borrowing firm has low information transparency.

1. Introduction

Syndicated loans have become a dominant form of bank lending in the global corporate financing market, with originations surpassing $4.2 trillion in 2013 according to Loan Pricing Corporation.[1] By definition, there are multiple lenders in a syndicated loan, with one or more of the lenders (lead arrangers/lead banks) playing the role of arranging, pricing and monitoring the loan. Although lead arrangers perform the traditional role of due diligence as informed lenders, the loan amount is shared with other syndicate members, and lead arrangers hold <100% of the debt in a syndicate (Esty, 2001). As a result, lead arrangers may shirk their monitoring responsibilities when undertaking most of the monitoring costs and owning only part of a loan, and loans with higher ex ante credit risks are less desired by lead arrangers when they have an information advantage over participant banks (Holmstrom & Tirole, 1997; Sufi, 2007). Therefore, the syndication process generates an additional conflict of interest between lead arrangers and participant banks in addition to the typical borrower moral hazard problems between a borrowing firm and lending banks. Participant banks' concerns regarding lead banks' shirking their due diligence duties could be especially relevant when borrower moral hazard problems are severe. Those concerns are reflected in the structure of syndicated loans during the syndication process.[2]

In this study, we focus on executive compensation with debt features ("inside debt") to explore how CEO inside debt holdings affect the structure of syndicated loans. Agency theory posits that inside debt such as executive pension plans and/or deferred compensation can mitigate shareholder-creditor conflicts of interest (Jensen & Meckling, 1976). Because inside debt obligations represent long-term, unsecured, unfunded claims against firm assets and are payable at a future date, the value of CEOs' inside debt holdings is sensitive to both the probability of bankruptcy and the liquidation value.[3] In the event of bankruptcy or insolvency, inside debt holdings are at risk, and CEOs face similar default risk as other outside creditors (Edmans & Liu, 2011; Sundaram & Yermack, 2007). As a result, greater inside debt holdings encourage CEOs to manage firms more conservatively with lower

* Corresponding author.
E-mail addresses: liqiang.chen@smu.ca (L. Chen), hong.fan@smu.ca (H. Fan).

[1] Loan Pricing Corporation (LPC) of Thomson Reuters is the premier global provider of information on the syndicated loan markets. For additional information, please visit https://www.loanpricing.com/.

[2] For example, Lin et al. (2012) find that borrowing firms that have a greater divergence between ownership rights and cash flow rights have fewer participant banks in a syndicate, and the lead banks are asked to maintain a larger amount of loans. Chen (2014) shows that borrowing firms with greater CEO risk-taking incentives are usually associated with a more concentrated syndicate, and the lead arrangers are required to hold a larger portion of the syndicate's loans.

[3] Executive pension plans usually include tax-qualified plans that cover all employees (rank-and-file plans, RAFs), supplemental executive retirement plans (SERPs) and other deferred compensation (ODC). RAFs are required to be funded and secured under the Employee Retirement Income Security Act up to $200,000 annually. Both SERPs and ODC do not have to be funded or secured, and such schemes expose executives to risk of loss if the firms enter bankruptcy or become insolvent. Please see Anantharaman et al. (2014) for a detailed discussion.

http://dx.doi.org/10.1016/j.rfe.2017.06.004
1058-3300/

risk-seeking behaviors, such as lower R&D expenditures and financial leverage and more diversification (Cassell, Huang, Sanchez, & Stuart, 2012). Therefore, CEO inside debt can reduce borrowing firms' credit risks and mitigate borrower moral hazard problems. Thus, syndicate loans to borrowing firms with greater CEO inside debt holdings can attract more participant banks, and the syndicate structure is more diffused to reflect the participant banks' preferences regarding CEO inside debt holdings.

On the other hand, CEO inside debt holdings can also affect the adverse selection problem for lead banks. Syndicate loans to borrowing firms with less CEO inside debt holdings have greater ex ante credit risks, all else being equal. Lead banks then have incentives to keep a smaller portion of the loans, probably via inviting more participant banks. As a result, the syndicate structure is less concentrated under this scenario. However, this may backfire and cause trouble for the lead arrangers in the long run. For example, knowing that lead arrangers have adverse selection problems, participant banks may consider loans with low lead bank ownership as a signal of high risk and are therefore less likely to participate. In addition, lead banks' reputation concerns also mitigate such adverse selection behaviors because a poor track record as a lead arranger makes it difficult to attract participant banks in the future (Gopalan, Nanda, & Yerramilli, 2011). As a result, the overall effects of lead banks' adverse selection problem are unclear. With the competing theories, it becomes an empirical research question to investigate the effect of CEO inside debt holdings on syndicate loan structure.

The purpose of this paper is twofold. First, we examine whether the CEO inside debt holdings of borrowing firms influence the structure of syndicate loans and if so, to what end. Following the extant literature (e.g., Anantharaman, Fang, & Gong (2014); Cassell et al. (2012); Liu, Mauer, & Zhang (2014); Phan (2014); Sundaram & Yermack (2007) and Wei & Yermack (2011)), CEO inside debt is measured as the CEO to firm debt-to-equity ratio, and a dummy variable is used that takes the value of one if the CEO to firm debt-to-equity ratio is greater than one and zero otherwise. The extant literature suggests that larger CEO to firm debt-to-equity ratios imply greater incentive alignment between CEOs and creditors. Jensen and Meckling (1976) argue that the incentive effects of CEO inside debt holdings are more pronounced when the CEO debt-to-equity ratio is greater than that of the firm, i.e., the CEO to firm debt-to-equity ratio exceeds one. To measure the syndicate loan structure, we employ four measures that are similar to those used in recent empirical studies (e.g., Chen (2014); Lin, Ma, Malatesta, & Xuan (2012); Sufi (2007)): the total number of lenders in a syndicate loan, the amount of a loan held by the lead arrangers, the percentage of a loan held by the lead arrangers and a Herfindahl index of lenders' shares in a syndicate loan. A greater number of lenders in a syndicate indicate that the syndicate is less concentrated. A larger amount and percentage of the loan held by the lead arrangers and a higher value of the Herfindahl index of lenders' shares indicate that the syndicate is more concentrated.

With a combined sample of syndicate loan structure information, financial information from borrowing firms and CEO inside debt information from 2006 to 2014, we find that CEO inside debt holdings have a significant impact on the structure of syndicate loans. Specifically, syndicate loans have a larger number of total lenders, lead arrangers hold a smaller amount and a smaller percentage of the syndicate loan, and the syndicate ownership is less concentrated as CEO inside debt holdings increase. The results are consistent with the notion that CEO inside debt holdings mitigate the credit risks of borrowing firms, and consequently participant banks are more willing to participate because they are less concerned about lead banks' shirking and wrongdoing. The results suggest that syndicate lenders consider CEO inside debt when they form a syndicate to reflect the alleviated moral hazard problems during the syndication process.

The second purpose of this paper is to investigate the possible channels through which CEO inside debt may affect the syndicate structure. We find that CEO inside debt's effects on the syndicate loan structure are moderated by borrowing firms' lending relationship with the lead arrangers, borrowing firms' information transparency level, and CEOs' expected retirement horizon. Inside debt's effects on the syndicate structure are mitigated if the lead arrangers have a lending relationship with the borrowing firms or the CEOs are close to retirement. On the contrary, CEO inside debt's effects on the syndicate structure are strengthened if the borrowing firms have low information transparency.

One potential concern for our empirical analysis is the issue of endogeneity. Reverse causality is less likely to be a problem because the syndicate structure of a loan is unlikely to be a direct determinant of the CEO inside debt of a borrowing firm. However, there is still possible omitted variable bias whereby some unaccounted-for firm characteristics could jointly determine CEO inside debt and the syndicate structure. An omitted variable problem is less likely to drive our results, however, because the omitted variable should explain not only the relation between CEO inside debt and the syndicate structure but also the relation's cross-sectional variation among different lenders, firms and CEO characteristics examined in this study. Nevertheless, we use an instrumental variable approach to address the possible endogeneity of CEO inside debt. Following extant empirical studies (e.g., Anantharaman et al., 2014), we instrument CEO inside debt with state personal income tax rates and a firm's marginal tax rate. Our empirical results continue to hold when CEO inside debt is instrumented with instrumental variables: CEO inside debt holdings have a significant impact on the structure of syndicate loans.

This paper attempts to combine two stream of the literature and offers the following contributions. The first stream of work investigates the borrower moral hazard arising from executive compensation and examines how creditors perceive this hazard. These studies investigate different aspects of executive compensation, such as equity-based compensation (e.g., Chen & Qiu, 2016; DeFusco, Johnson, & Zorn, 1990; Ortiz-Molina, 2006) as well as inside debt-based compensation (e.g., Anantharaman et al., 2014; Chen, Dou, & Wang, 2010; Wang, Xie, & Xin, 2011). These studies generally show that creditors react negatively (positively) to equity-related (debt-like) executive compensation because of the increased (mitigated) borrower moral hazard resulting from executive compensation. We complement this stream of literature by showing that the CEO inside debt of a borrowing firm also has a significant influence on its syndicate loan structure, and we demonstrate that greater CEO inside debt holdings are associated with a less concentrated syndicate structure and that lead arrangers retain a smaller stake in such loans.[4]

The second stream of work is related to the rapidly growing body of empirical studies on the structure of syndicate loans over the last decade. The extant literature has shown that the structure of syndicate loans is influenced by the information opacity level of borrowing firms (Lee & Mullineaux, 2004; Sufi, 2007), borrowing firms' accounting information quality (Ball, Bushman, & Vasvari, 2008), lead arrangers' reputation (Gopalan et al., 2011), borrowing firms' ownership structure (Lin et al., 2012) and the CEO risk-taking incentives of borrowing firms (Chen, 2014). In this paper, we identify another important yet unexplored managerial characteristic that influences the structure of syndicate loans. We show that CEO inside debt holdings have a significant impact on the bank loan syndicate structure: greater CEO inside debt holdings can mitigate borrower moral hazard and are associated with a less concentrated syndicate structure. By dealing with borrowing firms with greater CEO inside debt holdings, lead arrangers can facilitate a quicker and easier syndication process.

[4] Wang et al. (2011) investigate the effects of CEO inside debt holdings on bank loan contracting and find that greater CEO inside debt holdings are associated with smaller lending syndicates because self-interested lead arrangers keep a larger portion of the loans with greater CEO inside debt holdings. This paper differs from Wang et al. (2011) in that we first find that CEO inside debt holdings are associated with larger lending syndicates to reflect participant banks' mitigated concerns regarding expropriation risks; second, we also investigate several new moderating effects and additional robustness tests in this study.

Please cite this article as: Chen, L., & Fan, H., CEO inside debt and bank loan syndicate structure, *Review of Financial Economics* (2017), http://dx.doi.org/10.1016/j.rfe.2017.06.004