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Adnan Isin

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Adnan Isin
University of Exeter Business School, Rennes Drive, Exeter, EX4 4PU, United Kingdom
e-mail:A.A.Isin@exeter.ac.uk

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ABSTRACT

Examining the syndicate loans market for publicly traded U.S. firms I show that tax avoidance is positively related to loan spreads. Importantly, however, tax-specific premiums disappear for loans with large number of co-leads, which facilitate credit risk diversification, for loans with performance pricing provisions, which facilitate borrower-lender incentive alignment, and for borrowers with CDS contracts, which facilitate credit risk transfer. Moreover, non-bank institutional investors demand higher risk premiums to compensate for their high-risk investment strategies that also account for tax-specific risks and do not have particular focus on tax-specific firm risks. Finally, I show that simultaneous access to private and public debt financing, which reflects greater firm-level financial flexibility and fewer hold-up problems, largely mitigates agency risks associated with all forms of tax avoidance. These syndicate-level risk-mitigating measures work jointly well and are more effective, ex-ante, at moderating tax-specific risks in comparison to maintenance-based covenant structures alone. These results help identify channels through which firms can mitigate non-tax costs associated with tax avoidance and, hence, effectively pursue strategies that persistently reduce their corporate tax liabilities without incurring material agency costs.

Keywords: Tax avoidance, Cost of debt, Agency costs, Contract design and risk mitigation, Financial constraints, Information asymmetries

1. INTRODUCTION

Since the establishment of the "under-sheltering" puzzle (Weisbach, 2002) the literature in corporate taxation has sought to identify why some firms engage in greater levels of tax avoidance than others. To do so, studies have concentrated on debt contracting costs associated with tax avoidance (e.g., Shevlin, Urcan and Vasvari, 2013; Hasan et al., 2014). This topic is of particular importance given that the anticipated benefits (real and financial) from tax avoidance largely accrue to shareholders, while creditors, given their fixed claims on upside firm performance, assume most of the direct risks associated with tax avoidance (Hasan et al., 2014). In fact, recent evidence links tax avoidance with managerial rent extraction (Desai and Dharmapala, 2006, Desai, Dyck and Zingales, 2007), aggressive and non-transparent financial reporting (Frank, Lynch and Rego, 2009; Balakrishnan, Blouin and Guay, 2011), which are likely to further increase indirect agency costs associated with corporate tax avoidance.

Importantly, however, despite documenting significant contracting costs (CCs from here on) associated with tax avoidance, the literature (Shevlin et al., 2013; Hasan et al., 2014) fails to explain the evidence that considerable number firms are able to pay significantly lower taxes for prolonged periods (Dyreng et al., 2008, 2016; GAO, 2008, 2016). One arguably valid reason for this observational divergence is that these studies do not take into account recent innovations in loan formation and contractual design alternatives or, more importantly how these contractual innovations help mitigate risks associated with tax avoidance. This is an important oversight given that advances in loan formation and covenant design help lenders expertly manage noticeably complex risk functions (BIS, 2003; Rajan, 2005; IMF, 2006), that are relatively eminent and substantial in comparison to tax-specific risks. For example, among the corporate-level risk disclosures, tax-position risks make up only 2% of the total risk function keywords in U.S. Securities and Exchange Commission mandated "risk factor sections" Campbell et al. (2012).[1] This observation is intuitive given that "direct" risks associated with tax avoidance will emerge only to the extent of tax-positional aggressiveness and/or the avoidance strategy can be successfully challenged by the tax authorities. I argue that if efficient loan formation and contractual design alternatives help facilitate credit risk diversification and/or borrower-lender incentive alignment (e.g., Simon, 1993; Armstrong, 2003; Bank for International Settlements, or BIS, 2003; Asquith et al., 2005; Manso et al., 2010; Mora, 2015), which enable lenders to take on relatively significant non-tax-based risks (BIS, 2003; Rajan, 2005; IMF, 2006),

[1] Campbell et al. (2012) documents that the large majority of risk disclosures focus on systematic (36%), idiosyncratic (33%), litigation (15%) and financial (13%) risk functions

then it is natural to expect these loan-level risk mitigation strategies to be (at least) as effective for aggressive levels of corporate tax-positional risks. In that case, contracting costs associated with tax avoidance are likely to be lower than previously documented (Shevlin et al., 2013; Hasan et al., 2014) which provides an agency-theoric explanation as to how corporations can attain persistently low tax rates (e.g., Dyreng et al., 2008) without incurring material agency-specific costs. Accordingly, I re-examine contracting costs associated with corporate tax avoidance by focusing on a priori un-explored loan/borrower-level risk-mitigating mechanisms, and their role in alleviating agency costs associated with tax avoidance.

First, I focus on lead-level syndicate participation (co-syndication) as a syndicate formation strategy that facilitates lead-level risk diversification. In line with the evidence in Shivdasani and Song (2007), Figure 1 demonstrates a systematic and economically meaningful increase in co-syndication in private debt markets where the degree of lead-level participation in a given loan has been steadily increasing over the last two decades. For example, the number of lead agents in a given syndicate loan increased from 22% of the total number of loan participants in pre-2000 period to reach 45% in the post-2000 period for a given loan.[2] This definitive trend in syndicate formation is an indication of banks' co-operation to take appropriate risks to more effectively compete with public debt markets for corporate lending business without exhausting their regulatory capital limits (e.g., Simon, 1993; Armstrong, 2003; BIS, 2003; Altunbas et al., 2010 Mora, 2015). Hence, I perceive greater lead-level syndicate participation, which I term as co-syndication intensity (CSI), as a syndicate formation strategy that helps diversify-away some of the loan-specific risks (e.g., Simon, 1993; Armstrong, 2003; BIS, 2003; Shivdasani and Song, 2007; Mora, 2015), including those associated with aggressive levels of tax avoidance.[3]

Second, I control for performance pricing provisions (PPPs), which are perceived as hybrid monitoring mechanisms that utilize price and non-price terms simultaneously as they directly tie loan interest rates to alternative measures of firm performance (Ball et al., 2008). Hence, PPPs are flexible contractual arrangements that adjust loan spreads depending on the pre-determined performance metrics and provide early screening processes that mitigate (ex-ante) moral hazard and adverse selection problems that might occur among the parties to the loan (Asquith et al., 2005; Manso et al., 2010). Therefore, these provisions are favorable from the

[2] Co-syndication in loan markets is observable in both in-and out-of-sample data sets and for firms with and without informational asymmetries or financial constraints. Figure 1 only presents out-of-sample total loan dataset obtained from the Thomson Deals database. See Section 4.1 for more discussion.

[3] I will be using lead-level risk diversification, syndicate-lead diversification and large number of co-leads to refer to co-syndication intensity, hence CSI, throughout the paper.

borrower's perspective (Asquith et al., 2005).[4] Accordingly, given that loan spread is tied to firm performance, I argue that performance pricing provisions can transfer a meaningful portion of cash flow (e.g., IRS settlements) and/or other direct and indirect risks (if any) associated with aggressive tax avoidance (back) to borrowers.

Using a sample of 6456 loan deals and broad measures of corporate tax avoidance, the results indicate a positive link between tax avoidance and loan spreads. With a focus cash effective tax rates (ETRs), on average, a standard deviation (0.14) increase in tax avoidance results in an economically meaningful 7.50 basis points (bps) increase in loan spreads for the average firm. For the mean loan facility this tax avoidance premium corresponds to $554,250 ($739 million × 7.50 bps) additional interest cost per year and to $2.22 million over the mean loan term of four years. Importantly, however, the results also show that co-syndication intensity, which facilitates credit risk diversification, and loans with PPPs, which reduce borrower-lender frictions, mitigate a substantial portion of additional risk premiums demanded for tax avoidance.[5] In economic terms focusing on cash ETRs (CETR), CSI and the existence of PPPs mitigate, on average, 44% and 75% of the additional risk premium required for tax avoidance, respectively. Equally important, both CSI and PPPs work more effectively, ex-ante, in moderating additional risk premiums required for tax avoidance compared to covenants-based monitoring mechanisms alone.[6]

Next, I use a number of alternative econometric settings as well as sample and modelling specifications to further consolidate my observations.[7] First, I control for plausible self-selection into loan contracts with risk mitigating mechanisms (RMMs) in place using propensity score matching (PSM) and Heckman (1979) procedures (un-tabulated). The results using these alternative econometric settings validate the effectiveness of loan-level RMMs in moderating agency costs associated with tax avoidance. Moreover, in additional tests, the results are robust to the introduction of Financial Accounting Standards Board (FASB) Interpretation No. 48

[4] Examining loan price terms associated with PPPs, Asquith et al. (2005) find lower spreads for contracts with interest increasing performance pricing. However, one should note that, as the authors also documents, both interest-increasing and interest-decreasing performance clauses are effective in mitigating agency problems. Therefore, to the extent that these provisions generate borrower-lender incentive alignment, borrowers are likely to obtain contractual benefits which is the fundamental motivation underlying the analysis.

[5] I also examine the effects of the total number of syndicate participation (syndicate participation intensity), an additional measure of loan-level risk diversification, and lead arranger reputation, a measure of lender credibility, in moderating ex-ante contractual risks related to tax avoidance. Although I observe similar risk-moderating effects for all of these risk-mitigating factors available to lenders, these moderating effects do not consistently extend to risks related to tax avoidance when PPP and CSI variables are included. For brevity here, I do not tabulate these results and further discuss potential reasons for my observations in the results Section 4.

[6] These observations are robust to panel data fixed effects and generally hold for alternative measures of tax avoidance strategies including total and permanent book tax differences.

[7] The Reviewer's suggestions of these additional analyses are greatly appreciated

(FIN 48) in 2006, a quasi-natural setting that examines the corporate self-reporting of risky tax positions, and to tax shelter participation scores that control for the most egregious forms of tax avoidance (Hanlon and Heitzman, 2010). Finally, risk mitigation benefits achieved via lead-level risk diversification (CSI) and PPPs are robust to controlling for firm-level opaqueness/financial constraints, alternative measures of internal/external corporate governance and to potential rating shopping arguments where firms may obtain credit ratings solely to attract lenders for an upcoming loan issue. Moreover, adjustment of loan duration to facilitate enhanced and timely monitoring, and the formation of relationship banking via repeated lending, simply do not substitute for the non-tax and/or tax-specific risk-mitigation benefits achieved via syndicate co-syndication and performance-based provisions.

Second, I tackle the potential problem of reverse causality, where the positive link between tax avoidance and loan spreads could as well be a firm-level response to the already high cost of debt financing. I first use the industry's-median tax avoidance as an instrumental variable for tax avoidance incentives and obtain results that confirm earlier observations. Next, I use Supervisory Capital Assessment Program (SCAP) and the Comprehensive Capital Analysis and Review (CCAR), conducted in 2009 and 2011, respectively, as an instrumental variable for lending incentives. Acharya et al. (2017) show that following these capital adequacy tests banks reduce their credit supply to relatively risky borrowers. If tax avoidance, directly and/or indirectly increases firm-level risks, banks should be expected to ideally reduce financing for these firms and/or, at the very least, increase loan spreads and/or tighten up non-price loan terms. I show that, while these banks do not "credit-ration" tax avoiders more so following the CCAR, they do price in potential risks associated with tax avoidance to a greater extent in the post CCAR period compared to those banks that were not subject to the CCAR. Expectedly, risk and tax-risk mitigation benefits achieved via CSI and PPPs are more pronounced for banks that have been subject to capital adequacy tests compared to those that have not. Importantly, however, tax risk-moderation achieved via CSI and PPPs are equally observable for the same group of stress-tested banks in pre-and-post stress test periods.

Third, I control for loan ownership structure which translates into significant differences in loan pricing (Ivashina and Sun, 2011a; Lim et al., 2014; Beyhagi, Nguyen and Wald, 2017), covenant structures (Becker and Ivashina, 2016), as well as borrower selection (Harjoto, Mullineaux and Yi, 2006; Nadauld and Weisbach, 2012; Lim et al., 2014; Beyhagi et al., 2017). For example, evidence show that non-bank institutional investors primarily invest in high-risk/high-yield issuers (Nadauld and Weisbach, 2012; Lim et al., 2014; Beyhagi et al.,

2017) with the potential opportunity to benefit from secondary market trading for portfolio management purposes (e.g., Gupta et al., 2008).[8] I find that, in line with Lim et al. (2014) and Beyhagi et al. (2017), non-bank institutional investors and investment banks demand approximately 18 bps and 4 bps larger risk premiums for similar-risk borrowers in comparison to commercial banks, respectively. Moreover, I find that non-bank lenders, particularly institutional investors, do not demand additional premiums for aggressive levels of corporate tax avoidance. That is, given that these institutions predominantly lend to high-risk/high-yield borrowers they likely to perceive tax risk to be a small part of firm-risk that makes their borrower actually "high-risk". For loans with significant commercial bank participation syndicate-level risk mitigation mechanisms (SRMMs) continue to moderate substantial portion of contracting costs associate with tax avoidance.

Next, I investigate credit default swaps (CDSs) as an alternative borrower-specific risk mitigation mechanism, which enable lenders to transfer some or all of the loan specific risks back to the financial system (e.g., Parlour and Winton, 2013; Beyhagi, Massoud and Saunders, 2016). These credit protection contracts help enhance capital allocation (e.g., Duffee and Zhou, 2001) without increasing credit portfolio risks (e.g., Norden, Buston and Wagner, 2014).[9] I find that the ability to transfer borrower-specific risks back to the financial system via CDS contracts mitigates a substantial portion of risks associate with corporate tax avoidance.

Finally, I investigate the effects of having access to public bond markets on the contracting costs of tax avoidance. Both theoretical and empirical works in capital structure literature brings forward the concept of "*reputation acquisition*" where firms grow out of bank-specific lending towards arm's length financing as they gain credibility over time (Diamond, 1989, 1991; Datta, Iskandar-Datta and Patel, 1999; Cantillo and Wright, 2000; Denis and Mihov, 2003; Faulkender and Petersen, 2006; Colla, Ippolito and Li, 2010; Lin et al., 2013), largely to benefit from looser covenant structures inherent in public debt financing (e.g., Gilson and Warner, 1997). More importantly, evidence also suggests that firms tend to diversify-away from bank financing towards public debt financing, even if their banks are willing to lend more, (Rajan, 1992; Gilson and Warner, 1997) to mitigate inefficient contracting costs (hold-up problems) they face with their existing banks as a result of information monopolies (Rajan, 1992, Houston and James, 1996; Santos and Winton, 2008; Hale and Santos,

[8] For the purposes of this paper, I will refer to commercial banking groups as banks. That is, when stated non-banks it means non-commercial banks, incorporating both investment banks and institutional investors.
[9] Another fruitful avenue would have been to examine secondary markets loan trading which helps improve lender-liquidity by freeing-up regulatory capital and facilitate risk management. However, since I do not have access to the Loan Syndication and Trading Association database, which provides information on secondary loan market trading I am unable to control for this additional loan portfolio risk management tool.

2009; Ioannidou and Ongena, 2010; Schenone, 2010). In fact, access to public debt markets initiates long-lasting financial flexibility (Cantillo and Wright, 2000), enabling firms to effectively choose between public and bank financing depending on industry and/or market specific conditions (James and Smith, 2000). These arguments are likely to be stronger for syndicated loan markets, since Sufi (2007) shows that firms from all levels of the credit spectrum, from privately held unrated firms to investment-grade public firms, actively participate in this market. Strikingly, however, the literature examining the contracting costs of tax avoidance implicitly assumes that firms hold either bank-originated or arm's length public debt financing but not both facilities concurrently (Shevlin et al., 2013; Hasan et al., 2014), which stands as an important oversight of the theoretical and empirical evidence provided in capital structure literature.

Based on the above discussion, I argue that the ability to access public bond markets is an indication of "acquired credibility" which reflects, in *retrospective thinking*, superior firm-level information environment and financial flexibility.[10] Accordingly, I conjecture that simultaneous access to both public and private debt financing will, to some extent, alleviate tax-specific informational asymmetries and offset associated risk premiums. Using around 2400 public bond issues matched to the syndicated loan sample I compare the contracting costs of tax avoidance for firms with and without outstanding public debt where the latter group is likely to have greater information asymmetries and/or financial constraints. In line with a priori expectations, the magnitude of the positive link between tax avoidance and loan spreads is economically (and statistically) larger for firms that have no access to public debt markets in comparison to firms that do. In economic terms, for a given standard deviation (0.14) decrease in CETRs, access to bond markets alleviates more than half (4.86 bps) of the additional risk premium required (9.15 bps) for tax avoidance. I obtain both qualitatively and quantitatively similar results using sub-samples that match firms based on their observable characteristics leaving public debt market access as a treatment factor. Furthermore, access to public debt markets and syndicate-specific risk-mitigating functions are generally incrementally effective at moderating risk premiums for tax avoidance and complement one another.

Overall, the paper makes several notable contributions to the tax, finance and banking literatures. First, finance and banking literature argues on agency and credit risk mitigation benefits associated with loan formation and

[10] In this paper, I am neither interested in nor capable of (given data constraints) testing theoretical models of capital structure (e.g., Diamond, 1989, 1991) using forward looking models as conducted by Datta et al. (2011). Accordingly, I define the term *acquired credibility* as a backward looking (static), rather than forward looking, proxy for firms' financial and/or informational credibility.

contract design alternatives (e.g., Jensen and Meckling, 1976; Smith and Warner, 1979; Simons, 1993; Armstrong, 2003; Nini et al., 2009; Chava et al., 2010), These studies, however, generally do not provide a solid empirical analysis that concentrates on a particular firm-level risk taking incentive.[11] In this paper, I exploit corporate tax avoidance as an ideal setting and empirically test for the effectiveness of agency and credit risk mitigation mechanisms available to lenders in alleviating ex-ante risks associated with a particular risk-taking incentive (i.e., tax avoidance). In particular, I observe that the standalone tax risk premium documented in the literature (Shevlin et al., 2013; Hasan et al., 2014) is largely eliminated for loans with larger co-syndication and performance pricing provisions, which facilitate credit risk diversification and borrower-lender incentive alignment, respectively. Hence, my analysis documents significantly lower contracting costs for tax avoidance than previously observed, which brings an agency-theoric explanation as to how corporations can attain persistently low tax rates (e.g., Dyreng et al., 2008) without incurring material agency-specific costs.

Second, I show that loan structures with large number of co-leads and performance pricing provisions are more effective, ex-ante, in mitigating tax-specific risks related to elevated levels of tax avoidance in comparison to both maintenance-based and incurrence-based (lite) covenant structures. These results lend credence to the fundamental arguments made in Francis et al. (2016) and suggest that maintenance-based covenant structures do not necessarily establish ex-ante commitment mechanisms. Instead, these covenant structures maximize contracting benefits via either close monitoring, which result in frequent loan renegotiations with the accrual of new information (Roberts and Sufi, 2009) and/or via state-contingent transfer of control rights are triggered, following technical/actual defaults (Roberts and Chava, 2008; Nini et al., 2009; Christensen, Nikolaev and Wittenberg-Moerman, 2016). The analysis presented, therefore, extends the evidence in studies focusing on performance provision clauses (e.g., Asquith et al., 2005; Ball et al., 2008; Manso et al., 2010) to the tax avoidance literature.

Third, I document that the ability to deploy some or all loan-specific risks back into the financial system via CDS contracts also substantially alleviates standalone risks associated with tax avoidance. This observation extends the credit risk diversification benefits associated with CDS contracts to the corporate tax avoidance setting. In addition, tax-specific risks are not necessarily priced in loans with significant participation of non-bank lenders such as investment banks and institutional investors. This observation extend the growing body of

[11] One exception to this argument, to the best of my knowledge, is the study by Chava et al (2010) that focuses on managerial entrenchment and fraud.

research that investigates credit pricing of non-commercial bank lenders (Harjoto et al., 2006; Ivashina and Sun, 2011a, Lim et al., 2014; Beyhagi et al., 2017) to incorporate corporate tax avoidance as a test of a particular risk-taking incentive. In particular, I argue that non-commercial bank lenders, particularly institutional investors, are likely to understand potentially elevated risks associated with these borrowers and demand higher risk premiums that account for tax-specific risks alongside the other more eminent firm-level risks to compensate for their expected returns.

Finally, extending the analysis in previous studies (Hasan et al. 2014, Shevlin et al., 2013), I show that simultaneous access to public and private debt markets effectively mitigates agency costs related to all forms of tax avoidance strategies. These observations extend the empirical evidence on the contracting costs related to inefficient hold-up problems associated with bank financing (Santos and Winton, 2008; Hale and Santos, 2009; Ioannidou and Ongena, 2010).

Altogether, the study documents potential use of alternative contract design mechanisms through which tax-specific risks are either diversified-away among the syndicate-lead, transferred back onto either the borrower in question and/or the financial system. Therefore, the study provides a new and important perspective into contracting costs of tax avoidance within an agency framework (Hanlon and Heitzman, 2010) and adds to the link between banks and tax avoidance incentives documented in the prior literature (Gallemore, Gipper and Maydew, 2016). Pertinent to the ongoing research agenda in tax literature (see Hanlon and Heitzman, 2010), these results help identify channels through which firms might mitigate non-tax costs associated with tax avoidance that enables them to pursue tax avoidance strategies to persistently reduce corporate tax burden without incurring materially large agency costs (e.g., Dyreng et al., 2008; GAO, 2008, 2016).

2. INSTITUTIONAL KNOWLEDGE AND HYPOTHESIS DEVELOPMENT

2.1. The Link between Tax Avoidance and the Cost of Debt Financing

Corporate taxes make up a sizeable portion of total profits and thus, provide managements with fundamental incentives to pursue tax avoidance strategies that aim to reduce the firm-level tax burden (e.g., Desai et al., 2007). For example, a recent GAO (2016) report documents that U.S. corporations that file Schedule M-3 forms paid only 13%of their pre-tax worldwide income in U.S. federal income taxes. This ETR level reaches to 17%when foreign, state and local income taxes are included, a ratio far below the statutory 35%. In addition, around 55%of all large U.S.-controlled corporations reported no federal tax liability in at least one year between 1998 and 2005 (GAO, 2008). Corporations pursue alternative avoidance strategies extending from the naïve

(e.g., deferral strategies) to the ultra-aggressive (e.g., tax shelters) positons for obvious real (i.e., cash) and/or financial benefits. Examining cross-sectional differences among firms, recent evidence documents a positive link between tax avoidance and firm value for firms with better corporate governance (e.g., Desai and Dharmapala, 2009, Wilson, 2009; Goh et al., 2016), income-mobility (DeSimone and Stomberg, 2012) and financial constraints (Ayers et al., 2011). On the other hand, every tax avoidance strategy comes with anticipated risks and, theoretically, firms pursue a given tax strategy only when the benefits of doing so exceeds its costs (e.g., Blouin, 2014; Scholes et al., 2008). For example, benign strategies involving tax-exempt investments (e.g., municipal bonds) arguably have no tax-position uncertainty, whereas, ultimately aggressive active tax shelter participation will (e.g., Hanlon and Slemrod, 2009). Tax risk, although lacking clear empirical verification (Blouin, 2014; Guenther, Matsunaga and Williams, 2016), can affect the contracting costs of tax avoidance in (at least) two complementary routes.

First, depending on the overall tax aggressiveness, tax avoidance may subject firms to escalated regulatory scrutiny. Tackling corporate tax avoidance has never been a more important objective for regulators and governments both in the United States and around the world. Corporations face rigorous domestic and international regulatory (Desai, Dyck and Zingales, 2007; Hoopes, Mescall and Pittman, 2012; Bozanic et al., 2016; Lennox et al., 2015; Kubick et al., 2016) and public attention (Dyreng et al., 2016; Chen et al., 2015) on their tax strategies. In the United States, the FASB implemented FIN 48 in 2006 and Schedule UTP in 2010 requiring firms to estimate, report, and detail relevant information on uncertain tax positions.[12] Similarly, in the international arena, the Organization for Economic Co-operation and Development (2013) project on Base Erosion and Profit Shifting provides 15 action plans that aims to increase transparency in tax reporting and transactions to align corporate profits with jurisdictional economic value creation. Altogether, tax risk and tax-risk management have become a boardroom subject (KPMG, 2004; Donohoe, McGill and Outslay, 2014) with firms agreeing on increasingly greater tax-specific risks related to stricter compliance terms and tax audits (E&Y, 2014).

Second, tax avoidance can decrease corporate transparency (Balakrishnan et al., 2011), facilitate managerial rent diversion (Desai and Dharmapala, 2006, 2009) and is generally illustrated with more aggressive financial reporting (Frank et al., 2009). All of these factors increase agency frictions between borrowers and lenders. For

[12] The FASB has plans to further enhance information processed in tax accounts. (see http://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176168335332&acceptedDisclaimer=true)

example, lenders value decision-useful timely accounting information (e.g., Watts, 2003; Ahmed et al., 2000; Ball et al., 2008; Beatty, Weber and Yu, 2008) when firms are more conservative in anticipating profits in comparison to anticipating losses. Moreover, the complex nature of tax accounting and inconsistent disclosure of tax-specific information (e.g., Plumlee, 2003; De Simone and Stomberg, 2012; Robinson and Schmidt, 2013) further increase information asymmetries between borrowers and creditors with regards to tax-specific risks undertaken. At the intersection of the above discussion lies the fact that, unlike equity holders who have residual claims, banks have fixed claims on firm performance in that while they have limited participation in future residual income, they bear significant downside risks (e.g., Shevlin et al., 2013; Hasan et al., 2014). Therefore, regardless of their real and/or financial benefits, creditors are likely to focus more on inherent risks associated with different levels and forms of tax avoidance. Accordingly, banks "price-protect" their exposure to a given firm by pricing in additional premiums for bearing an incremental risks related to tax avoidance. My first hypothesis is as follows.

H1: Lenders require additional premiums to compensate for inherent risks in alternative forms and levels of tax avoidance absent loan-specific risk mitigation mechanisms in place.

2.2. Syndicated Loan Markets and Risk Mitigation

Syndicated loans are financing arrangements provided by a syndicate (group) of lenders and incorporate a number of risk mitigation mechanisms available to lenders that are not, in most cases, accessible via single bank and/or arms' length financing. Syndicates are usually underwritten by large/senior banks with strong lending relations and the capability to originate a loan deal and then allocate the loan proceedings to interested loan participants (Altunbas, Gadanecz and Kara, 2006). Accordingly, syndication allows lead agents to spread credit commitment among participating lenders and diversify their individual exposure to a single borrower and/or industry (e.g., Simon, 1993; Armstrong, 2003; BIS, 2003; Mora, 2015). The ability to allocate loan amounts among other lenders allows syndicate arrangers (usually large banks) to provide existing and/or new customers access to sizeable credit facilities that would otherwise exceed a single lender's regulatory capital limits (e.g., Simon, 1993; Armstrong, 2003; Mora, 2015).

On the other hand, contracting relations between borrowers and lenders are subject to informational frictions. These agency issues arise when lenders cannot credibly verify borrowers' expected future performance and when managers have incentives to divert corporate wealth from lenders to shareholders, respectively (e.g., Asquith et al., 2005). Syndicate arrangers can form efficient ownership structures to tackle these frictions

between borrowers and lenders which directly contribute to adverse selection and moral hazard problems between lead and non-lead syndicate participants.[13] Moreover, amid the intense competition for lending business syndicate leads are increasingly formed by large groups of credible banks that share the underwriting, monitoring and administering responsibilities of loans – a strategy that also alleviates information asymmetries among the loan participants regarding the credibility of the borrower in question. This definitive trend in syndicate formation is an indication of banks' co-operation in taking appropriate risks to more effectively compete with public debt markets for corporate lending business (e.g., Armstrong, 2003; Altunbas et al., 2010). For example, while 57%of the total loans made in 1994 have a single lead agent underwriting loans, only 17% of the loans are formed by a single lead agent in 2016 in total un-adjusted Thomson Deals database.[14] These large banks charge upfront fees for underwriting, administration and monitoring of the loans (Dennis and Mullineaux, 2000) and are likely to commit to rigorous and ongoing monitoring. Given that corporate tax avoidance is inherently risky and potentially elevates adverse selection and moral hazard problems (see Section 2.1), I expect risk-diversifying syndicate formation structures to alleviate ex-ante risks inherent in alternative levels and forms of tax avoidance.

Moreover, the pricing of syndicate loans has become increasingly flexible with the development of performance pricing provisions (PPPs) as hybrid screening/monitoring mechanisms that utilize price and non-price terms simultaneously (Ball et al. 2008). PPPs are pricing grids that index the interest rate charged to a borrower's performance either measured using credit ratings and/or accounting-based financial information. These provisions automatically increase/(decrease) loan spreads if a borrower's performance improves/(deteriorates) beyond/(below) pre-defined thresholds which increases administrative and monitoring flexibility for the syndicate agents. For example, Asquith et al. (2005) documents that PPPs effectively alleviate adverse selection and moral hazard problems between borrowers and lenders and that inclusion of interest-increasing performance provisions reduce loan spreads. Moreover, Manso et al. (2010) show that firms that choose loans with performance pricing provisions are more likely to improve their credit ratings compared to firms choosing fix-rate loans. Accordingly,

[13] Adverse selection among syndicate participants occurs when the syndicate lead has privileged and private information on a borrower's true creditworthiness that is not efficiently shared with a non-agent loan participants (Mora, 2015). So far, however, no empirical support of such opportunistic behavior has been found (Simons, 1993; Pichler and Wilhelm, 2001; Lee and Mullineaux, 2004; Panyagometh and Roberts, 2010; Chaudhry and Kleimeier, 2013). Since banks earn up to 200 bps of the total loan proceeds in underwriting fees and compete with public debt markets for corporate lending business, this behavior proves to be too costly in practice.

[14] Section 4.1, on descriptive statistics provides a more detailed discussion on this topic.

by providing ex-ante disciplinary incentives, PPPs provide fair allocation of risk premium should the borrower performance improves and prevents costly pre-payment and resultant refinancing risks (Asquith et al., 2005). Given contractual effectiveness in mitigating borrower-lender frictions I expect PPPs to alleviate ex-ante risks inherent in alternative levels and forms of tax avoidance.[15]

H2: Syndicate structures that facilitate credit risk sharing (CSI) and incentive-alignment (PPPs) among the lending parties will moderate some or all of contracting costs associated with alternative levels and forms of tax avoidance.

2.3. Loan Ownership Structure

One of the primary drivers of growth in the syndicated loan market is the influx of non-commercial and non-investment bank participants since the start of the early 2000s (e.g., Ivashina and Sun, 2011a; Shivdasani and Wang, 2011; Nadauld and Weisbach, 2012; Lim et al., 2014), including hedge funds, pension funds, mutual funds, collateralized loan obligations (CLOs), private equity firms, and insurance companies.[16] Increasingly developed secondary loan market trading and the engagement of credit rating agencies in the private lending market, coupled with yield-seeking behavior in a competitive lending environment, have been the major catalysts behind non-bank involvement in private lending markets. For example, during the 2007 pre-crisis peak, institutional investors funded 62% of the leveraged loan segment, up from 15% in 2001 (Ivashina and Sun, 2011a). In particular, these financial institutions increased their presence in loan segments once dominated by commercial banks which had retracted either given regulatory capital constraints that impose lending limitations and/or as part of internal loan risk amendments (e.g., Ivashina, 2009; Lim et al., 2014). Research shows that the influx of this new group of players in the private lending markets, altering the traditional bank-only composition of debt ownership structure, has resulted in significant differences in loan pricing, covenant structure and maintenance applications as well as borrower selection depending on the type of institutions in a given loan facility.

Evidence shows that, compared to traditional banks, institutional investors overwhelmingly lend to high-risk/high-yield borrowers (Harjoto et al., 2006; Nadauld and Weisbach, 2012; Lim et al., 2014; Beyhagi et al., 2017), apply demand larger premiums on loans to borrowers with similar risks (Harjoto et al., 2006;; Lim et al., 2014; Beyhagi

[15] Asquith et al. (2015) distinguish between interest-increasing and interest-decreasing performance provisions. I do not make such distinction for the purposes of this study for two reasons. First, unlike Asquith et al. (2005), I am not interested in identifying the determinants of these provisions. Second, as Asquith et al. (2005) also documents, both interest-increasing and interest-decreasing performance clauses are effective at mitigating adverse selections risks.

[16] For the purposes of this paper, I also split banks into commercial, investment banking and institutional investor groups. See Section 3.4 for details.

et al., 2017;), and are more likely to use incurrence-based ("covenant-lite") covenants (e.g., Becker and Ivashina, 2016).[17] These differences in credit pricing and lender choice can be summarized by distinguishing between different groups of lender profiles. For example, compared to commercial banks, investment banks and in particular, institutional investors (e.g., hedge funds) are subject to much less stringent regulation (Lim et al., 2014). Unlike commercial banks they are not subject to risk-based capital requirements (i.e., Basel III), where the proportion of safety capital is set higher for riskier borrower profiles/loans. These regulatory capital pressures, cited as one of the primary drivers of capital influx by institutional lenders into high-risk/high-yield borrowing segment, may also drive loan premiums observed for non-bank facilities (e.g., Harjoto et al., 2006; Lim et al., 2014). In particular, Lim et al. (2014) argue that the yield premium observed in institutional loans stems from the fact that these lenders serve financially-constrained borrowers whose capacity to obtain debt financing is particularly sensitive to lending market supply/demand conditions, regulatory capital being one of them. This observation is in line with the evidence in Acharya et al. (2017), documenting a significant reduction in loans made to relatively risky borrowers by U.S. banks following regulatory capital adequacy tests.

Moreover, unlike commercial banks, investment banks and institutional investors are unable to tap into (mostly insured) deposits and/or overnight financing and, instead, rely on investor financing where maturities and/or funding reliability depend on the type of investment strategy adopted.[18] For example, while hedge funds enjoy long-term lock-up periods mutual funds are subject to fund withdrawals on demand, and thus operate on very limited funding security (e.g., Beyhagi et al., 2017). One way to compensate for funding risk is to charge larger premiums which may explain differences in the credit pricing of institutional and investment bank lending facilities (e.g., Harjoto, 2006; Beyhagi et al., 2017). Finally, non-bank lenders may require larger spreads to compensate for relatively costly screening and/or loan renegotiation (Demiroglu and James, 2011; Beyhagi et al., 2017). Pertinent to the analysis, regardless of their reasons, these differences in loan ownership structures may impact the direct link between tax avoidance and loan contracting costs in several ways. First, one might observe that non-bank lenders may tolerate risks associated with corporate tax avoidance regardless of the loan-specific

[17] In contrast, Ivashina and Sun (2011), directly, and Becker and Ivashina (2016), indirectly, documents lower spreads for loans with significant institutional investor involvement. On the other hand, focusing only on investment banks, Harjoto et al. (2006) document that this price difference will depend on whether the loan in question is leveraged and/or the presence of an additional commercial bank in a given loan package. None of these studies, however, go through the detailed data mining process that more precisely "name-matches" different lender types to loan facilities as in Lim et al. (2014), Beyhagi et al. (2017) and in this paper,

[18] Note that Harjoto et al. (2006) document that some investment banks are able to access to deposit financing through their bank or bank-like subsidiaries. Examples include Merrill Lynch, Morgan Stanley and Lehman Brothers.

risk mitigation mechanisms. Given that non-banks overwhelmingly lend to high-risk/high-yield borrowers, they understand potentially elevated risks associated with corporate tax avoidance alongside with other (bigger/smaller) risks that makes these borrowers high risk.

Second, non-banks can take on either simultaneous and/or on-demand short positions in any of the companies/industries they have been exposed to in a given lending transaction. In particular, by participating in the syndicate, these companies might obtain confidential information with regards to the prospects of the borrower in question that is otherwise unavailable. For example, Ivashina and Sun (2011b) show that institutional investors use private information acquired in the loan market to trade in public securities which include taking both long and short positions depending on the information acquired on the lending side. A similar argument is also made by Brophy, Ouimet and Sialm (2009) for hedge funds. Accordingly, potential risks associated with tax avoidance can be entirely offset by taking a short position in the borrower, should the investors consider shorting an appropriate portfolio strategy.[19]

Alternatively, non-bank lenders may require additional tax-specific risk premiums as they do not specialize in timely monitoring and information acquisition, if needed (e.g., Demiroglu and James, 2011; Beyhagi et al., 2017), regarding direct or indirect agency problems associated with tax aggressive firms (e.g., Shevlin et al., 2013; Hasan et al., 2014), as commercial banks do. This line of thinking is in line with tax-aggressive firms borrowing predominantly from the private lending channels rather than arm's length public debt markets (Hasan et al., 2014). It is therefore, ex-ante, unclear, whether bank and non-bank lenders have the same risk-perception towards corporate tax avoidance. My fourth hypothesis is therefore as follows.

H3: Bank and Non-bank lenders have similar credit pricing strategies for loans to tax-aggressive borrowers.

[19] Moreover, research (Gupta et al., 2008; Kamstra et al., 2014) shows that institutional investors are more likely to invest in facilities with secondary market trading and/or in facilities with such potential since institutional demand is observable to potential lending candidates (e.g., Ivashina and Sun, 2010a). Hence, these investors can utilize secondary markets as part of their portfolio risk-management strategies, which would entirely transfer borrower-specific risks, including tax risk, to the financial system. However, the ability to utilize secondary market loan operations are unlikely to affect non-bank institutions' pricing of firm-specific risks, including tax-risk, given that the secondary market trading is also available to commercial banks (e.g., Santos and Nigro, 2009; Kamstra et al,, 2014).

2.4. CDS Contracts as a Borrower-Level Risk-Management Option

Lenders can also take advantage of CDSs, which that enables them to deploy some or all of their exposure to a particular borrower back onto the financial system. I examine CDS mechanisms as an alternative risk-management measure for a number of reasons. First, CDS trading is only available as a credit protection tool for around 10% of "systematically-important" U.S. firms (Uzmanoglu, 2015), which collectively account for nearly 70% of the public U.S. firms. Second, CDS contracts significantly enhance firm-level information environment (Acharya and Johnson, 2007) and front-runs equity and bond markets in generating information with regards to firm riskiness and expected credit losses (e.g., Berndt et al., 2005). Finally, CDS contracts can significantly alter lenders' loan origination, pricing and/or monitoring incentives.

In this respect, two alternative lines of thinking dominate the CDS-based research theme, namely risk-taking and risk-mitigating incentives associated with CDS contracts. For example, theoretical work indicates that banks' usage of CDS contracts can lead to increased bank-level risk taking, where banks tend to issue riskier loans and/or engage in sub-optimal levels of delegated monitoring (Morrison, 2005). This argument received empirical support documenting that banks that are more active in CDS markets tend to originate riskier assets (Phuang, 2015) and these CDS-active banks mostly have insufficient regulatory capital positons (Shan, Tang and Yan, 2014). Similarly, evidence shows that, lenders are generally more likely to originate (sizeable) loans (e.g., Saretto and Tookes, 2013; Shan et al., 2014) and apply price concessions (e.g., Ashcraft and Santos, 2009) when a given borrower has single-name CDS contracts trading on their outstanding debt.

Moreover, the-risk mitigating argument states that CDS contracts may serve as a crucial risk-management tool that eliminate all or some of the borrower-specific risks, increase lending capacity without increasing credit portfolio risks (e.g., Norden et al., 2014) and improve capital allocation to more efficient loans (e.g., Duffee and Zhou, 2001). In fact, more recent theoretical work by Bolton and Oehmke (2011) argues that creditors actively protected with CDS contracts become "empty creditors," and are more likely to opt for bankruptcy proceedings rather than renegotiate loan terms, given that their primary positions are protected via CDS payment in a case of bankruptcy. This is an extreme case in which lenders will have a negative economic interest in the borrowers. Pertinent to the analysis in this paper, I am only interested in the overall risk-mitigating benefits that accrues to lenders via CDS contracts availability, rather than the overall price concessions obtained by the borrowers. Hence, I argue that the ability to deploy some or all of a borrower-specific exposure back onto the financial system via

CDS contracts should substantially offset potential risks associated with tax avoidance as well as other prominent risks.[20] My fifth hypothesis is therefore as follows.

H4: Potential risks associated with corporate tax avoidance are offset for loans to borrowers with CDS contracts available.

2.5. Alleviation of Information Asymmetries via Public Bond Markets

Firms have multi-tiered capital structures utilizing both relationship-led bank financing and arms' length public debt markets (Rauh and Sufi, 2010). A large and comprehensive literature links this observation to a number of supply and demand-side mechanism that govern firms' ability to access alternative borrowing sources. For example, bank-led financing adds the greatest value to small, young and riskier firms with substantial information asymmetries and in turn, bank financing seems to be the ultimate resort for this same group of firms (e.g., Diamond, 1984, 1989, 1991; Ramakrishnan and Thakor, 1984; Chemmanur and Fulghieri, 1994; Cantillo and Wright, 2000; Lin et al., 2013). Banks have the expertise to acquire and process specialized information regarding expected future performance and the credibility of borrowers with weakly verifiable information (e.g., Diamond, 1991; Fama, 1985; James, 1987; Rajan and Winton, 1995; Boot, 2000; Bharath et al., 2008). Commensurate with the borrowing firm's risk profile, banks offer less rigid funding arrangements that are easier to re-negotiate in comparison to the contractual terms observed in public debt financing. For instance, Roberts and Sufi (2009a) documents that banks frequently re-negotiate loan terms with borrowers depending on the arrival of new information concerning firms' credit quality, investment opportunities and macroeconomic fluctuations. This contractual flexibility, however, necessitates the continuous acquisition of specialized information regarding expected future performance and credibility of the borrower in question (Diamond, 1991, Fama, 1985, James, 1987; Rajan and Winton, 1995) and monitoring via the application of strict covenant clauses that are much more comprehensive than those observed in public debt markets (e.g., Gilson and Warner, 1997; Begley and Freeman, 2004; Kwan and Carleton, 2010).

Although these covenant clauses are successful at alleviating adverse selection and moral hazard problems associated with low-credit quality firms with significant information asymmetries (e.g., Diamond, 1984, 1989, 1991; Ramakrishnan and Thakor, 1984; Berlin and Mester, 1992), the benefits of such clauses do not equally extent to established firms with high credit quality and low information asymmetries (e.g., Diamond, 1989, 1991;

[20] Alternative purposes for CDS trading as well as additional benefits/costs incurred by the borrowers are outside the scope of this study.

Berlin and Mester, 1992; Houston and James, 2002; Denis and Mihov, 2003). For example, Diamond (1989) argues that as firms build their reputational capital they upgrade from bank-led financing to arm's length financing. Supporting this argument, empirical evidence documents that once firms acquire a certain level of financial and reputational credibility they value public debt with less invasive covenant terms over traditional bank financing (e.g., Datta et al. 1999; Cantillo and Wright, 2000; Faulkender and Petersen, 2006; Colla, Ippolito and Li, 2010; Lin et al., 2013). Therefore, the empirical evidence overwhelmingly supports supply-driven factors influencing firms' ability to access additional non-bank financing and that credit constrained and informationally opaque firms are more likely to be cut-off from these public financing alternatives (e.g., Denis and Mihov, 2003, Faulkender and Petersen, 2006). For example, Faulkender and Petersen (2006) find that firms with access to public debt markets have, on average, 35% more debt than firms that do not. Similarly, Denis and Mihov (2003) show that the primary determinant of a firm's access to public debt markets is its credit quality. In line with these arguments, the same firm characteristics that make firms bank-dependent also increase the costs of non-bank external financing (Houston and James, 2001). For example, evidence argues on economies of scale to public debt financing showing that it is only cost-effective to issue public debt if loan size exceeds $100 million (Carey et al., 1993; Krishnaswami, Spindt and Subramanian, 1999). Accordingly, given the significant economies of scale in public debt financing, firms with large financing needs are likely to find it more cost-efficient to borrow in public markets compared to bank financing (Houston and James, 2001).

Moreover, firms can also tap into public debt markets to alleviate hold-up problems associated with relationship lending (Rajan, 1992; Houston and James, 1996) and gain relative bargaining power in re-negotiation terms should the existing contract terms become sub-optimal with the arrival of new positive information regarding future firm performance (Rajan, 1992). Supporting this argument, Hale and Santos (2009) show that first time access to public bond markets reveals new information on firms' financial strength to public debt markets. This set of information arise from additional documents filed for SEC registration, information released via underwriters as part of their placement efforts, credit ratings assigned by rating agencies and the expert analysis from bond analysts and investors. For example, Moody's and S&P both have the policy to rate public bond issuers whether or not they have a particular rating agreement with the issuing firm. The authors show that following their first public bond issue, a priori bank-dependent firms are able to obtain up to 50 bps lower interest rates as the existing bank now

faces increased competition from public debt markets and a priori un-informed banks.[21] Similarly, Santos and Winton (2008) and Ioannidou and Ongena (2010) show that recent public debt market access decreases bank loan spreads by 95 bps and 87 bps, respectively. Moreover, Santos and Winton (2008) document that banks with exploitable information over bank-dependent firms increase their loan rates to these firms during recession times by more than is justified by the borrowers' risk alone. In fact, the authors show that banks raise their loan rates (by 28 bps) only for these bank-dependent firms and not for firms with access to public debt markets. The analysis of Ioannidou and Ongena (2010) reveals that, in a competitive corporate lending environment, banks systematically form information monopolies following the initiation of a new lending relationship. All these aspects of relationship lending indicate that firms have sensible reasons to diversify-away form single lending structures once they acquire certain level of reputation capital.

These observations suggest two inter-connected channels through which firms are able to optimize their contracting costs. First, via the information-dissemination channel (Santos and Winton, 2008; Hale and Santos, 2009; Ioannidou and Ongena, 2010) firms are able to eliminate hold-up costs related to bank financing and reduce loan spreads related to informational monopolies. This argument generally supports the evidence in Bharath et al. (2008) who documents higher accounting-based information quality for firms that borrow from public debt markets. Second, once firms enter public debt markets they are likely to utilize these markets even after their financial attributes fall below the original entry threshold (Cantillo and Wright, 2000). Therefore, the ability to access to public debt markets generates long-lasting financial flexibility through which firms can effectively choose between public and bank financing depending on industry and/or market specific conditions (James and Smith, 2000). In the light of the above discussion, I classify firms with simultaneous access to both public and syndicate loan markets as firms with *acquired credibility*, which reflects, in retrospective thinking, superior firm-level financial flexibility and information quality.[22] Accordingly, I propose the following final hypothesis:

H5: Acquired credibility via simultaneous access to both public and private debt financing will mitigate some or all of adverse selection and moral hazard problems associated with alternative levels and forms of tax avoidance.

3. RESEARCH DESIGN AND SAMPLE SELECTION

[21] In a similar analysis Schenone (2010) use public equity initial public offering as an information shock that erodes existing bank's informational monopoly and confirms the argument that banks do price their informational monopolies for bank-dependent firms (Rajan, 1992).

[22] For the purposes of this study, the term *acquired credibility* is retrospective in thinking, given that I limit the sample to profitable firms alone, and do not aim to test forward looking interaction between contracting costs of tax avoidance and capital structure theories.

3.1. Sample Construction

The data for syndicated and public debt financing are obtained from the Thomson One Deals database which offers a very similar coverage as the SDC Platinum and DealScan databases, which are widely used in empirical banking research.[23] Syndicated loans data from this database are then matched to the Compustat database to obtain relevant financial information. Following Hasan et al. (2014), I use facility-level data where a given company can have more than a single loan issue in a given year and I follow past research in tax literature (e.g., Dyreng et al., 2008; Drake et al., 2015) and eliminate financial and utility firms (SIC codes 6000-6999 and 4900-4999, respectively), firms that are domiciled outside of the U.S. (Compustat: FINC=0) and loss-making firm year observations.[24] Moreover, I truncate CETR data to be in the [0,1] interval and exclude firm-years with an average asset size of less than $10 million, since the IRS considers these firms small corporations. Finally, following Dyreng et al. (2008), I drop firms with less than 10 years of observations. Altogether, these sample selection criteria result in a maximum of 6456 loan-year observations and vary with alternative tax avoidance strategies and or sample specifications investigated.

I obtain data regarding loan ownership composition by using the information from the Thomson One Deals database and the S&P Capital IQ platform. Unlike the DealScan database, the Thomson One Deals database does not provide information with regards to the lender types in a given loan facility. The database does provide information whether a given loan facility has an institutional investor involvement, however, this information may not be reliable given that similar information from other vendors seems to have general problems (Lim et al., 2014).[25] More importantly, the information is binary and does not quantify the information with regards to loan ownership structure. For example, one cannot identify what proportion of a given loan package is made up of non-commercial lenders such as investment banks and/or institutional investors. This information is important, given that loan ownership structure affects loan pricing and secondary market liquidity. To obtain information on different lender types, I rely on two-stage string matching algorithms similar to the approaches in the literature (e.g., Lim et al., 2014; Beyhagi et al., 2017).

[23] There exists some differences among these data sets, the most relevant of which will be discussed throughout the text.

[24] Although this is an unorthodox approach in finance research, it is the most prevalent practice in tax-based research. Elimination of these firms helps one meaningfully interpret tax avoidance measures. Moreover, loss making firms do not have the same tax incentives as profitable firms.

[25] The INSTITUTIONAL report item in the Thomson One Deals database provides a binary information on institutional involvement in a given loan tranche.

First I string-match the information from the Capital IQ platform to the loan-level lead and participant names provided by the Thomson One Deals database. I identify the numbers of the commercial bank, the investment bank and institutional investor involvement at the facility-level. This string matching will have proximity errors, which are then manually checked with the actual lender information from the Bloomberg and S&P Capital IQ platforms. The matching procedure considers the most obvious classification changes associated with the lending institutions. For example, the string match considers JP Morgan an investment bank before its merger with Chase Manhattan Corp in 2000, after which it obtained commercial banking status. Similarly, Goldman Sachs and Morgan Stanley are treated as commercial banks following their conversion to deposit institutions in 2008, but as investment banks in the pre-conversion period. Finally, I obtain CDS data for 2004 and onwards from the S&P Capital IQ platform.[26] In line with the main sample construction I eliminate CDS contracts associated with financial companies (SIC: 6000-6999).

3.2. Tax Avoidance Measures

Corporations use a pool of avoidance strategies to manage their overall tax burden ranging from the least to the most aggressive (Hanlon and Heitzman, 2010). Therefore, I use tax avoidance proxies that broadly capture alternative forms of tax planning strategies with different ex-ante risk profiles (e.g., Scholes et al., 2009; Blouin, 2014). These include CETRs, long run (5-year average) CETRs (LRCETR) and permanent book-tax differences (PBTDs). The CETRs, calculated as worldwide cash taxes paid (Compustat: TXPD) divided by pre-tax income (Compustat: PI) adjusted for special items (Compustat: SPI), captures the effects of deferral as well as permanent tax avoidance strategies. This measure reflects both certain (e.g., municipal bond interest) and uncertain tax positions (e.g., tax shelters), and is arguably the most direct corporate tax burden measure (Edwards et al., 2016). LRCETRs eliminate yearly fluctuations in the CETR measure and provide a more stable outlook on corporate tax avoidance persistency (Dyreng et al., 2008). These two measures are arguably the most direct representation of overall corporate tax avoidance (Edwards, Schwab and Shevlin, 2015). PBTDs, calculated as the difference between book-tax differences (BTDs) and temporary book tax differences, captures the permanent portion of the book-tax differences. All effective tax rate measures are truncated in the [0,1] interval in line with the literature (e.g., Dyreng et al., 2008).

3.3. Composite Measure of Loan Quality

[26] This is the earliest date at which the Capital IQ platform started providing this particular information.

A typical loan issue can incorporate innovative loan formation and contractual design alternatives simultaneously. Moreover, any given loan may signal distinguished level of the credibility of the syndicate lead based on lender reputation and loan ownership ratios. Merely focusing on a single aspect of loan formation and contractual design alternatives, such as lead-level diversification and/or performance provisions, may fall short of capturing overall expected benefits from risk mitigation and loan quality. To circumvent this empirical challenge, I generate a composite loan quality measure, LQM, which encompasses lender credibility and syndicate-level risk management mechanisms. To do so, I first rank the total number of co-leads, loan participants, reputable lead arrangers and the proportion of syndicate-lead loan ownership into their respective quintiles. Next, I scale the quintiles to be in [0,4] interval and calculate an overall quality score by summing the values of each risk mitigating factor. To this measure I add four if the firm has PPPs embedded in loan terms and zero otherwise. Finally, I re-rank this preliminary score into its quintiles and identify observations in the top quintile as issues with access to the highest quality loan structures that also encompasses the most comprehensive syndicate-level risk-mitigating mechanisms accessible. Accordingly, the dummy indicator LQM takes the value of one if the measure is at the top quintile and zero otherwise. The estimation procedure follows similar steps as in the income mobility measure used by De Simone, Mills and Stomberg (2015).

3.4. Measures of Non-Commercial Bank Intensity

I measure institutional investor and investment banking intensity as the proportion of institutional investors and investment banks to the total number of commercial banks in a given loan facility, respectively. Measuring non-commercial bank intensity this way is intuitive given that the measure correctly assumes that the effect non-commercial banking institutions on price and non-price loan terms are likely to be most visible when the proportion of these institutions over "traditional" commercial banks are larger in a given loan facility. The variables IIINT and IBINT measures the proportion of institutional investors and investment banks to total number of commercial banks, respectively. Methodologically, I control for institutional investor and investment bank intensity by creating a sub-sample of observations where the proportion of institutional investor and investment bank involvement are above or below their respective sample medians. By utilizing these sub-groups I am able to test whether the link between tax avoidance and loan spread are particularly stronger or weaker for these non-commercial-bank lenders. In the meantime, this structure allows me to test whether syndicate-level risk mitigation measures help alleviate contracting costs associated with tax avoidance. The details of the regression results are presented in Section 5.2.4.

3.5. Measuring Opaque/Financially Constrained Firm Years

I construct a composite measure that controls for firm-level financial information asymmetries and financial constraints. I use a single measure that controls for both information asymmetries and financial constraints for two reasons. First, measures that separate firm-level information asymmetries (opaqueness) from financial constraints are far from obvious. For example, while credit ratings are seen as the most important identifier of financial constraints (e.g., Faulkender and Petersen, 2006; Denis and Mihov, 2003), the measure has been used to identify information asymmetries as well (e.g., Lee and Mullineaux, 2004; Sufi 2007). Second, in line with the literature (e.g., Shevlin et al., 2013), I adopt a tax-research-focused sample construction strategy that is relatively restrictive in scope in comparison to other banking and finance papers (see Section 3.1. for details). Notably, I eliminate loss-making firm year observations given that for negative income years CETR and LRCETR measures would be negative, hence meaningless. Additionally, profitable firms have significantly different tax avoidance incentives as well as the capacity compared to loss making firms. On the downside, however, the incorporation of loss-making years into the analysis would have much consistently reflected the characteristics of firms with severe financial constraints and information asymmetries. My analysis, given its sample-restrictions, is likely to have limitations to do so. Hence, tax-research-focused sample construction strategy makes it even more difficult to distinguish firm characteristics that individually reflect information asymmetries and financial constraints.

To overcome these challenges in identifying opaque and/or financially constrained firms, I generate a measure that is likely to reflect both information asymmetries and financial constraints simultaneously. To do so, I identify firm-year observations that lie at the bottom quartiles of the level of institutional equity ownership and the number of analysts following, respectively. These firms each receive a value of one, indicating weak levels of external governance quality. Next, I use the availability of single-name CDS contracts, which significantly improves firm-level information environment (Acharya and Johnson, 2007) and front-runs equity and bond markets in generating information with regards to firm riskiness and expected credit losses (e.g., Berndt et al., 2005). Hence, firms with no single-name CDS contracts are assigned a value of one. These three items reflect potential information asymmetries. Next, I move on to financial constraints measures. First, I identify firm-years that lie at the bottom quartile of ZCORE measure and assign these firm-years a value of one. Next, firm-years with neither firm-level nor issue-level credit ratings are assigned a value of one. By using both firm and issue-

level ratings criteria I mitigate concerns with regards to issue-level rating shopping.[27] To form the measure, I first take the arithmetic average of the values assigned to each firm-year observations using the criteria based on the level of institutional equity ownership, the number of analysts following, the presence of CDS contracts and the distribution of ZSCORE measure. Finally, I add the firm and issue-level ratings score on to this measure. Accordingly, ratings-based financial constraints measure receives the largest weight given that the literature use this measure to reflect both financial constraints and information asymmetries. I refer to this measure as a composite measure that reflects opaque/constrained firm-year observations.

3.6. Measures of Internal and External Corporate Governance

The link between tax avoidance and loan spreads might change depending on the quality of internal/external corporate governance mechanisms. To control for internal corporate governance I use G-index developed by Gompers, Ishii and Metrick (2003). I separate the sample into sub-sample of firms with strong (low G-index) and weak (high G-index) internal corporate governance using median G-index as a cut-off point. To control for external corporate governance strength I generate a composite measure of external governance by ranking firm-level institutional ownership and the number of analysts following into their respective quartiles. Both institutional ownership and analyst coverage function as effective external governance mechanisms (e.g., Burns, Kedia and Lipson, 2010; Chung and Zhang, 2011; Chen, Harford and Lin, 2015) and are associated with superior information environment (e.g., Jiambalvo, Rajgopal and Venkatachalam, 2002; Roulstone, 2003; Velury and Jenkins, 2006) and lower cost of capital (e.g., Bhojraj and Sengupta, 2003; Ashbaugh, Collins, and LaFond, 2006; Bowen, Chen and Cheng, 2008). Accordingly, I group firms into "Strong External Governance" sub-sample if firm-year observation is in the top percentile of institutional equity ownership and the number of analysts following, simultaneously. Similarly, I group firms into "Weak External Governance" sub-sample if firm-year observation is *not* in the top percentile of institutional equity ownership and the number of analysts following, simultaneously.

4. EMPIRICAL MODELLING

[27] I further control for potential rating shopping arguments in Section 6.4 and in Table 13.

I use the following general model, which is adjusted depending on the sample and/or model specification applied, to test contracting costs associated with tax avoidance

$$SPREAD_{i,t} = TAX_{i,t} + RM_{i,t} + RM\_TAX_{i,t} + CSI_{i,t} + PPP_{i,t} + LREP_{i,t} + TERM_{i,t} + SPI_{i,t} + LPCT_{i,t} + REVD_{i,t} + SECUR_{i,t} + LNLOAN_{i,t} + LNTA_{i,t} + PTROA_{i,t} + LVRG_{i,t} + PIFO_{i,t} + AQ_{i,t} + PPE_{i,t} + MTB_{i,t} + INOWN_{i,t} + ANFLW_{i,t} + CIS_t + ZSCORE + T + IND \quad (1)$$

where SPREAD is the all-in-drawn spread based on London Interbank Offered Rate (LIBOR) -benchmark loans. The all-in-drawn spread includes any fees associated with the deal as well as the basis point spread priced in over the LIBOR. The variable TAX represents all three alternative tax avoidance proxies used in the analysis including CETR, LRCETR and PBTD and RM stands for all loan and borrower-specific risk-mitigation measures used in the analysis. The first of these risk mitigation measures is CSI, a dummy indicator that takes the value of one if the loan facility has more than the median number of lead arrangers and zero if less and controls for risk diversification at the syndicate-lead level. The second risk-mitigating measure is PPP, which is a dummy indicator for loans that include PPPs. I expect negative coefficients for these two risk-mitigation measures. The third syndicate-level risk-mitigation measure is the composite measure LQM, which captures loan quality. The measure takes the value of one if the sample distribution is in the top quintile of its distribution and zero otherwise (see Section 3.3). I also expect negative coefficients for the LQM variable, given that the measure reflects both risk mitigation and loan quality. Next, I control for the availability of CDS contracts, a measure of borrower-specific risk mitigation, using the CDS variable, which takes the value of one if a given borrower has a CDS contract trading on its debt and zero otherwise. CDS contracts provide capital allocation efficiency alongside credit risk management which are desirable from the perspective of the syndicate originators. Although these contracts may induce less than optimal monitoring efforts, these instruments are available to all participants in the syndicate, including junior lenders, should they need to alter their positional risks. Therefore, on average, I expect some of these benefits to be transferred back to borrowers during credit pricing, hence negative coefficients.

Next, the RM_TAX variable interacts with each of these alternative loan-/borrower-specific risk mitigation measures (RM) with alternative measures of tax avoidance (TAX). For each risk mitigation measure, RM is replaced with a unique and relevant identifier. Specifically, CSI_TAX and PPP_TAX control for the moderating effects of lead-level credit diversification and PPPs on ex ante risks associated with alternative tax avoidance strategies. The variable LQM_TAX examines the link between tax avoidance and loan contracting costs,

controlling for loan quality. Similarly, CDS_TAX controls for potential offsetting effects the availability of CDS contracts may have against ex-ante risks associated with alternative tax avoidance strategies. I expect negative coefficients for all of these interaction variables, since I expect them to eliminate some or all contracting costs associated with tax avoidance. Finally, I add a dummy indicator controlling for firms' access to the public debt market (BOND) and its interaction with alternative measures of tax avoidance (BOND_TAX). This interaction variable controls for acquired credibility, which reflects superior firm-level information environment and financial flexibility. I expect negative coefficients for both the BOND and BOND_TAX variables.

In addition to the number of lead arrangers in a syndicate, in line with the literature (e.g., Sufi, 2007, Mora et al., 2015), I control for the proportion of loan held by the syndicate arrangers (LPCT). Unlike past research (e.g., Sufi, 2007), however, I am not interested in capturing individual lead-bank level loan ownership but rather focus on the total portion of loan held by the lead agents altogether Therefore, if four lead arrangers hold half of the total loan amount altogether, that is the ratio I use in the ratio LPCT and not 12.5 percent% (50%/4) for each lead bank. A priori, I expect to observe negative coefficients for the total lead-bank ownership variable. I control for lead arranger reputation as an additional variable that mitigates agency conflicts among the lending group, as in the past research (Denis and Mullineaux, 2000; Sufi, 2007; Ball et al., 2008; Chaudhry and Kleimeier, 2013). Specifically, I classify the top five syndicate arrangers per given year in the Thomson One Deals database as the most reputable lenders. Next, I identify loans with the number of reputable lenders in the top quartile of the total sample distribution (LREP). I also control for syndicate participation intensity, SPI, a dummy indicator that takes the value of one if the loan facility has more than the median number of participants and zero otherwise.). I expect negative coefficients for these two variables given that lead reputation alleviates information asymmetries among the lending group, and loan participation intensity reflects the overall demand for a given loan facility. I also control for the effectiveness of covenant-based monitoring on moderating the ex-ante anticipated risks related to tax avoidance. I add a dummy indicator (COV) for issues with a number of maintenance-based covenants higher than the sample mean and its interaction with tax avoidance measures (COV_TAX). The interaction variable COV_TAX controls for the role maintenance-based covenants play in alleviating tax-specific agency costs of bank financing.[28] Additionally, I control for "new economy" incurrence-

[28] In un-tabulated analysis I test for the same argument by including a dummy indicator that takes the value of one if the number of restrictive covenants in a given loan facility is in the top quartile of the sample distribution and zero otherwise.

based (covenant-lite) covenants COVL and its interaction with tax measures COVL_TAX. I do not have a directional prediction for the coefficients for either of these alternative covenant structures.

In line with past research (e.g., Sufi, 2007; Shevlin et al., 2013; Hasan et al., 2014), I control for the average loan maturity (TERM) and average loan size as the natural logarithm of the loan amount (LNLOAN). On average, a positive link between both variables and loan spreads can be expected. As well as controlling for loan maturity in the main model, as an additional (un-tabulated) robustness test, I test whether lenders adjust loan maturity to take into account tax-specific risks. For example, Platikanova (2017) shows that lenders shorten loan durations for tax avoiders, facilitating frequent credit assessments to control for tax-related risks. I discuss the methodology and results of this analysis in Section 6.4. The dummy variable LVRGD controls for non-– investment-grade leveraged issues, which controls for issue-level credit quality. It is important to add this additional measure, given that most of the institutional investor investment in loan syndicates takes place in this relatively high-risk/high-yield loan segment (see Section 2.3 for more details). Finally, I also control for whether the loan is a revolving credit facility (REVD) and secured via collateral (SECUR) as additional loan- level control variables (e.g., e.g., Berger and Udell, 1995; Sufi, 2007; Shevlin et al., 2013; Hasan et al., 2014; Shevlin et al., 2013).

Next, I include common firm-level control variables. I control for firm size (LNTA) as the natural logarithm of total assets (Compustat item at) and financial leverage (LVRG) as total long-term debt outstanding (Compustat item dltt) divided by total assets. I control for firm-level profitability using total and foreign pre-tax returns on assets (PTROA and PIFO, respectively) calculated as pre-tax income (Compustat item pi) and foreign pre-tax income (Compustat item pifo) divided by total assets, respectively. I control for accrual quality (AQ) as calculated by Francis et al. (2005) as a proxy for earnings quality, the percentage of institutional ownership (INOWN), and the number of analysts following (ANFLW) as measures of external corporate governance. I expect a positive link between low-quality earnings and loan spreads (e.g., Cook et al., 2015). Moreover, I expect stronger external governance to alleviate borrower–lender frictions and hence negative coefficients for these variables (e.g., Bhojraj and Sengupta, 2003; Ashbaugh et al., 2006). I use net property, plant, and equipment (Compustat item PPENT) scaled by total assets to control for asset tangibility. The finance literature argues that assets that are more tangible mitigate contractibility problems between borrowers and lenders and enable access to larger funding facilities (e.g., Rajan and Zingales, 1995; Campello and Giambona, 2010). Therefore, I expect a negative link between asset tangibility (PPE) and loan spreads. I control for the availability

of firm-level growth opportunities using the market-to-book ratio (MTB) and the effects of macro- and firm-level financial constraints using the commercial and industrial spread (C&I spread) over federal fund rates (CIS), following Harford et al. (2014), and z-scores (Z-SCORE), respectively. Specifically, CIS takes the value of one when the C&I spread over the federal fund rates are above the median and zero otherwise. I expect macro-level financial constraints to be priced in bank loan spreads. Note that I will tabulate only the primary variables of interests starting with Table 4 (see Table notes when necessary) and some additional test/sample-specific control variables are explained within the relevant section and also in Appendix.

5. RESULTS

5.1. Descriptive Statistics

Table 1 presents descriptive statistics for all the variables used in the study. The median cash CETR is 26%, consistent and is in accord with the levels observed in previous studies (e.g., De Simone and Stomberg, 2012). This rate is much lower than the U.S. statutory 35% and indicates that, on average, firms are successfully utilizing strategies to alleviate their overall tax burden. In univariate terms sample CETRs average 24% in 2015, which is 4.4% lower in comparison to the 28.4% average CETRs observed in 1994. This decrease in CETRs is comparable, in economic terms, to the 5% drop in CETRs observed in Dyreng et al. (2016) for a slightly longer sample period of 25 years. Moreover, both LRCETRs and PBTDs have been systematically increasing over the same period (un-tabulated), indicating that firms have been utilizing both permanent and temporary avoidance strategies simultaneously.

In univariate analysis the average number of lead arrangers is 3 banks/agents per syndicate loan and lead arrangers hold, on average, 45% of a typical loan provided. More important, however, is the time-series observation in Figure 1 that documents a systematic and economically meaningful increase in average lead-level participation in loan issues (Graph A). Additionally, the proportion of the number of loan originators (leads) to the total participation has also been steadily increasing (Graph C) during the sample period. For example, while the proportion of lead agents to total participants was 22% in the pre-2000 period, this ratio reached 45% in the post-2000 period for a typical loan provided. Indeed, this observed increase in the led-to-participant ratio is unlikely to be driven by lower number of total syndicate participants given that syndicate participation levels had no definitive upside/downside trend during the sample period (Graph B).

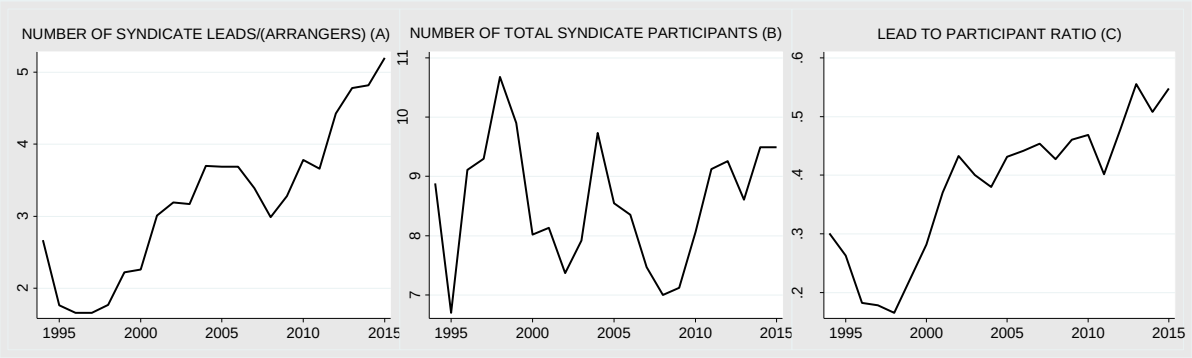

Figure 1: Time-series Depiction of the Syndicate Loan Market Properties

Loan spreads range from 50 bps in the low and 175 bps in the top quartiles but are significantly higher for firms with opaque and/or financially constrained firms (un-tabulated). The mean loan size (LOANSIZE) is $739 million with an average maturity (TERM) of four years. This amount is larger than that observed in Hasan et al. (2014) study, given that I eliminate loss making observations which increases the relative skewness in the scale economies of the sample. While loan size and maturity seems to be consistent with macroeconomic conditions, on average, both have been increasing in the post-2000 period (un-tabulated). During this period banks have syndicated substantially large loans to fund some sizeable acquisitions including Anheuser-Busch InBev's $75 billion and Teva Pharmaceuticals' $30.5 billion financing packages (Reuters, 2015). On average, 32% of the loans have performance pricing provisions and 38% of the loans are collateralized (SECUR). On the other hand, an average loan has 6 covenant clauses. The proportion of institutional investors to commercial banks (IIINT) and the proportion of investment banks to commercial banks (IBINT) averaged 15% and 17%, respectively, for a given loan facility. The pre-tax return on asset (PTROA) of a given firm in the sample is 12% - a significantly high ratio which reflects the fact that loss firm-year observations are excluded from the analysis. The average institutional equity ownership (INOWN) stands at 50% of the firms whereas the total number of analysts following (ANFLW) is 6.

5.2. Effects of Syndicate-Level Risk Mitigation Mechanisms on the Contracting Costs of Tax Avoidance

Panel A to C in Table 2 present the results for the main model that tests for the effects of loan-level risk mitigation mechanisms on the contracting costs of tax avoidance. Panel A and B use CSI and PPPs, which as the two primary syndicate-level RMMs, respectively. Panel C adds the LQM, which encompasses lender credibility and syndicate-level risk management mechanisms, to the model. For each model, I use one of the tree primary tax avoidance measures (TAX) that includes CETRs, LRCETR and PBTDs. Furthermore, for each model, I

interact the tax avoidance variables with the relevant risk-mitigation measure of interests to form RM_TAX variable.

Concentrating the analysis on CETRs, the coefficients from Panel A to Panel C correspond to 7.02 bps increase in loan spreads for a standard deviation (0.14) increase in tax avoidance. Given the average loan amount of $739 million, this tax avoidance premium corresponds to around $517,300 ($739 million × 7.02bps) additional interest cost per year.[29] For an average four-year loan in the sample, this corresponds to $2.07 million (4 × $554,250) in additional tax-related financing costs for an average borrower. On the other hand, the coefficients for LRCETR and PBTD corresponds to 7.95 bps 3.88 bps increase in bank financing given a standard deviation decrease in LRCETR and increase in PBTD measures, respectively. Of the three tax avoidance measures, I fail to find a particularly strong link between the PBTDs and loan spreads. Despite having positive coefficients, the results for PBTDs are not statistically significant for the analyses in Panel B and Panel C. Overall, however, the results are in line with the H1, confirming that banks price in additional risk premiums to compensate for inherent risks in alternative forms and levels of tax avoidance.

Next, the coefficients for CSI (RM_TAX variable in Panel A) are negative and economically significant, indicating that, on average, loan facilities with large number of co-leads have lower cost of debt financing. In line with Asquith et al. (2005), the incorporation of PPPs in loan terms is negatively linked to loan spreads. These results show that, on average, lead-level diversification and performance-based provisions effectively reduce overall firm-specific risks. In economic terms, a typical loan that incorporates larger syndicate-lead formation and performance pricing provisions is associated with around 12 bps and 35 bps lower loan spreads, respectively.[30] Moreover, the composite loan quality measure (LQM) lowers loan spreads by 14BPS.

The coefficients for the interaction variables show that the contracting costs associated with tax avoidance are largely mitigated for loans with high co-syndication intensity (CSI_TAX), which facilitates lender-level risk diversification, and for issues with performance-based provisions (PPP_TAX), which facilitate borrower-lender

[29] To compare, these numbers are significantly higher than those observed ($1 million additional costs for tax avoidance) in Hasan et al. (2014) study. One of the main reasons for this results is that, unlike Hasan et al. (2014), I eliminate loss-making firm years for two reasons: First, it helps in the interpretation of tax avoidance and second, loss-making firms do not have the same tax incentives as profitable firms (e.g., Manzon and Plesko, 2002). Therefore, my sample is likely to include larger firms that are able to have access to significantly larger amounts of financing. My result hold when I run the same analysis using quintile regressions at the median and/or sample composition winsorized at the 1st and the 99th percentiles to reduce for the influence of outliers.

[30] I also use a continuous variable that controls for the size of the syndicate-lead (NOTIER). The coefficients for this continuous measure indicates a 10.50BPS decrease in loan spreads for an average loan facility.

incentive alignment. Moreover, the analysis in Panel C indicates that, for a top-quality loans, the contracting costs associated with tax avoidance almost do not exist. In economic terms, focusing on the CETR measure in Table 2, syndicate-level RMMs collectively offset an economically significant 70% to 96% of the additional risk premiums required for tax avoidance, depending on the sample and model specification used. In line with the past evidence (e.g., Sufi, 2007; Altunbas et al., 2010), lead ownership (LPCT) and lead reputation (LREP) also effectively moderate information asymmetries associated with bank financing and reduce loan spreads. Specifically, a typical loan with larger syndicate-lead loan ownership and reputable syndicate arrangers offset 8 bps and 12 bps of the baseline loan spreads demanded. In additional analysis I observe similar tax-risk-moderating effects for these two variables, however, the results do not consistently hold when performance provision (PPP_TAX) and co-syndication intensity (CSI_TAX) interaction variables included in the model. Hence, for brevity in the study, I do not tabulate these results.

The coefficients for the control variables are mostly in line with a priori expectations. For example, anticipating solvency risks, results indicate larger spreads for firms with greater financial leverage. On the other hand, profitability and firm size are strongly negatively associated with loan spreads which collectively indicate benefits of scale economies in loan contracting. In line with the existence of relationship-focused lending (e.g., Berger and Udell, 1995) I find lower spreads for syndicate loans facilitated as revolving bank lines of credit, as opposed to term loans, which are characterized as transactional credits. I find no particular link between loan spreads and loan maturity or collateral. In line with my prior expectations, having a larger institutional investor base and number of analysts following, reduces loan spreads by 4.50 bps and 5.50 bps, respectively. Both types of external governance measures are therefore effective at alleviating the overall borrower-lender frictions inherent in debt financing. Finally, macro-level financial constraints (CIS) are positively associated with loan premiums where a standard deviation increase in the C&I spread translates into economically-meaningful 40 bps increase in loan spreads. Overall, these results are in line with H2 (see Section 2.2.) that loan structures that facilitate credit risk sharing among the lead agents and those that facilitate lender-borrower incentive alignment, will moderate some or all of the contracting costs associated with alternative levels and forms of tax avoidance. The following sections apply a series of econometric and sample-design adjustments to the baseline model to check for the construct-validity of these initial results.

5.2.1. Self-Selection in Syndicate-Level Risk Mitigation Mechanisms

Although lenders have the bargaining power to dictate both price-and non-price-based loan terms, firms have the ultimate choice to accept these terms. Accordingly, some firms might be more flexible during loan negotiation and willing to accept and/or even initiate new terms (in addition to what banks already propose) that better align borrower and lender interests. To control for the plausible effects of self-selection into syndicate-level risk mitigation mechanisms, which aims to alleviate general borrower-lender frictions, I match firms based on their observable characteristics. Matching samples on a common set of observations allows me to control for important differences among firms that could affect the regression results. Accordingly, score-matching provides a degree of reassurance in terms of establishing a more genuine link between syndicate-level risk-mitigating mechanisms and the contracting costs of tax avoidance.

Table 3 examines the effects of syndicate-level risk mitigation on the contracting costs of tax avoidance for the full PSM sample. Panel A and Panel B control for self-selection into loans with higher number of lead agents and PPPs, and Panel C controls for self-selection into high-quality loans (LQM), respectively. The results display the sub-sample constructed using caliper matching at 5% level with no replacement, however, the results still hold at lower caliper matching levels (e.g., 2%). I continue to observe a positive link between tax avoidance and loan spreads for CETR and LRCETR and tax-risk moderation for loans with syndicate-level RMMs for this matched sample of observations. In line with the observations in Table 2, the analysis in Table 3 shows that the positive link between tax avoidance and loan spreads is weakest for PBTDs. Overall, the analysis using the PSM sub-sample validates the results in Table 2, confirming that syndicate-level RMMs substantially offset overall tax and non-tax risks associated with a given borrower.

5.2.2. Controlling for the Risk Moderating Effects of Loan Covenants

Table 4 compares whether syndicate-level risk-mitigating mechanisms function effectively under loan structures that also include restrictive covenant structures. Empirical evidence shows that restrictive maintenance-based covenants can increase the efficiency of a loan contract by alleviating adverse selection and moral hazard problems (Dichev and Skinner, 2002). On the other hand, there is also substantial evidence documenting that loan covenants are likely to become more effective incentive-alignment tools following technical defaults (Chava and Roberts, 2008; Nini et al., 2009; Christensen et al., 2016), which will allow lenders to gain additional control over the borrower. In fact, evidence show that lenders initially set rights following a technical default (Berlin and Mester, 1992; Dichev and Skinner, 2002; Chava and Roberts, 2008; Garleanu and Zwiebel, 2009). These transfer of state-contingent control rights actually help alleviate agency problems (e.g., Jensen and

Meckling, 1976; Smith and Warner, 1979) and increase borrower-level operating and investment efficiency (e.g., Chava and Roberts, 2008; Nini, Smith and Sufi, 2009; Gu, Mao and Tian, 2014).

Moreover, Roberts and Sufi (2009a) demonstrate that over 90% of long-term debt contracts are renegotiated prior to their stated maturity. More important, authors argue that these re-negotiations do not necessarily take place due to technical/actual defaults but due to changes in borrower's credit quality, investment opportunities and/or general macro-economic conditions. Hence, there is no robust ex-ante reason to believe covenant-based monitoring may not operate as early commitment mechanisms, as say, PPPs do (Asquith et al. 2005). Therefore, I make no predictive arguments regarding the direction of the relation between financial covenants and syndicate risk mitigation

In Table 4 I control for the existence of restrictive and incurrence-based (lite) covenant structures. In doing so, I include the dummy indicator (COV) for issues with number of covenants higher than the sample mean and its interaction with tax avoidance variables (COV_TAX). The analyses from Panel A to Panel C test for the effectiveness of maintenance-based covenant structures in alleviating the contracting costs associated with tax avoidance. For space considerations I tabulate the coefficients for only the main variables of interest. The results show that stricter covenant structures are generally positively linked with loan spreads which may indicate that lenders, on average, do not trade-off loan contractual strictness with lower spreads. The analysis also show that both CSI and PPPs are more effective, "ex-ante", at moderating tax-specific agency costs associated with bank borrowing when compared to maintenance-based covenant structures alone. These results hold even when the triple effectiveness of risk co-syndicate intensity, the presence of performance-based provisions and maintenance-based covenant structures in a single model (Panel C). These results indicate that syndicate-level RMMs are not mutually exclusive and work well, simultaneously, in alleviating contracting costs associated with tax avoidance. As in previous tables, I observe no link between PBTD measure of tax avoidance and loan spreads.

It could be argued that the non-price terms of a typical syndicate loan could include both maintenance-based covenants alongside with performance pricing clauses. I acknowledge that the models utilized in Table 4 do not control for the joint effects of covenant and performance pricing clauses on alleviating both general and tax-specific agency problems. Therefore, in an un-tabulated analysis, I conduct the same analysis on an alternative model that identifies loans with maintenance-based covenant structures but no performance-based pricing provisions. This way, I avoid conducting complex three-way interaction analysis to control for the simultaneous

effects of the two screening/monitoring mechanisms. The analysis validates my earlier observation that PPPs are more effective, ex-ante, at moderating tax-specific risks in comparison to covenant-based monitoring structures alone. These results are in line with the general perception that maintenance-based covenant clauses are most effective when the state-dependent contingent transfer of control rights are triggered (e.g., Roberts and Chava, 2008, Roberts and Sufi, 2009a; Nini et al., 2009; Francis et al., 2016; Christensen et al., 2016).

Next, in Panel D, I control for the "new economy" incurrence-based covenant-lite (COVL) structures that become effective only when a new transaction such as additional debt issue or acquisition occurs. Respectively, both "maintenance" and "incurrence" based covenant structures reflect supply and demand conditions in corporate lending business where the latter has emerged as a result of yield competition (S&P, 2016). Hence, it is argued that incurrence-based (lite) covenants reflect escalated lender-level risk taking incentives (e.g., S&P, 2016; Becker and Ivashina, 2016). Panel D incorporates both maintenance and incurrence-based covenant structures, syndicate-lead risk diversification and PPPs in a single model. The results show that, both lead agent risk diversification and PPPs simultaneously work more effectively, ex-ante, in moderating additional risk premiums required for tax avoidance compared to covenant-lite and/or maintenance-based covenant mechanisms in place.[31]

5.2.3. Controlling for the Endogenous Link between Tax Avoidance and Loan Spreads

Table 5 and Table 6 control for the endogenous link between corporate tax avoidance and loan spreads. In particular, the concern is that larger loan spreads observed for borrowers with high levels of tax avoidance might not necessarily imply a causal link between aggressive tax positions and loan spreads. That is, larger spreads might not necessarily be driven by high levels of corporate tax avoidance. Instead, one could argue that when facing high loan spreads, some firms might turn to tax avoidance strategies that generate cash flow benefits. To tackle this potential reverse causality problem, I first use industry-median level of tax avoidance (excluding the particular firm "i" from the calculation) as an instrumental variable for tax avoidance incentives, following Hasan et al. (2014), and run a two-stage least squares (2SLS) model.

The output from the second-stage analysis is presented in Table 5. Panel A and B use the co-syndication intensity and performance pricing provisions as the two primary syndicate-level RMMs, respectively. Panel C adds the composite loan quality measure (LQM) to the model. For space considerations I tabulate the

[31] It is important to note, however, that these results might be affected by the stricter sample selection criteria applied (see Section 3.1) in order to run a meaningful analysis on tax avoidance.

coefficients for only the main variables of interest. The results show that syndicate-level RMMs eliminate a substantial portion of the loan contracting costs associated with aggressive levels of tax avoidance.

Next, in Table 6, I use Supervisory Capital Assessment Program (SCAP) and the Comprehensive Capital Analysis and Review (CCAR), conducted in 2009 and 2011, respectively, as an instrumental variable for lending incentives. The program started as the SCAP in 2009 to ensure that the 19 systematically important banks with assets over $100 billion had sustainable capital to endure another potential liquidity dry-out. The program then continued as the CCAR with the same 19 banking organizations with assets under management exceeding $100 billion. The main goal of these programs was to enhance financial stability, transparency and market discipline (Tarullo, 2010; Bernanke, 2013; Goldstein and Sapra, 2013). Acharya et al. (2017) investigate the effects of U.S. stress tests on the supply of credit and find that, as part of the risk management hypothesis, stress-tested banks reduce credit supply to relatively risky borrowers.

If tax avoidance, either directly and/or indirectly, increases firm risks, then one should expect banks to either reduce financing to these firms and/or, at the very least, reflect these risks in price and non-price terms of loan contracts. By comparing treated (stress-tested) versus control (not tested) bank behavior, I can identify whether loan spreads are driven by the supply side of the equation. More importantly, I provide additional analysis that examines whether syndicate-level risk mitigating mechanisms continue to offset additional risk premiums, if any, demanded by the treated banking groups. Moreover, I can test the link between aggressive levels of tax avoidance and loan spreads in the pre-and-post stress test period for the treated banking organizations. This analysis will also examine the effectiveness of syndicate-level risk mitigation measures on alleviating contracting costs associated with tax avoidance in the pre-and-post stress test period for the treated banking organizations.

Table 6 presents the result from this analysis. As in Table 5, I tabulate the coefficients for only the main variables of interest for space considerations. In all panels, ST stands for sub-sample of banks that were subject to stress testing (treated group), STN stands for sub-sample of banks that were not subject to stress testing (control group) and STP stands for the pre-stress test period for the sub-sample of the banks that were subject to stress testing following 2009. I examine whether syndicate-level RMMs work effectively well for stress tested (ST) versus not-tested firms (STN) in the post 2009 (inclusive) period when the first stress test took place. The results show that, in the post-2009 period, only the stress-tested banks (ST) demand additional risk premiums for aggressive levels of tax avoidance, whereas those that were not subject to stress tests (STN) do not. For the

stress-tested bank sample (ST), performance provisions and lead-level risk diversification collectively offset around 40% to 85% of the additional risk premium required for aggressive levels of tax avoidance. I find no link between tax avoidance and loan spreads for loans issued by lenders that were not subject to capital adequacy tests. As a result, I also observe no risk-offsetting benefits to lead-level diversification and PPPs. The differences in tax coefficients between stress tested and not-tested banks are statistically significant at $p<0.001$ levels.

I also analyze whether stress-tested banks had similar credit pricing strategies for loans to tax-aggressive borrowers in the pre-and-post 2009 period (STP). I find that these banks have priced in additional risk premiums for aggressive levels of tax avoidance in both pre-and-post stress test periods. Notably, both performance provisions and lead-level risk diversification help alleviate the contracting costs associated with tax avoidance in both pre-and-post stress-test periods for the same 19 stress-tested banking groups. These risk mitigation effects are, however, economically (and statistically at $p<0.001$) larger in the post-stress-test period compared to the pre-stress-test period. The results in Table 6 show that the tax risk premium is concentrated on loans initiated by a group of systematically-important commercial banking groups, which lends credence to the analysis of lender types in the next section. The analysis also substantiates my arguments on the effectiveness of syndicate-level RMMs in alleviating tax-specific loan contracting premiums.

5.2.4 Controlling for Loan Ownership Structure

In this section, I control for lenders type and re-examine contracting costs associated with tax avoidance and the tax-risk moderation benefits of syndicate RMMs. Firs, in Panel A, I investigate whether bank and non-bank lenders have similar credit pricing. The results from column (1) to (3) indicate that, institutional investors and investment banks charge, 18 bps and 4 bps, in additional premiums for a given borrower, respectively, in comparison to commercial banks. When controlling for panel data fixed and random effects, while the coefficients for institutional investor intensity remain robust, the positive premiums observed for the investment bank intensity disappear. These results are generally in line with the evidence provided in Lim et al. (2014) and Beyhagi et al. (2017). The investigation of the underlying reasons for the additional risk premiums for non-bank lenders is outside the scope and the capacity of this paper given the tax specific focus and the related data constraints. Hence, in Panels B and C I investigate whether bank and non-bank lenders have similar credit pricing strategies for loans to tax-aggressive borrowers (H3). For all three measures of tax avoidance, the

analysis in Panel B shows that tax-specific risks are not priced in for loans with high institutional investor intensity.

Notably, in line with the evidence in Lim et al. (2014), these investors already demand an average of 30 bps larger spreads than commercial banks do for the same company with the same risk profile. Hence, one could argue that, these investors already take into account all the relevant company specific risks, including tax-specific ones, if any, and do not have particular focus on tax-specific risk-taking. This argument is in line with the evidence that institutional investors overwhelmingly focus on high-risk/high-yield borrowers. Hence they are likely to understand potentially elevated risks associated with these borrowers and demand an overall (higher) risk premium that covers corporate tax avoidance alongside other, more eminent firm-level risks to compensate for their expected returns.

On the other hand, the results for investment banks are somewhat less clear. For cash ETRs, loans with both high and low investment bank intensity seem to be pricing in contracting costs associated with tax avoidance. For all other measures of tax avoidance the results support my initial argument that investment banking groups are unlikely to pricing tax-specific risks. However, given the coefficients observed for cash ETRs I am less assertive in arguing that investment banks do not focus on tax-specific risks.[32] Commercial banking groups, however, do price in additional risk premiums for aggressive levels of tax avoidance. In economic terms, for loans that are issued predominantly by the commercial banks, a standard deviation decrease in cash ETRs result in an average 10 bps additional risk premium. Overall, the analysis documents that the perception of loan contracting risks associated with tax avoidance is both statistically (at $p<0.001$) and economically different for commercial banks and non-commercial-bank lenders (particularly for institutional lenders). Finally, in line with the evidence so far, syndicate-level RMMs effectively moderate tax-specific risk premiums for loans with pre-dominant commercial bank participation.

5.2.5. Controlling for Credit Default Swap Contracts

[32] It is important to note that the definition and job description of investment and commercial banks are less clear than textbook explanation when one tries to identify them empirically. This is simply because so many banks categorized as investment banks in one period switched to commercial bank status (e.g., Goldman Sachs, Morgan Stanley). More so, some of the banks under commercial banking status also either directly or indirectly investment banking operations via controlled institutions (e.g., Bank of America – Merrill Lynch). This blurred core business identity becomes even more problematic when one tries to (string) match observations. These limitations, which are also acknowledged in the literature (Harjoto et al., 2006), may or may not drive my results; nonetheless, they are worth mentioning.

In this section I examine the link between tax avoidance and loan controlling for CDSs which provide lenders with an alternative borrower-specific risk mitigating instrument. In doing so, I augment the baseline model to incorporate a dummy indicator (CDS) for firms with single-name CDS contracts trading in over-the-counter markets. Next I interact the CDS variable with all three tax avoidance measures (CDS_TAX) to control for whether, and, if so, to what extent CDS contracts, as an alternative borrower-specific risk management instrument, alleviates previously documented contracting costs associated with tax avoidance. Panel A runs the model for the baseline sample and Panel B runs the model for the baseline and propensity-score-matched samples that controls for firm-level similarities for companies with and without CDS contracts. As in the previous PSM models, I use caliper matching at 5%, but the results are similar for more precise matching levels. Finally, in Panel C, I control for lead-level risk diversification and performance-based provisions, given that both of these syndicate-level RMMs and the borrower-specific credit protection (CDS contracts) can co-exists. Hence, the analysis in Panel C allows me to identify differences in risk-mitigation benefits associated with these alternative risk-management strategies available to lenders.

The results in both Panels A and B of Table 8 demonstrate that lenders perceive the ability to obtain a credit protection via CDS contracts as a valuable overall risk-mitigation mechanism and transfer at least some of these benefits back to borrowers in loan pricing. Specifically, the presence of CDS contracts reduces loan spreads by around 30 bps when the coefficients in Table 8 are averaged. Moreover, the analysis documents that CDS contracts alleviate almost the entire risk premium required for aggressive levels of tax avoidance. These results also hold when I conduct an event study-type analysis that takes into account new CDS contract initiations during the sample period (un-tabulated). The only tax avoidance variable for which these results do not hold is the permanent portion of book-tax differences. However, this observation does not become problematic in assessing the effectiveness of CDS contracts alleviating tax-specific risks, given that the analysis already documents a no particular link between PBTDs and loan spreads.

Similarly, the analysis in Panel C of Table 8 demonstrate that both syndicate-level RMMs and the availability of borrower-specific credit protection contracts help alleviate both the general as well as tax-specific risks associated with a given borrower. This is an important observation, since both types of risk-management measures can co-exist and no particular one's benefits dominates those expected from the other. The results in Panel C also hold when I used a score-matched sample (un-tabulated) that controls for firm-level similarities for companies with and without CDS contracts as in Panel B. Confirming H4, these results indicate that lenders do

obtain real benefits from the ability to deploy some or all of their portfolio risks (including tax-specific risks) back into the financial system and these benefits are, to some extent, reflected in loan prices.

6. ADDITIONAL ROBUSTNESS TESTS

6.1. Controlling for Self- Disclosed Tax Position Uncertainties (FIN 48) and Tax Shelters

In this section I apply three alternative settings to further test the validity of the arguments set forth so far. I start with the introduction of FIN48 as a quasi-natural setting that examines the corporate self-reporting of risky tax positions and how such tax-specific information disclosure affects the link between tax avoidance and loan spreads. Starting in December 2006, U.S. corporations have been required to estimate and appropriately reserve for risky tax positions under FIN 48. While doing so, the standard requires firms to anticipate 100% audit probability and IRS's full knowledge of all relevant information and separately reserve for these relatively ambiguous tax positions as unrecognized tax benefits (UTBs). Thus, FIN 48 may provide a roadmap for the tax authority (Blouin and Robinson, 2014) and result in higher agency costs associated with tax avoidance (Hasan et al., 2014). Accordingly, I perceive these tax reserves to reflect management's estimates of relatively risky tax positions, as these positions may indicate potentially higher tax payments in the future.

First, I examine whether agency costs associated with tax avoidance are more pronounced following the introduction of FIN 48 reporting in the post-2007 period compared to the pre-2007 period. This differences-in-differences setting is similar to the one applied in DeSimone and Stomberg (2012) and Drake et al. (2015).[33] Panel A and B of Table 9 present the results of this analysis. For each panel, RM stands for the particular risk mitigating measure used including; the number of lead agents, performance pricing provisions and the composite score of loan quality, in respective order. For space considerations I tabulate the coefficients for only the main variables of interest. The results show that, in line with prior evidence (DeSimone and Stomberg, 2012 and Drake et al., 2015), the period following the enactment of FIN 48 reporting is associated with significantly larger agency costs associated with corporate tax avoidance.

Focusing on CETRs, a standard deviation increase in tax avoidance results in 15 bps/(8 bps) increase in loan spreads in the post-2006/(pre-2006) period. This difference in additional risk premiums between the two periods

[33] It is important to note that, as also described by DeSimone and Stomberg (2012), the period following the introduction of FIN 48, effective in 2007, might not entirely reflect the impact of the self-assessment and disclosure of tax risk, since this period is also associated with additional measures with the aim of clamping down on corporate tax avoidance. Hence, although FIN 48 is arguably the most important tax accounting rule change, the analysis in this section branches out to incorporate other relatively aggressive and/or ambiguous tax positions.

is statistically significant at conventional levels. More importantly, all three measures of syndicate-level risk mitigation work equally well in both the pre-and post-2006 periods, solidifying the results obtained so far. In both periods, more than half of this additional risk premium required for tax avoidance is offset via syndicate-level risk-mitigating mechanisms. In un-tabulated analysis, propensity score matched sub-samples that control for self-selection into syndicate-level risk mitigating mechanisms, provide qualitatively similar results for both periods.

In the next setting, I account for the fact that the link between loan spreads and tax avoidance might not be linear for different levels tax-positional uncertainties, which the paper proxies using unrecognized tax benefits (UTB) via FIN 48 reporting. I follow Cook et al. (2015) and apply a setting that controls for high and low levels of tax reserves and how lenders evaluate tax avoidance at these relatively aggressive/passive levels of tax-positional ambiguity. Accordingly, UTB levels in the top quartile of the distribution are assigned as high-UTB firm-years, while the remainder of the distribution is assigned as the low-UTB firm-years.[34] Next, I re-examine the link between tax avoidance and loan spreads using the three tax avoidance proxies adopted. Panel A and B of Table 10 present the results of the analysis where only the variables of primary interest are tabulated. The results show that at high levels of UTB reserves, for which tax positional uncertainties are presumably high, agency costs associated with tax avoidance are significantly higher than those observed for low levels of UTB reserves. These results also document that syndicate-level risk-mitigating mechanisms effectively moderate agency costs associated with tax avoidance at both high and low levels of tax-position uncertainty.

Finally, I test for the link between tax avoidance and loan spreads by controlling for tax shelter activities, the most egregious forms of tax avoidance (e.g., Hanlon and Heitzman, 2010). Accordingly, I separate the sample into high and low tax shelter score firm-years based on the tax shelter measure provided by Wilson (2009). The cut-off points used are the same as those use in Panel A and B. The results in Panel C and D of Table 10 document that, at high/(low) levels of shelter engagement, a standard deviation decrease in CETRs results in 11 bps/(6 bps) increase in the loan spreads. This difference in the additional risk premium required for high-shelter firm-years is statistically significant for all syndicate-level RMMs at conventional levels of statistical significance. Moreover, syndicate-level RMMs offset substantial amount (70-80%) of additional risk premiums required for tax avoidance for both high and low levels of predicted tax shelter engagement. Collectively, these

[34] Alternative cut-off points provide indistinguishably similar results.

results suggest that syndicate-level risk mitigating mechanisms effectively alleviate the agency costs associated with tax avoidance under relatively aggressive and ambiguous forms of tax planning.

6.2. Controlling for Opaque/Financially Constrained Firm Years

Past research documents a positive link between micro and macro-level financial constraints and tax avoidance (Law and Mills, 2015; Edwards et al., 2016) and argue that these firms rely on tax avoidance strategies with the aim to obtain a vital source of liquidity particularly when most needed (Edwards et al., 2016; Ayers et al., 2011). Moreover, these strategies appear to enhance shareholder value particularly for financially constrained firms (Ayers et al., 2011). On the other hand, if some of these positions include more aggressive interpretation of the tax code and are successfully challenged by the IRS, resulting tax settlements could substantially reduce internal cash flows at times when they are vital source of working capital. For example, Hasan et al., (2014) provides anecdotal evidence on a number of credit rating downgrades that cites large cash outflows due to IRS tax settlements as the primary underlying (see p.113). Such an impact on cash flows are particularly risky for financially constrained firms given that these firms' future financing and investment strategies are particularly sensitive to the availability of internally generated cash flows (e.g., Fazzari, Hubbard and Petersen, 1988; Almeida, Campello and Weisbach, 2004; Campello et al., 2011). Similarly, information asymmetries directly affect firms' ability to borrow (e.g., Biddle and Hillary, 2006), the lender choice (e.g., Ongena and Smith, 2001) and price and non-price terms of loans (e.g., Bharath et al., 2008). Moreover, corporate tax avoidance can further facilitate managerial risk shifting and less transparent financial reporting environment for these firms (Desai and Dharmapala, 2006, 2009; Balakrishnan et al., 2011). In fact, recent evidence shows that even equity investors hold a negative perception of tax avoidance for informationally opaque firms (Goh et al., 2016).

In the light of the evidence provided, it is important to control for firm-level opaqueness and/or financial constraints. Table 11 investigates the effects of firm-level opaqueness/financial constraints on contracting costs of tax avoidance. Panel A uses a sub-sample of financially constrained/opaque firms and Panel B uses a sub-sample of non-opaque/financially firms. The classifications of firms into opaque/financially constrained sub-groups are explained in detail in Section 3.5. For each panel, the analysis tests whether syndicate lead diversification (CSI) and/or performance based provisions (PPP) help alleviate contracting costs associate with tax avoidance. The results show that the contracting costs associated with tax avoidance are confined to opaque/constrained firm-year observations. In economic terms, for financially constrained firms a standard deviation increase in CETRs, and LRCETRs result in 13 and 10 basis points increase in loan spreads,

respectively. Tax-specific risk premium differential between the two sub-groups are both economically and statistically (at $p<0.001$) significant. The analysis also confirms that syndicate-level RMMs effectively offset tax-specific risk premiums observed for opaque/constrained group of firms. Specifically, focusing on cash ETRs, syndicate-level RMMs collectively offset approximately 54% to 80% of the additional tax-specific risk premiums, depending on modelling specifications.[35]

6.3. Controlling for the Strength of Internal and External Corporate Governance

In this section I control for the quality of internal and external corporate governance mechanisms. This analysis is important on several accounts. First, better governance is linked with lower cost of financing and better non-price loan terms (e.g., Roberts and Yuan, 2010; Li, Tuna and Vasvari, 2014; Francis et al., 2012). Second corporate tax avoidance, including the most aggressive tax shelter engagement, is documented to enhance shareholder value for better governed firms (e.g., Desai and Dharmapala, 2006; Wilson, 2009; Goh et al., 2016). Thus, it is important re-investigate the contracting costs associated with tax avoidance, given that the positive link documented so far may be sensitive to the quality of internal and external corporate governance mechanisms. More importantly, one needs to identify whether and, if so, to what extent, tax-risk moderating benefits associated with lead-level risk diversification and/or the presence of performance-sensitive loan provisions can be captured by stronger internal and external corporate governance mechanisms.

Table 12 presents the results for the analysis that controls for the quality of internal and external corporate governance. Panel A uses a sub-sample of firms with strong (low G-index) and weak (high G-index) internal corporate governance. The results in Panel A show that contracting costs associated with tax avoidance are generally more pronounced for firms with weak internal governance. However, the tax-risk premium required for weakly governed firms are not statistically significantly different than those required for strong governance firms for CETR and LRCETR measures and is only marginally significant for PBTDs.

In Panel B, I use the composite measure of the external governance quality (see Section 3.6). Thus, I group firms into the "Strong External Governance" sub-sample if firm-year observation is in the top percentile in sample-level distribution of institutional equity ownership and the number of analysts following. The rest of the

[35] In un-tabulated analysis, I also use propensity-score matched sub-samples. The results from this analysis are quantitatively very similar to those reported in Table 11. Moreover, in un-tabulated analysis, I find no distinctive evidence that opaque/constrained firm-year observations are linked to more aggressive levels of tax avoidance.

firm-year observations are assigned into the "Weak External Governance" sub-sample.[36] The results in Panel B indicate a substantially higher tax-specific risk premiums for firms with weak external governance. In economic terms, a standard deviation decrease in CETRs will correspond to an economically-significant 9 bps increase in loan spreads for firms with weak external governance mechanisms. Similarly, a standard deviation decrease in LRCETRs will increase loan spreads by 8.50 bps for firms with weak external governance mechanisms. These spread differentials observed are statistically significant across the two sub-samples examined. On the other hand, the coefficients for the PBTDs, albeit being positive, are less indicative of a solid positive link between tax avoidance and loan spreads in comparison to the cash ETR-based measures.

Overall, the analysis shows that tax-specific risk premiums are significantly more pronounced for firms with weak internal and, particularly, external governance mechanisms in place.[37] The analysis, therefore, is in line with the tax literature which documents a positive feedback on corporate tax avoidance under strong corporate governance. These results are in line with the evidence provided in Hasan et al (2016), that, stronger corporate governance substantially offset otherwise observable tax-specific risk premiums. Notably, however, syndicate-level RMMs substantially offset tax-specific risk premiums for firms with both weak and strong corporate governance mechanisms in place. Thus, the strength of internal governance mechanisms are not substitutes for recent trends in co-syndication and covenant design alternatives that help facilitate credit risk diversification and/or borrower-lender incentive alignment. The analysis in this section further solidifies the results obtained in the previous sections.

6.4. Further Robustness Tests

This section runs additional robustness analysis. In Panel A of Table 13, I control for potential credit rating shopping argument where firms can obtain credit ratings to either to get access to external debt financing and/or to obtain more favorable terms in additional rounds of financing. The analysis identifies a sub-sample of firms that had received a credit rating during the sample period and tests for the link between tax avoidance and loan spreads in the post rate-assignment period. Panel B tests for repetitive lending-borrowing links where RL is used

[36] Note that the regression model excludes institutional equity ownership (INOWN) and the number of analysts following (ANFLW) given that these measures are used to form the composite external governance measure.
[37] In un-tabulated analysis, I also run the same analysis on a sub-set of firms that have reported a material internal governance weakness but fail to find a strong and positive directional link between tax avoidance and loan spreads. In models that exhibit such positive links, lead-level risk diversification substantially offset tax-specific risk premiums, however, for a much smaller sample of 172 firm-years.

as the dummy variable to control for repeated lending relationship with a given "lead" lender. Any relationship that covers minimum 3 years of lender-borrower relationship receives a value of one and zero otherwise.

In Panel C, I investigate whether loan maturity structure can substitute for loan-level risk mitigation mechanisms in alleviating the contracting costs associated with tax avoidance. Platikanova (2017) show that lenders shorten loan durations for tax avoiders in order to facilitate frequent credit assessments to control for tax-related risks. Column A investigates whether aggressive levels of tax avoidance is associated with shorter loan duration. In this analysis the dependent variable is the loan maturity (TERM). Column B controls for firms with average loan maturity of 3 years or lower (STD) and its effect on the link between tax avoidance and loan spreads (STD_TAX). The analyses from Column C to D provide an alternative analysis to test the link between tax avoidance and loan maturity. Specifically, Columns C and D control for sub-sample of loans with high and low levels of co-syndication intensity and Columns E and F control for sub-sample of loans with or without performance-based loan provisions. Panel D runs the baseline model of tax risk mitigation analysis using book-tax differences (BTD) and the 5 year (rolling) standard deviation of cash ETRs as measures of tax avoidance and risk.

The results show that tax-risk moderating benefits achieved via lead-level syndicate diversification and PPPs are robust to controlling for potential rating shopping, where firms may obtain credit ratings solely to attract lenders for an upcoming loan issue, and to alternative measures of tax avoidance and risk.[38] Moreover, Column A indicates no link between aggressive levels of tax avoidance and loan maturity. On the other hand, Column C provides some evidence of longer term maturity for tax-aggressive borrower-years for loans with high co-syndication which facilitates credit risk diversification. I find no such effect for performance-based provisions in Column E. Overall, the adjustments to loan duration, which facilitate enhanced and timely monitoring, and the formation of relationship banking via repeated lending, are not substitutes for the risk mitigation benefits achieved via co-syndication and performance-sensitive covenant structures.

7. Access to Public Debt Markets and Contracting Costs of Tax Avoidance

In this section I examine the contracting costs of tax avoidance, controlling for corporate access to public debt market financing, which enables firms to tap into longer-term financing options with more flexible covenant-terms. Panel A/(Panel B) in Table 14 examines loan costs associated with tax avoidance for sub-sample of firms

[38] For both BTDs and SDCETR variables, either lead-level risk diversification or performance-based provisions offset tax-specific risk premiums.

with/(without) access to public debt markets alongside their private lending markets. The results indicate that the contracting costs associated with tax avoidance are confined to firms with no access to public debt financing. For example, focusing on CETR in Panel B, a standard deviation increase in tax avoidance results in 8.50 bps increase in loan spreads for firms with no access to public debt markets. Similarly, loan spreads increase by 8.87 bps and 3.81 bps for a given standard deviation increase in LRCETR and PBTD tax avoidance proxies, respectively, for firms with no access to public debt financing.

Next, in Panel C, I add a dummy indicator controlling for firms' access to the public debt market (BOND) and its interaction with alternative measures of tax avoidance (BOND_TAX). This analysis tests whether, and if so, to what extent, superior firm-level financial flexibility and the information environment help alleviate the agency costs associated with tax avoidance. The analysis also controls for self-selection into public debt financing using a propensity-score matched sub-sample. In practice, firms might prefer to access to these markets much sooner (Rajan, 1992; Werner and Gilson, 1999; Hale and Santos, 2008) than postulated by the reputation-building argument (Diamond, 1989, 1991), which will enhance firm-level information environment and financial flexibility. More importantly, this empirical observation necessitates controlling for self-selection bias into public debt financing. As in previous score-matched sub-samples, I use caliper matching at 5% with no replacement. The results in this panel indicate that having access to public debt financing offsets between 50% and 100% of the additional risk premium required for tax avoidance, depending on the alternative tax avoidance strategy examined.

Finally, in Panel D of Table 14, I examine the joint effectiveness of syndicate-level risk mitigation mechanisms and acquired credibility via access to public debt financing in alleviating the contracting costs associated with tax avoidance. To do so, I incorporate the variables for public bond market access, syndicate-lead risk diversification and performance pricing provisions and their interactions with tax avoidance proxies into a single model. The conclusion from this analysis is that, both mechanisms operate as complements in moderating tax-specific risk premiums. Nonetheless, the economic effects observed for acquired credibility via bond market access is about half of those observed for syndicate-level risk-mitigating mechanisms. For PBTDs, I find that only co-syndication intensity effectively offsets additional tax-risk premiums, in line with the pattern of results presented so far.

Altogether, the results document that acquired credibility via access to public debt finance, which facilitates information production that is otherwise privately capitalized (held-up) by a single or a group of private lenders,

as well as financial flexibility, help substantially mitigate contracting costs associated with tax avoidance. It is important to note that, establishing whether risk-moderation benefits stem from the information-dissemination channel (Santos and Winton, 2008; Hale and Santos, 2009; Ioannidou and Ongena, 2010), where firms are able to eliminate hold-up costs related to bank financing, and/or from financial-flexibility channel (Cantillo and Wright, 2000; James and Smith, 2000), where firms obtain long-lasting financial flexibility through access to alternative financing options, is an empirical challenge that is out of the scope of this paper. However, one can side with information-production channel given that corporate tax avoidance generates direct and indirect information asymmetries (e.g., e.g., Desai and Dharmapala, 2006, Desai et al., 2007; Frank et al., 2009; Balakrishnan et al., 2011; Shevlin et al., 2013; Hasan et al., 2014). Indeed, Hasan et al (2014) documents that given the agency problems (direct/indirect) linked with aggressive tax avoidance, these firms prefer to tap into private lending markets for external financing, rather than obtain arm's length public debt. Nonetheless, for the purposes of this analysis, the source of the risk-moderating benefits are of secondary importance. Altogether the analysis supports the arguments made in H5.

8. CONCLUSION

In this paper, I revisit and significantly expand the empirical evidence quantifying contracting costs associated with corporate tax avoidance (Shevlin et al., 2013; Hasan et al., 2014) and bring forth novel thinking towards some of the most relevant and timely issues in finance and banking literatures. First, the paper distinguishes itself from the tax literature (Shevlin et al., 2013; Hasan et al., 2014) by incorporating recent advances in loan formation and covenant design alternatives into the analysis, including increasing tendency to co-syndicate deal structures and the application of performance-based pricing provisions. I find that the standalone tax-specific risk premiums documented in the literature (Shevlin et al., 2013; Hasan et al., 2014) are largely eliminated for loans with high co-syndication intensity, which facilitates credit risk diversification, and for loans with performance-sensitive provisions, which facilitate borrower-lender incentive alignment. Moreover, the ability to transfer loan-specific risks back into the financial system via CDS contracts substantially alleviates standalone risks associated with tax avoidance.

Furthermore, the analysis documents a strong negative link between simultaneous access to public and private debt financing and the contracting costs of tax avoidance. In line with the hold-up costs associated with single-bank lending (e.g., Rajan, 1992,; Houston and James, 1996; Santos and Winton, 2008; Hale and Santos, 2009; Ioannidou and Ongena, 2010; Schenone, 2010), I find that access to public debt financing, which facilitates

superior financial flexibility and informational environment (Cantillo and Wright, 2000; James and Smith, 2000), helps alleviate potentially escalated agency costs associated with corporate tax avoidance (Desai and Dharmapala, 2006,; Desai et al., 2007; Balakrishnan et al., 2011). These results are important given that the prior literature implicitly assumes that firms hold either bank-originated or arm's length public debt financing but not both facilities concurrently (Shevlin et al., 2013; Hasan et al., 2014). Moreover, the results also extend the empirical evidence on the inefficient hold-up problems associated with relationship-focused bank financing (Santos and Winton, 2008; Hale and Santos, 2009; Ioannidou and Ongena, 2010) into the corporate tax avoidance setting within the agency-theory framework.

Next, by exploiting corporate tax avoidance as a particular risk-taking incentive, the study provides one of the few solid empirical analyses to date that tests agency and/or credit risk mitigation benefits associated with loan formation and contract design alternatives (e.g., Jensen and Meckling, 1976; Smith and Warner, 1979; Simons, 1993; Armstrong, 2003; Nini et al., 2009; Chava et al., 2010). I show that lead-level risk diversification and performance-sensitive loan provisions are more effective, ex-ante, in mitigating tax-specific risks in comparison to both maintenance-based and incurrence-based (lite) covenant structures. In the context of corporate tax avoidance, these results are in line with the fundamental arguments made in Francis et al. (2016) and suggest that maintenance-based covenant structures do not necessarily establish ex-ante commitment mechanisms. Instead, these covenant structures maximize contracting benefits via either close monitoring, which result in frequent loan renegotiations with the accrual of new information (Roberts and Sufi, 2009) and/or via state-contingent transfer of control rights are triggered, following technical/actual defaults (Roberts and Chava, 2008; Nini et al., 2009; Christensen, Nikolaev and Wittenberg-Moerman, 2016).

Finally, the analysis suggests that, loans with high institutional investor and investment bank participations do not price in additional risk premiums for aggressive levels of corporate tax avoidance. I argue that, given that these institutions predominantly lend to high-risk/high-yield borrowers, they demand higher risk premiums to compensate for their high-risk investment strategies that also accounts for tax-specific risks. Thus, tax risk is likely to blend in with other risk factors to collectively form high-risk high-yield investment opportunities. Accordingly, the analysis extends the growing body of research that investigates credit pricing of non-commercial bank lenders (Harjoto et al., 2006; Ivashina and Sun, 2011a, Lim et al., 2014; Beyhagi et al., 2017) to incorporate corporate tax avoidance as a test of a particular risk-taking incentive.

Overall, my analysis documents significantly lower contracting costs for tax avoidance than previously observed, which brings an agency-theoric explanation as to how corporations can attain persistently low tax rates (e.g., Dyreng et al., 2008) without incurring material agency-specific costs. These results enhance our understanding on the agency costs associated with tax avoidance (Hanlon and Heitzman, 2010) and on the role financial intermediaries play in corporate tax planning (Gallemore, Gipper and Maydew, 2016). Pertinent to the ongoing research agenda in tax literature (see Hanlon and Heitzman, 2010), these results help identify channels through which firms might mitigate non-tax costs associated with tax avoidance that enables them to persistently reduce corporate tax burden without incurring material agency costs (e.g., Dyreng et al., 2008; GAO, 2008, 2016).

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Table 1
Summary Statistics

Variables	Q1	Med	Mean	Q4	Sdev
Tax Measures					
$CETR$	0.13	0.26	0.25	0.35	0.14
$LRCETR$	-0.009	0.004	0.009	0.023	0.04
$PBTD$	0.003	0.013	0.022	0.03	0.05
BTD	0.006	0.023	0.03	0.046	0.05
UTB	0.0014	0.005	0.01	0.012	0.015
$SHELTER\ SCORE$	-0.84	0.14	0.23	1.21	1.57
$SDCETR$	0.02	0.048	0.073	0.098	0.077
Loan Variables					
$SPREAD$	50	100	123	175	100
$NOLEAD$	1	3	3	5	2.17
$NOPART$	3	6	8	10	7.40
CSI	0	1	0.54	1	0.50
SPI	0	0	0.40	1	0.49
$LPCT$	0.20	0.33	0.45	0.83	0.34
$LREP$	0	0	0.44	1	0.50
$TERM$	3	5	3.93	5	1.75
$LNLOAN$	4.83	5.79	5.70	6.62	1.37
$REVD$	1	1	.80	1	0.41
PPP	0	0	0.32	1	0.18
$SECUR$	0	0	0.38	0	0.27
$IIINT$	0	0	0.15	0.12	0.51
$IBINT$	0	0	0.17	0.21	0.32
$LVRGD$	0	0	0.32	1	0.46
COV	0	0	6.31	8	17.52
$COVL$	0	0	0.07	0	0.26
Other Variables					
$PIFO$	0	0	0.02	0.02	0.04
CIS	0.014	0.018	0.0214	0.02	0.52
$PTROA$	0.064	0.10	0.12	0.16	0.09
$LNTA$	4.90	6.23	6.29	7.59	1.98
PPE	0.23	0.43	0.53	0.75	0.40
$LVRG$	0.007	0.14	0.18	0.28	0.21
AQ	0.02	0.029	0.035	0.04	0.03
$ZSCORE$	2.62	3.87	5.71	6.06	9.60
$ANFLW$	1	4	6.40	10	7.5
$INOWN$	0.00	0.25	0.50	0.70	0.37
$G-INDEX$	7	9	9.10	11	2.65
MTB	1.41	2.23	3.30	3.61	23

Table 1 presents summary statistics. In line with the past research all ETR measures are truncated between [0,1] intervals. Q1 and Q4 represent the bottom and top quartiles for each observation. All variables are explained in greater detail in Appendix.

TABLE 2

The Effects of Syndicate Risk Mitigation Mechanisms on Tax Avoidance and Syndicate Loan Spreads 1

	Panel A			Panel B			Panel C		
	RM_TAX:CSI			RM_TAX:PPP			RM_TAX:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	55.61***	81.75***	132.4**	52.44***	54.24***	40.77	43.73***	54.53***	53.14
	(4.68)	(3.32)	(2.12)	(4.89)	(2.98)	(0.67)	(4.94)	(3.36)	(0.98)
CSI	-19.55***	-27.94***	-6.469	-10.51***	-15.11***	-8.874**			
	(-3.63)	(-3.31)	(-1.63)	(-2.88)	(-3.42)	(-2.35)			
PPP	-35.22***	-33.10***	-34.36***	-47.39***	-37.24***	-47.67			
	(-18.01)	(-15.04)	(-16.71)	(-12.33)	(-6.03)	(-14.51)			
LQM							-27.8***	-27.60***	-14.32***
							(-6.49)	(-4.59)	(-5.83)
RM_TAX	-35.77**	-50.12*	-129.3*	-48.49***	-15.64*	47.67	-52.3***	-37.38*	-109.52
	(-2.51)	(-1.76)	(-1.66)	(-3.86)	(-1.77)	(0.69)	(-3.56)	(-1.87)	(-0.73)
TPARTD	-8.131***	-8.363***	-8.182***	-8.144***	-8.484***	-8.199***			
	(-3.77)	(-3.50)	(-3.56)	(-3.79)	(-3.57)	(-3.57)			
LEADPCT	-21.38***	-23.40***	-22.69***	-21.12***	-23.24***	-22.60***			
	(-3.46)	(-2.87)	(-3.61)	(-3.41)	(-2.84)	(-3.60)			
LREP5	-7.427***	-7.532***	-7.482***	-7.453***	-7.777***	-7.641***			
	(-3.00)	(-2.87)	(-2.90)	(-3.02)	(-2.97)	(-2.96)			
TERM	0.828	1.532	0.306	0.801	1.504	0.313	-0.156	0.577	-20.36
	(0.99)	(1.57)	(0.36)	(0.96)	(1.54)	(0.36)	(-0.18)	(0.59)	(-0.30)
REVD	-43.55***	-41.38***	-42.50***	-43.58***	-41.56***	-42.53***	-46.00***	-43.81***	-0.532
	(-12.91)	(-11.20)	(-12.02)	(-12.94)	(-11.25)	(-12.03)	(-13.36)	(-11.78)	(-0.61)
SECUR	0.108	1.391	0.507	0.299	1.354	0.492	0.216	1.426	-44.60***
	(0.06)	(0.72)	(0.28)	(0.17)	(0.70)	(0.27)	(0.12)	(0.72)	(-12.39)
LNLOAN	2.486	2.038	1.141	2.570	2.036	1.061	1.081	0.225	0.777
	(1.45)	(1.04)	(0.62)	(1.50)	(1.04)	(0.58)	(0.64)	(0.12)	(0.41)
LNTA	-16.76***	-16.27***	-15.77***	-16.59***	-16.09***	-15.57***	-15.56***	-15.27***	0.0697
	(-10.88)	(-9.64)	(-9.61)	(-10.84)	(-9.61)	(-9.59)	(-10.00)	(-9.00)	(0.04)
PTROA	-127.9***	-147.8***	-137.9***	-126.7***	-147.1***	-137.5***	-121.9***	-143.1***	-14.46***
	(-6.55)	(-6.07)	(-6.81)	(-6.51)	(-6.06)	(-6.77)	(-6.14)	(-5.80)	(-8.82)
LVRG	52.42***	67.27***	57.36***	52.20***	67.12***	57.66***	52.58***	68.95***	-132.1***
	(6.46)	(7.18)	(6.70)	(6.46)	(7.21)	(6.71)	(6.36)	(7.25)	(-6.40)
PIFO	-37.75	-28.18	-32.12	-37.90	-29.64	-36.03	-42.29	-35.66	58.36***
	(-1.18)	(-0.82)	(-0.92)	(-1.19)	(-0.87)	(-1.04)	(-1.32)	(-1.04)	(6.67)
AQ	52.17	72.38	54.49	59.14	76.71	52.30	55.75	79.85	-41.92
	(1.16)	(1.32)	(1.20)	(1.30)	(1.39)	(1.15)	(1.19)	(1.41)	(-1.21)
PPE	-1.181	-0.202	-0.417	-1.280	-0.360	-0.138	0.394	0.526	60.85
	(-0.26)	(-0.04)	(-0.10)	(-0.29)	(-0.07)	(-0.03)	(0.09)	(0.10)	(1.31)
MTB	-0.0135	-0.0153	-0.0173	-0.0130	-0.0148	-0.0171	-0.0102	-0.0140	1.436
	(-0.92)	(-0.86)	(-1.14)	(-0.87)	(-0.83)	(-1.14)	(-0.67)	(-0.74)	(0.34)
INOWN	-12.68***	-8.215**	-12.87***	-12.34***	-7.930**	-12.72***	-14.61***	-10.64***	-0.0139
	(-3.60)	(-2.05)	(-3.53)	(-3.51)	(-2.00)	(-3.48)	(-4.09)	(-2.65)	(-0.93)
ANFLW	-0.574***	-0.628***	-0.578***	-0.614***	-0.648***	-0.596***	-0.514***	-0.589***	-14.25***
	(-3.05)	(-2.93)	(-2.93)	(-3.26)	(-3.00)	(-3.03)	(-2.73)	(-2.73)	(-3.82)
CIS	72.47***	87.48***	69.40***	71.82***	88.23***	69.85***	69.12***	94.91***	-0.539***
	(9.84)	(19.60)	(8.44)	(9.78)	(19.86)	(8.48)	(9.40)	(21.61)	(-2.74)
ZSCORE	0.621	0.726	0.679	0.683	0.734	0.753	0.642	0.843	0.61
	(1.34)	(1.24)	(1.38)	(1.20)	(1.24)	(1.26)	(1.42)	(1.46)	(1.05)
LVRGD	60.84***	61.17***	61.50***	60.76***	61.11***	61.58***	63.48***	63.13***	0.772*
	(22.35)	(20.16)	(21.55)	(22.31)	(20.12)	(21.53)	(22.48)	(20.18)	(1.91)
I & T FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	64.23***
R^2	0.57	0.57	0.57	0.57	0.57	0.57	0.55	0.55	(21.70)
Obs	6198	5126	5592	6198	5126	5592	6198	5126	5592

Table 2 runs the baseline model that controls for the effectiveness of risk loan-specific risk-mitigating factors in alleviating ex-ante risks related to tax avoidance. Panel A and B use the co-syndication intensity and performance pricing provisions as the two syndicate-level risk mitigating mechanisms, respectively. Panel C adds the composite loan quality measure (LQM), which encompasses lender credibility and syndicate-level risk management mechanisms, to the model. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. Calculation of all of these tax avoidance measures alongside with control variables are detailed in Appendix. All t-values are reported in parentheses and asterisks above the coefficients represent significance levels where * is used for $p < 10\%$, ** is used for $p < 5\%$ *** is used for $p < 1\%$ significance levels. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

TABLE 3

The Effects of Syndicate Risk Mitigation Mechanisms on Tax Avoidance and Syndicate Loan Spreads PSM

	Panel A			Panel B			Panel C		
	RM_TAX:CSI			RM_TAX:PPP			RM_TAX:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	63.11***	73.53**	163.2*	45.61***	43.21*	48.28	67.56***	57.56**	61.90
	(3.70)	(2.33)	(1.89)	(3.47)	(1.88)	(0.43)	(4.63)	(2.39)	(0.61)
CSI	-27.48***	-30.54***	-7.080	-9.266**	-15.17***	-10.57**			
	(-4.23)	(-3.08)	(-1.49)	(-2.33)	(-3.12)	(-2.28)			
PPP	-31.33***	-28.65***	-32.49***	-44.14***	-34.56***	-39.85***			
	(-11.95)	(-9.87)	(-11.61)	(-9.54)	(-4.90)	(-10.20)			
LQM							-32.03***	-24.61***	-14.58***
							(-5.41)	(-2.96)	(-4.51)
RM_TAX	-61.01***	-62.14*	-146.7**	-36.47**	-27.49*	39.85	-65.30***	-26.43*	-34.77
	(-3.09)	(-1.84)	(-2.02)	(-2.45)	(-1.79)	(0.57)	(-3.47)	(-1.87)	(-0.33)
TPARTD	-10.83***	-10.25***	-10.38***	-6.883***	-7.358***	-10.36***			
	(-3.99)	(-3.47)	(-3.65)	(-2.88)	(-2.81)	(-3.64)			
LEADPCT	-26.13***	-24.52**	-27.40***	-18.06***	-16.36*	-26.95***			
	(-3.24)	(-2.42)	(-3.15)	(-2.77)	(-1.91)	(-3.09)			
LREP5	-6.843**	-6.800*	-5.900	-8.777***	-8.946***	-6.130*			
	(-2.01)	(-1.87)	(-1.62)	(-3.35)	(-3.18)	(-1.69)			
TERM	1.873*	2.164**	1.326	2.068**	3.083***	1.398	0.441	1.747	0.446
	(1.87)	(1.99)	(1.23)	(2.51)	(3.11)	(1.30)	(0.33)	(1.16)	(0.31)
REVD	-41.97***	-35.75***	-39.92***	-46.51***	-45.10***	-39.81***	-45.55***	-37.48***	-48.59***
	(-8.80)	(-6.99)	(-8.14)	(-11.02)	(-9.32)	(-8.12)	(-7.26)	(-5.82)	(-7.10)
SECUR	-1.911	-0.474	-3.477	2.007	3.009	-3.482	0.492	2.413	1.332
	(-0.77)	(-0.17)	(-1.35)	(1.02)	(1.36)	(-1.35)	(0.19)	(0.88)	(0.49)
LNLOAN	1.642	1.717	0.462	1.221	0.996	0.329	5.065*	3.935	4.567
	(0.70)	(0.69)	(0.18)	(0.59)	(0.42)	(0.13)	(1.92)	(1.47)	(1.64)
LNTA	-18.27***	-18.93***	-16.87***	-16.82***	-16.25***	-16.52***	-13.87***	-12.33***	-13.41***
	(-7.82)	(-7.51)	(-6.91)	(-9.42)	(-8.23)	(-6.84)	(-5.65)	(-5.04)	(-5.13)
PTROA	-98.59***	-111.5***	-105.9***	-116.4***	-131.3***	-103.9***	-137.9***	-169.8***	-152.3***
	(-3.35)	(-3.18)	(-3.28)	(-5.72)	(-4.97)	(-3.20)	(-4.82)	(-4.93)	(-5.21)
LVRG	61.94***	77.46***	71.41***	43.42***	56.00***	71.98***	41.12***	59.81***	42.93***
	(4.87)	(5.07)	(5.37)	(5.08)	(5.67)	(5.39)	(3.90)	(4.80)	(3.87)
PIFO	-24.56	-23.82	-35.22	-63.09*	-69.29*	-34.15	-18.72	-19.15	-20.77
	(-0.58)	(-0.50)	(-0.76)	(-1.93)	(-1.95)	(-0.72)	(-0.50)	(-0.48)	(-0.47)
AQ	23.78	9.986	33.04	60.93	53.00	30.85	64.86	81.44	18.78
	(0.41)	(0.14)	(0.55)	(1.23)	(0.85)	(0.52)	(1.00)	(0.99)	(0.27)
PPE	0.635	-6.007	3.574	-0.207	1.191	4.056	6.292	3.728	4.251
	(0.12)	(-1.00)	(0.60)	(-0.04)	(0.18)	(0.69)	(0.97)	(0.54)	(0.65)
MTB	-0.0357	-0.162***	-0.0509	-0.0238	-0.00697	-0.0486	0.00139	0.000560	0.00383
	(-0.93)	(-3.01)	(-1.59)	(-1.28)	(-0.46)	(-1.53)	(0.11)	(0.05)	(0.31)
INOWN	-12.82***	-5.937	-13.69***	-17.79***	-14.45***	-13.95***	-13.54**	-6.143	-12.91**
	(-2.68)	(-1.14)	(-2.71)	(-4.68)	(-3.21)	(-2.76)	(-2.56)	(-1.01)	(-2.25)
ANFLW	-0.353	-0.426	-0.442*	-0.162	-0.0965	-0.464*	-0.829***	-0.856***	-0.792***
	(-1.37)	(-1.44)	(-1.68)	(-0.74)	(-0.37)	(-1.76)	(-3.67)	(-3.21)	(-3.20)
CIS	63.97***	82.25***	61.40***	82.03***	98.96***	61.97***	57.22***	81.88***	52.92***
	(5.88)	(11.12)	(5.23)	(7.51)	(11.40)	(5.26)	(5.11)	(11.48)	(4.19)
ZSCORE	0.202	0.441	0.511	0.729	0.854	0.482	0.824	1.814	0.859
	(0.29)	(0.50)	(0.69)	(1.30)	(1.29)	(0.65)	(1.36)	(1.27)	(1.11)
LVRGD	61.76***	65.02***	63.40***	52.86***	52.74***	63.30***	51.66***	53.43***	52.18***
	(15.65)	(14.85)	(15.76)	(17.14)	(14.78)	(15.74)	(11.46)	(11.17)	(10.94)
I & T FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.59	0.59	0.59	0.55	0.55	0.59	0.54	0.57	0.54
Obs	2910	2367	2633	3752	2990	2633	2470	2023	2252

Table 3 runs the baseline model that controls for the effectiveness of risk loan-specific risk-mitigating factors in alleviating ex-ante risks related to tax avoidance on propensity-score matched sample. Panel A and B use the co-syndication intensity and performance pricing provisions as the two syndicate-level risk mitigating mechanisms, respectively. Panel C adds the composite loan quality measure (LQM), which encompasses lender credibility and syndicate-level risk management mechanisms, to the model. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. Calculation of all of these tax avoidance measures alongside with control variables are detailed in Appendix. All t-values are reported in parentheses and asterisks above the coefficients represent significance levels where * is used for $p < 10\%$, ** is used for $p < 5\%$ *** is used for $p < 1\%$ significance levels. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

TABLE 4

Controlling for Restrictive and "Lite" Covenant Structures

	Panel A			Panel B			Panel C			Panel D		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	61.56***	79.97***	135.5*	50.95***	51.99***	37.69	75.18***	83.29***	121.6	75.84***	85.72***	115.2
	(4.20)	(2.92)	(1.77)	(4.75)	(2.87)	(0.62)	(4.77)	(2.92)	(1.50)	(4.81)	(3.02)	(1.42)
CSI	-19.88***	-27.40***	-6.194	-10.32***	-14.82***	-8.609**	-19.86***	-27.18***	-6.172	-20.01***	-27.38***	-6.166
	(-3.59)	(-3.19)	(-1.55)	(-2.82)	(-3.34)	(-2.27)	(-3.60)	(-3.16)	(-1.55)	(-3.64)	(-3.20)	(-1.55)
CSI_TAX	-38.18**	-49.12*	-130.8*				-38.75**	-48.34*	-130.5	-38.65**	-48.28*	-136.2
	(-2.53)	(-1.69)	(-1.75)				(-2.57)	(-1.86)	(-1.56)	(-2.58)	(-1.66)	(-1.63)
PPP	-37.61***	-36.15***	-36.90***	-54.57***	-42.87***	-38.28***	-54.45***	-41.98***	-38.25***	-52.17***	-37.03***	-36.55***
	(-17.33)	(-14.42)	(-16.21)	(-11.17)	(-5.61)	(-10.69)	(-11.08)	(-5.45)	(-10.60)	(-10.50)	(-4.63)	(-12.83)
PPP_TAX				-46.79***	-26.09*	68.92	-67.32***	-23.41	68.12	-65.71***	-43.12*	78.37
				(-4.22)	(-1.89)	(0.80)	(-4.22)	(-1.68)	(0.78)	(-4.04)	(-1.76)	(0.88)
COV	2.137	10.01	7.458**	15.24***	15.57*	7.885**	13.50**	13.94	8.356***	11.98**	10.02	7.359**
	(0.45)	(1.31)	(2.42)	(2.84)	(1.75)	(2.49)	(2.41)	(1.52)	(2.62)	(2.09)	(1.05)	(2.31)
COV_TAX	-19.39	4.767	-14.38	32.33	26.71	-24.44	25.45	20.83	-59.89	23.63	11.20	-63.38
	(-1.31)	(0.19)	(-0.19)	(0.91)	(0.91)	(-0.26)	(1.43)	(0.69)	(-0.60)	(1.29)	(0.35)	(-0.62)
$COVL$										-22.53***	-30.97***	-21.68***
										(-3.11)	(-3.09)	(-3.77)
$COVL\_TAX$										-10.14	-45.55	70.80
										(-0.50)	(-1.12)	(0.79)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.57	0.57	0.57	0.57	0.51	0.58	0.57	0.57	0.56	0.57	0.57	0.57
Obs	6198	5126	5592	6198	5126	5592	6198	5126	5592	6198	5126	5592

Table 4 controls for the existence of restrictive and incurrence-based (lite) covenant structures. Panel A and B compares the effects of restrictive covenant structures on the link between loan spreads and tax avoidance to those observed for syndicate-lead risk diversification and performance-based provisions, respectively. Panel C incorporates maintenance-based covenant clauses, syndicate-lead risk diversification and performance pricing provisions in a single model. Panel D adds a dummy indicator for incurrence-based (lite) covenant structures (COVL) and its interaction with TAX variable (COVL_TAX) to the model in Panel C. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Calculation of all of these tax avoidance measures alongside with control variables are detailed in Appendix. Asterisks above the coefficients represent significance levels where * is used for $p < 10\%$, ** is used for $p < 5\%$ *** is used for $p < 1\%$ significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

TABLE 5

Controlling for Endogeneity: Industry Median Level of Tax Avoidance as an Instrument

Panel A: Industry Median Level of Tax Avoidance as an Instrument

	Panel A			Panel B			Panel C		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	154.0***	170.1***	189.9**	93.18**	76.48*	-142.2	109.5***	109.8***	-85.65
	(2.81)	(3.01)	(2.22)	(2.23)	(1.82)	(-1.06)	(2.84)	(2.78)	(-0.66)
CSI	-40.16***	-47.18***	-5.094	-9.467**	-9.435**	-9.101**			
	(-3.00)	(-3.30)	(-1.19)	(-2.56)	(-2.55)	(-2.46)			
CSI_TAX	-124.0**	-146.2***	-137.1*						
	(-2.44)	(-2.80)	(-1.68)						
PPP	-34.28***	-34.12***	-34.53***	-52.72***	-38.63***	-41.74***			
	(-17.44)	(-17.35)	(-17.57)	(-5.24)	(-3.72)	(-14.70)			
PPP_TAX				-73.27*	-45.98*	190.0			
				(-1.88)	(-1.78)	(1.36)			
LQM							-54.22***	-53.76***	-11.66***
							(-5.65)	(-5.31)	(-3.48)
LQM_TAX							-91.8***	-85.5***	-137.5
							(-4.18)	(-3.96)	(-1.03)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.56	0.54	0.57	0.56	0.54	0.56	0.53	0.55	0.55
Obs	6198	5126	5592	6198	5126	5592	6198	5126	5592

Table 5 controls for the potential reverse causality effect between tax avoidance and loan spreads. The analysis uses industry median level tax avoidance (excluding the particular firm "i" from the calculation) as an instrument for tax avoidance. This industry median tax avoidance is calculated for each tax avoidance measure used. The table presents the results for the second stage regression of a two stage (2SLS) regression. Panel A and B use co-syndication intensity and performance pricing provisions as two syndicate-level risk mitigating mechanisms, respectively. Panel C adds the composite loan quality measure (LQM), which encompasses lender credibility and syndicate-level risk management mechanisms, to the model. The dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Calculation of all of these tax avoidance measures alongside with control variables are detailed in Appendix. Asterisks above the coefficients represent significance levels where * is used for p < 10%, ** is used for p < 5% *** is used for p < 1% significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

TABLE 6

Controlling for Endogeneity: Bank Capital Adequacy Stress Testing

	Panel A			Panel B			Panel C		
	CETR			LRCETR			PBTD		
Variables	ST	STN	STP	ST	STN	STP	ST	STN	STP
TAX	214.7***	4.164	52.02***	189.6**	-13.37	82.17**	128.3	134.7	-11.41
	(3.12)	(0.10)	(3.10)	(2.20)	(-0.22)	(2.41)	(0.33)	(1.58)	(-0.13)
CSI	-43.10*	-20.31	-16.61**	-40.29*	-14.25	-27.4***	-3.354	5.425	-13.9***
	(-1.89)	(-1.52)	(-2.56)	(-1.73)	(-0.81)	(-2.67)	(-0.21)	(0.39)	(-2.69)
CSI_TAX	-164.9**	-62.61	-20.28*	-146.6*	-41.86	-28.40*	64.29	-119.2	-119.1
	(-2.42)	(-1.42)	(-1.67)	(-1.70)	(-0.69)	(-1.77)	(0.16)	(-1.07)	(-1.43)
PPP	-61.85***	-40.67***	-38.74***	-50.9***	-34.53*	-27.3***	-29.9***	-29.2***	-36.5***
	(-5.86)	(-3.21)	(-7.96)	(-5.26)	(-1.96)	(-3.69)	(-3.47)	(-2.91)	(-11.16)
PPP_TAX	-114.1***	-11.59	-29.67*	-67.39**	19.90	7.010	-183.9	-112.8	15.92
	(-3.07)	(-0.28)	(-1.85)	(-2.01)	(0.29)	(0.27)	(-0.82)	(-1.06)	(0.92)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.46	0.57	0.50	0.47	0.56	0.45	0.62	0.57	0.43
Obs	1503	683	3035	1475	663	2385	1128	646	2728

Table 6 also controls for the potential reverse causality effect between tax avoidance and loan spreads. The analysis uses banks that were subject to capital adequacy tests starting from 2009 and onwards as a treatment group and those that were not, as a benchmark group to investigate the link between tax avoidance and loan spreads between the two sub-groups. In all panels, ST stands for sub-sample of banks that were subject to stress testing, STN stands for sub-sample of banks that were *not* subject to stress testing and STP stands for the pre-stress test period sub-sample of the same banks that were subject to stress testing on and onwards 2009. Panel A, B and C use CETR, LRCETR and PBTD as a measure of tax avoidance, respectively. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Calculation of all of these tax avoidance measures alongside with control variables are detailed in Appendix. Asterisks above the coefficients represent significance levels where * is used for $p < 10\%$, ** is used for $p < 5\%$ *** is used for $p < 1\%$ significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

TABLE 7

Controlling for Loan Ownership Structure

Panel A: Non-Bank Participation Intensity and Loan Pricing

Variables	OLS (1)	OLS (2)	OLS (3)	FE (4)	RE (5)
TAX	43.61***	52.37***	50.33**	33.18***	31.73***
	(5.26)	(3.01)	(5.28)	(2.80)	(4.11)
$IIINT$	30.78***		-2.90	14.89***	22.93***
	(8.57)		(6.37)	(5.29)	(9.03)
$IBINT$		4.40*	-6.02**	-5.73**	-1.56
		(1.86)	(-2.39)	(-2.39)	(0.48)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes
R^2	0.57	0.51	0.57	0.47	0.51
Obs	6198	6198	6198	6198	6198

Panel A: Loans with High Institutional Investor to Commercial Bank Participation

	CETR		LRCETR		PBTD	
Variables	IIINT>M	IIINT<M	IIINT>M	IIINT<M	IIINT>M	IIINT<M
TAX	76.86	67.10***	9.418	94.73***	76.86	564.0*
	(0.91)	(4.51)	(0.09)	(3.36)	(0.91)	(1.83)
CSI	-13.13***	-17.79***	-43.08**	-19.90**	-13.13***	-13.18
	(-3.35)	(-3.17)	(-1.99)	(-2.15)	(-3.35)	(-1.02)
PPP	-18.64	-37.18*	-44.97	-40.87*	-18.64	-502.5*
	(-0.20)	(-1.80)	(-0.49)	(-1.76)	(-0.20)	(-1.67)
$IIINT$	-30.70***	-39.14***	-18.89	-40.06***	-30.70***	-40.62***
	(-11.58)	(-9.57)	(-1.12)	(-5.96)	(-11.58)	(-5.19)
$IBINT$	-60.01	-28.31**	12.71	-34.22*	-60.01	-160.3
	(-0.68)	(-2.19)	(0.44)	(-1.65)	(-0.68)	(-0.60)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.64	0.56	0.65	0.56	0.66	0.57
Obs	852	4612	719	3961	730	4214

Panel B: Loans with High Investment Bank to Commercial Bank Participation

	CETR		LRCETR		PBTD	
Variables	IBINT>M	IBINT<M	IBINT>M	IBINT<M	IBINT>M	IBINT<M
TAX	84.2***	82.14***	65.50	83.96***	22.28	271.2*
	(3.73)	(4.90)	(1.30)	(3.01)	(0.27)	(1.79)
CSI	-25.54***	-22.27***	-27.65*	-26.28***	-27.94**	-9.131
	(-2.70)	(-3.60)	(-1.95)	(-2.84)	(-2.11)	(-1.09)
CSI_TAX	-44.42*	-36.30**	-35.15	-50.56*	-11.92	-229.8**
	(-1.83)	(-2.02)	(-0.75)	(-1.77)	(-0.13)	(-2.08)
PPP	-58.04***	-46.52***	-38.40***	-33.24***	-32.40***	-40.01***
	(-8.58)	(-9.65)	(-3.91)	(-4.72)	(-12.44)	(-9.01)
PPP_TAX	-78.55***	-39.11**	-15.49	-6.854	38.28	-129.12**
	(-3.46)	(-2.54)	(-0.45)	(-0.28)	(0.46)	(2.24)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.52	0.56	0.53	0.63	0.51	0.66
Obs	2417	4039	1935	3406	2166	3671

Table 7 controls for the effects of loan ownership structure on the link between tax avoidance and loan spreads. Panel A/(Panel B) investigates how institutional investor/(investment bank) intensity affect the link between tax avoidance and loan spreads and the effectiveness of loan-level risk mitigating mechanisms in attenuating tax-specific risks, if any. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For each model, the notation ">M/(<M)" means that the institutional investor (IIINT) and/or investment bank (IBINT) intensity is either larger or smaller than the sample median. For space considerations I tabulate the coefficients for only the main variables of interest. Description of all variables used are in

Appendix. Asterisks above the coefficients represent significance levels where * is used for $p < 10\%$, ** is used for $p < 5\%$ *** is used for $p < 1\%$ significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

TABLE 8
Controlling for Credit Swap Contracts

	Panel A			Panel B			Panel C		
	Baseline			PSM			Baseline-Joint		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	42.02***	64.93***	74.61	66.46**	140.9***	154.3	82.09***	94.44***	123.9
	(5.25)	(4.37)	(1.48)	(2.52)	(3.06)	(1.17)	(5.34)	(3.42)	(1.59)
CSI	-10.74***	-15.19***	-8.954**	-15.21	-19.39	-13.60	-18.66***	-24.86***	-6.766*
	(-2.95)	(-3.45)	(-2.37)	(-1.12)	(-1.36)	(-0.87)	(-3.44)	(-2.93)	(-1.71)
CSI_TAX							-33.18**	-37.97*	-115.0
							(-2.20)	(-1.75)	(-1.37)
PPP	-35.33***	-33.18***	-34.27***	-27.93***	-28.57***	-25.37***	-49.40***	-38.50***	-34.77***
	(-18.04)	(-15.10)	(-16.60)	(-5.47)	(-5.34)	(-4.64)	(-12.52)	(-6.30)	(-14.27)
PPP_TAX							-57.81***	-21.54*	26.19
							(-4.40)	(-1.69)	(0.38)
CDS	-17.47***	-23.86**	0.028	-34.87***	-53.09***	-15.91**	-17.82***	-22.22**	-0.95
	(-2.78)	(-2.54)	(0.01)	(-3.20)	(-3.26)	(-2.19)	(-2.68)	(-2.25)	(-0.23)
CDS_TAX	-32.99***	-45.39***	-49.72	-55.84**	-120.1***	-60.46	-63.91***	-88.40**	-56.25
	(-2.93)	(-2.63)	(-1.09)	(-2.29)	(-2.73)	(-0.36)	(-2.77)	(-2.32)	(-0.55)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.57	0.57	0.57	0.62	0.62	0.61	0.57	0.57	0.57
Obs	6198	5126	5592	1188	1128	1092	6198	5126	5592

Table 8 controls for the existence of single-name credit default swaps (CDS). Panel A and B runs the model for the baseline and propensity-score-matched samples. Panel C tests for the triple effects of syndicate-lead risk diversification, performance pricing provisions and the existence of single-name CDS contracts on the link between tax avoidance and loan spreads. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Calculation of all of these tax avoidance measures alongside with control variables are detailed in Appendix. Asterisks above the coefficients represent significance levels where * is used for p < 10%, ** is used for p < 5% *** is used for p < 1% significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

Table 9

Syndicate Risk Mitigation and Cost of Tax Avoidance – Pre/Post 2006 Analysis

Panel A: Tax Avoidance and Syndicate-Level Risk Mitigation – Pre 2006

	RM:CSI			RM:PPP			RM:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	45.75***	34.91	164.3	47.37***	33.01*	-84.24	40.61***	27.30	-1.436
	(4.18)	(0.40)	(1.13)	(3.25)	(1.70)	(-1.32)	(4.14)	(1.16)	(-0.03)
RM	-15.38***	-14.12	-12.37	-47.07***	-44.25***	-40.48***	-24.08***	-14.61*	-10.73***
	(-2.63)	(-1.07)	(-1.46)	(-6.)	(0.00)	(-15.11)	(-4.65)	(-1.69)	(-3.53)
RM_TAX	-34.25*	-3.83	-83.19	-34.96	74.89	135.7	-56.09***	16.78	16.95
	(-2.26)	(0.93)	(-0.52)	(0.03)	(0.22)	(1.34)	(-3.19)	(0.51)	(0.21)
$Industry\ \&\ Time\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.590	0.50	0.51	0.52	0.50	0.58	0.53	0.49	0.52
Obs	3079	2949	2750	3079	2949	2750	3079	2949	2750

Panel B: Tax Avoidance and Syndicate-Level Risk Mitigation – Post 2006

	RM:CSI			RM:PPP			RM:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	72.33***	117.41***	104.4*	70.78***	85.21***	140.7*	72.38***	81.96***	107.3
	(2.67)	(4.76)	(1.90)	(0.00)	(3.39)	(1.72)	(2.91)	(4.02)	(1.15)
RM	-28.29***	-40.92***	-21.63*	-52.97***	-47.81***	-25.05***	-30.35***	-42.42***	-16.76***
	(-2.83)	(-4.31)	(2.31)	(0.00)	(-6.13)	(-4.97)	(-4.32)	(-5.43)	(-3.87)
RM_TAX	-509.290*	-94.91***	-66.6***	-73.50	-43.90*	-101.1*	-45.42*	-62.3***	-51.67
	(-1.75)	(-3.16)	(-2.81)	(0.00)	(-1.69)	(-1.69)	(-1.78)	(-3.58)	(-0.47)
$Industry\ \&\ Time\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.509	0.62	0.55	0.45	0.61	0.45	0.44	0.57	0.50
Obs	3119	2177	2842	3119	2177	2842	3119	2177	2842

Table 9 test the link between tax avoidance and loan spreads for pre/post 2006 period. For each panel, RM stands for the particular risk mitigating measure used including; the number of lead agents, performance pricing provisions and the composite loan quality measure (LQM). For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Description of all variables used are in Appendix. Asterisks above the coefficients represent significance levels where * is used for p < 10%, ** is used for p < 5% *** is used for p < 1% significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

Table 10

Controlling for Aggressive and Uncertain Tax Avoidance

Panel A: High Tax Positional Uncertainty - High Unrecognized Tax Benefits

	RM:CSI			RM:PPP			RM:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	119.4***	112.5**	272.1	73.83***	96.5**	174.2	59.06**	82.1*	140.3
	(2.74)	(2.07)	(1.54)	(2.64)	(2.01)	(1.39)	(2.25)	(1.86)	(1.20)
RM	-28.80*	8.231	3.637	-48.35***	-13.09	-14.08	-17.90*	-6.125	-9.421
	(-1.79)	(0.65)	(0.31)	(-3.75)	(-1.45)	(-1.50)	(-1.72)	(-0.66)	(-1.13)
RM_TAX	-101.4**	-94.8*	-227.7	-54.83**	-77.6*	-255.7	-23.75**	-63.6*	-74.66
	(-1.99)	(-1.72)	(-1.13)	(-2.16)	(-1.74)	(-1.40)	(-2.12)	(-1.78)	(-0.47)
$Industry\ \&\ Time\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.51	0.50	0.50	0.50	0.50	0.50	0.49	0.49	0.50
Obs	953	879	878	953	879	878	953	879	878

Panel B: Low Tax Positional Uncertainty - Low Unrecognized Tax Benefits

	RM:CSI			RM:PPP			RM:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	44.88	79.1	26.07	38.36**	21.90	76.22	37.92**	35.79	47.97
	(1.19)	(0.89)	(0.10)	(2.04)	(0.23)	(0.52)	(1.96)	(0.35)	(0.31)
RM	-12.58	-1.095	-8.781	-47.08***	-35.80***	-31.35***	-39.95***	-17.82***	-20.69***
	(-0.97)	(-0.09)	(-0.75)	(-4.79)	(-5.27)	(-4.09)	(-3.89)	(-2.92)	(-3.34)
RM_TAX	-18.54	-81.5	39.03	-24.98*	32.74	-155.8	-66.53*	-85.7	-97.85
	(-0.46)	(-1.01)	(0.14)	(-1.70)	(0.18)	(-0.67)	(-1.92)	(-1.07)	(-0.54)
$Industry\ \&\ Time\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.53	0.51	0.51	0.51	0.51	0.51	0.50	0.50	0.49
Obs	1761	1639	1637	1761	1639	1637	1761	1639	1637

Panel C: Aggressive Tax Avoidance - High Tax Shelter Scores

	RM:CSI			RM:PPP			RM:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	88.84***	133.7***	160.4**	59.10***	78.76***	71.70	54.22***	77.20***	73.57
	(3.60)	(2.96)	(2.51)	(3.87)	(3.13)	(0.96)	(3.76)	(3.19)	(1.03)
RM	-28.57***	-39.24***	-5.062	-40.95***	-38.81***	-23.60***	-26.60***	-27.58***	-13.58***
	(-3.00)	(-2.72)	(-0.84)	(-7.39)	(-4.55)	(-6.35)	(-4.72)	(-3.76)	(-4.13)
RM_TAX	-62.84**	-90.99*	-120.1*	-57.63***	-51.25*	12.68	-49.30**	-40.78*	-42.14
	(-2.32)	(-1.85)	(-1.74)	(-3.00)	(-1.65)	(0.16)	(-2.48)	(-1.78)	(-0.52)
$Industry\ \&\ Time\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.57	0.58	0.56	0.57	0.58	0.56	0.55	0.56	0.55
Obs	2995	2622	2398	2995	2622	2398	2995	2622	2398

Panel D: Less Aggressive Tax Avoidance - Low Tax Shelter Scores

	RM:CSI			RM:PPP			RM:LQM		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	39.22***	46.33*	140.0	39.22***	32.11	79.57	33.61***	34.08*	74.81
	(2.96)	(1.68)	(1.49)	(2.96)	(1.35)	(0.80)	(3.23)	(1.70)	(0.94)
RM	-13.51**	-17.58*	-2.837	-53.45***	-40.41***	-39.53***	-30.54***	-38.89***	-12.88***
	(-2.07)	(-1.83)	(-0.56)	(-10.44)	(-5.01)	(-12.25)	(-4.33)	(-3.60)	(-3.45)
RM_TAX	-30.09*	-30.82**	-105.5	-29.95***	-7.468	-59.06	-24.85***	-29.89*	-43.61
	(-1.81)	(-1.98)	(-1.45)	(-3.05)	(-0.26)	(-0.52)	(-2.70)	(-1.76)	(-0.35)
$Industry\ \&\ Time\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.57	0.55	0.57	0.57	0.55	0.56	0.53	0.52	0.53
Obs	3203	2504	3194	3203	2504	3194	3203	2504	3194

Table 10 controls for tax aggressiveness and uncertainty. Panels A and B control for sub-samples of firms with high and low levels of unrecognized tax benefits reported under FIN 48 reporting. Panel C and D control for sub-samples of firms with high and low levels of tax shelter scores. Each panel uses the co-syndication intensity, performance pricing provisions and the composite loan quality measure (LQM), as loan-level risk mitigation measures. RM stands for the particular risk mitigating measure used. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Description of all variables used are in Appendix. Asterisks above the coefficients represent significance levels where * is used for p < 10%, ** is used for p < 5% *** is used for p < 1% significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

Table 11

Controlling for Opaque/Financially Constrained Firms

	Panel A: Opaque/Financially Constrained Firms						Panel B: Non-Opaque/Financially Constrained Firms					
	RM:CSI			RM:PPP			RM:CSI			RM:PPP		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	60.48***	89.19***	143.9	65.32***	70.21***	103.4	21.59	56.85	102.8	14.48	15.65	-46.52
	(4.33)	(3.10)	(1.44)	(5.01)	(3.16)	(1.27)	(0.95)	(1.37)	(1.33)	(1.01)	(0.69)	(-0.66)
RM	-17.86***	-26.14**	-4.356	-58.00***	-48.56***	-39.69***	-15.75**	-26.99**	-10.38	-21.06***	-8.539	-26.42***
	(-2.67)	(-2.44)	(-0.87)	(-12.46)	(-6.63)	(-12.77)	(-2.06)	(-2.54)	(-1.55)	(-3.73)	(-1.02)	(-7.26)
RM_TAX	-39.06**	-53.47*	-94.06	-60.25***	-40.97*	-18.81	-6.235	-33.87	-149.6	8.072	6.56	144.6
	(-2.24)	(-1.74)	(-0.89)	(-4.54)	(-1.78)	(-0.20)	(-0.25)	(-0.76)	(-1.56)	(0.40)	(0.66)	(1.06)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.54	0.54	0.55	0.54	0.54	0.55	0.60	0.59	0.60	0.60	0.60	0.60
Obs	4093	3286	3660	4093	3286	3660	2105	1840	1932	2105	1840	1932

Table 11 controls for financially constrained/opaque firms. Panel A uses a sub-sample of financially constrained/opaque firms and Panel B uses a sub-sample of non-opaque or financially firms. For each panel, the analysis tests whether co-syndication intensity and/or performance based provisions (PPP) help alleviate contracting costs associate with tax avoidance. RM stands for the particular risk mitigating measure used. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Description of all variables used are in Appendix. Asterisks above the coefficients represent significance levels where * is used for p < 10%, ** is used for p < 5% *** is used for p < 1% significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

Table 12

Controlling for the Strength of Internal Corporate Governance

Panel A: Controlling for Internal Corporate Governance: G-Index

	Low G-Index						High G-Index					
	RM:CSI			RM:PPP			RM:CSI			RM:PPP		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	62.21***	91.46	-29.68	57.49***	67.13	-91.52	93.92***	101.8**	415.5***	59.88***	96.63***	205.1
	(2.71)	(1.24)	(-0.23)	(2.84)	(1.49)	(-0.94)	(2.74)	(2.44)	(3.77)	(2.87)	(3.01)	(1.37)
RM	-31.72***	-26.57	-18.30***	-48.05***	-18.73	-37.91***	-33.75**	-34.83***	-5.239	-29.36***	-51.68***	-25.02***
	(-3.22)	(-1.28)	(-2.67)	(-6.24)	(-1.48)	(-7.69)	(-2.24)	(-2.67)	(-0.59)	(-3.94)	(-4.74)	(-6.75)
RM_TAX	-52.21*	-15.92	-76.84	-42.41*	33.22	46.66	-59.15*	-82.20*	-381.9***	-10.46*	-68.40*	-136.18
	(-1.67)	(-0.24)	(-0.56)	(-1.77)	(0.76)	(0.35)	(-1.66)	(-1.85)	(-3.02)	(-1.85)	(-1.65)	(-1.31)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.48	0.44	0.45	0.48	0.44	0.45	0.45	0.56	0.47	0.55	0.56	0.46
Obs	1171	987	1041	1171	987	1041	1100	918	999	1100	918	999

Panel B: Controlling for External Governance: Institutional Ownership and the Number of Analysts Following

	Strong External Governance						Weak External Governance					
	RM:CSI			RM:PPP			RM:CSI			RM:PPP		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	39.95	-21.59	81.50	17.46*	6.444	-52.08	58.77***	97.67***	152.9**	61.16***	71.62***	96.86
	(1.38)	(-0.33)	(0.72)	(1.86)	(0.24)	(-0.63)	(4.68)	(3.74)	(2.09)	(4.85)	(3.41)	(1.29)
RM	-9.486	51.64	-2.966	-19.72***	-5.470	-23.61***	-20.55***	-31.57***	-6.388	-53.82***	-45.94***	-37.56***
	(-0.89)	(0.78)	(-0.40)	(-3.10)	(-0.55)	(-5.27)	(-3.35)	(-3.23)	(-1.40)	(-12.08)	(-6.35)	(-13.23)
RM_TAX	-11.67	-4.293	-118.9	10.89	63.17	0.456	-41.06***	-63.31**	-110.3	-61.95***	-36.89*	-0.400
	(-0.38)	(-1.11)	(-0.95)	(0.46)	(0.59)	(0.35)	(-2.58)	(-1.97)	(-1.15)	(-4.26)	(-1.86)	(-0.00)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.62	0.62	0.63	0.62	0.62	0.63	0.56	0.56	0.57	0.56	0.56	0.57
Obs	1441	1348	1335	1441	1348	1335	4757	3778	4257	4757	3778	4257

Table 12 controls for internal and external corporate governance mechanisms. Panel A uses a sub-sample of firms with strong (low G-index) and weak (high G-index) internal corporate governance. Panel B uses a composite measure of external corporate governance using institutional equity ownership and the number of analysts following (see Section 3.6). For each panel, the analysis tests whether syndicate-lead diversification (CSI) and/or performance based provisions (PPP) help alleviate contracting costs associate with tax avoidance controlling for corporate governance. RM stands for the particular risk mitigating measure used. The dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Description of all variables used are in Appendix. Asterisks above the coefficients represent significance levels where * is used for p < 10%, ** is used for p < 5% *** is used for p < 1% significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

Table 13
Additional Robustness Tests

	Panel A		Panel B		Panel C						Panel D	
	Post-Rating Change		Repetitive Lending		Maturity Structure						Other Tax Measures	
					A	B	C	D	E	F		
							CSI=1	CSI=0	PPP=1	PPP=0		
					Dependent Variables							
Variables	CSI	PPP	CSI	PPP	TERM	SPREAD	TERM	TERM	TERM	TERM	BTD	SDCETR
TAX	39.44	19.61	53.95***	60.17***	0.045	71.64***	0.393*	0.046	0.27	0.039	176.3***	42.07*
	(1.07)	(0.88)	(4.56)	(4.48)	(0.31)	(4.55)	(1.96)	(0.25)	(1.18)	(0.22)	(2.66)	(1.80)
RL			-3.782	-11.35**								
			(-0.72)	(-2.53)								
RL_TAX			15.15	-16.30								
			(0.88)	(-1.12)								
STD						3.589						
						(0.70)						
STD_TAX						-0.468						
						(-0.03)						
CSI	-19.31		-21.51***		0.157**	-20.12***			0.249**	0.114	-4.364	-9.670**
	(-1.37)		(-3.51)		(2.20)	(-3.79)			(2.21)	(1.26)	(-1.07)	(-2.14)
CSI_TAX	-43.04		-43.66**			-36.43**					-159.8**	-20.04
	(-1.09)		(-2.49)			(-2.51)					(-2.56)	(-1.32)
PPP		-43.89***		-48.04***	0.270***	-47.89***	0.147**	0.309***			-34.62***	-30.36***
		(-5.89)		(-12.15)	(5.58)	(-12.69)	(2.02)	(4.98)			(-14.25)	(-12.11)
PPP_TAX		-36.47		-51.37***		-49.80***					-149.15	-48.86**
		(-1.37)		(-3.92)		(-4.02)					(-1.37)	(-2.18)
I & T FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.59	0.59	0.57	0.57	0.28	0.58	0.40	0.27	0.29	0.31	0.58	0.57
Obs	1713	1713	6198	6198	6456	6460	1898	4300	2084	4114	5603	4763

Table 13 runs additional robustness tests. Panel A controls for potential credit rating shopping where the analysis controls for sub-sample of firms that had just received a credit rating during the sample period. The analysis tests for the link between tax avoidance and loan spreads in the post rate-assignment period. Panel B tests for repetitive lending-borrowing links. RL is the dummy variable of 1 if a given borrower has repeated lending relationship with a given "lead" lender. Any relationship that covers minimum 3 years of lender-borrower relationship receives a value of 1 and zero otherwise. Panel C controls for loan maturity and whether loan maturity structure can substitute for loan-level risk mitigation mechanisms in alleviating the contracting costs associated with tax avoidance. Column A tests for the effects of tax avoidance on loan maturity. Column B controls for firms with average loan maturity of 3 years or lower (STD) and its effect on the link between tax avoidance and loan spreads (STD_TAX). Columns C and D control for sub-sample of loans with high and low co-syndication intensity, respectively. Columns E and F control for sub-sample of loans

with or without performance-based loan provisions. Panel D runs the baseline model of tax risk mitigation analysis using book-tax differences (BTD) and the 5 year (rolling) standard deviation of cash ETRs as measures of tax avoidance and risk. For space considerations I tabulate the coefficients for only the main variables of interest. Description of all variables used are in Appendix. Asterisks above the coefficients represent significance levels where * is used for $p < 10\%$, ** is used for $p < 5\%$ *** is used for $p < 1\%$ significance levels. All t-values are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

TABLE 14

Access to Public Debt Markets and Contracting Costs of Tax Avoidance

	Panel A: Access to Bond Markets			Panel B: No Access to Bond Markets			Panel C: Self-Selection into Public Debt Financing			Panel D: Joint Test		
Variables	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD	CETR	LRCETR	PBTD
TAX	2.96	-6.128	-99.81	60.08***	62.30***	107.2**	37.98**	62.20*	88.66**	80.49***	92.34***	101.6*
	(0.22)	(-0.23)	(-1.13)	(4.95)	(3.96)	(2.10)	(2.24)	(1.93)	(2.06)	(5.17)	(3.31)	(1.91)
CSI	-6.942	-5.492	-3.381	-11.30***	-16.12***	-9.218**	-6.73	-10.74	-6.06	-19.46***	-25.90***	-17.21*
	(-0.82)	(-0.60)	(-0.39)	(-2.78)	(-3.24)	(-2.19)	(-1.09)	(1.58)	(-0.91)	(-3.55)	(-2.99)	(-1.81)
CSI_TAX										-36.31**	-41.96*	-67.72*
										(-2.42)	(-1.82)	(-1.89)
PPP	-27.64***	-27.34***	-29.34***	-37.19***	-34.86***	-35.58***	-32.98***	-32.29***	-33.00***	-48.47***	-37.49***	-34.71***
	(-6.89)	(-6.30)	(-6.54)	(-16.97)	(-14.09)	(-15.42)	(-10.39)	(-9.45)	(-9.73)	(-12.29)	(-6.07)	(-14.34)
PPP_TAX										-53.99***	-17.64*	-25.53
										(-4.13)	(-1.81)	(-1.38)
$BOND$							-11.62*	-19.48**	-10.64**	-16.85*	-13.72*	-15.054
							(-1.91)	(-1.98)	(-2.03)	(-1.92)	(-1.86)	(-1.29)
$BOND\_TAX$							-31.42*	-59.33*	-43.98***	-27.50*	-46.83*	-83.9***
							(-1.65)	(-1.66)	(-2.98)	(-1.77)	(-1.78)	(-3.28)
$I\ \&\ T\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.66	0.68	0.68	0.55	0.54	0.55	0.60	0.63	0.61	0.57	0.57	0.57
Obs	1274	1114	1141	4924	4012	4451	2536	2214	2269	6198	5126	5592

Table 14 controls for public simultaneous access to public bond markets at the same time as private loan agreements and its effect on attenuating the positive link between tax avoidance and loan spreads. Panel A uses a sub-sample of firms that have access to public debt finance alongside their private loan deals. Panel B controls for a sub-sample of firms that only have private loan arrangements outstanding. Panel C uses a propensity-score matched sample that controls for self-selection into public debt markets. Panel D incorporates public bond market access, syndicate-lead risk diversification and performance pricing provisions in a single model to test for joint effects. For each model, the dependent variable is all-in-drawn loan spreads (SPREAD) and the independent variable TAX represents one of the three tax avoidance proxies (CETR, LRCETR and PBTD) used in the analysis. For space considerations I tabulate the coefficients for only the main variables of interest. Description of all variables used are in Appendix. Asterisks above the coefficients represent significance levels where * is used for p < 10%, ** is used for p < 5% *** is used for p < 1% significance levels. All t-values are two-tailed and are reported in parentheses. Standard errors are clustered by firm and all regressions include industry (2-digit SIC) effects and time fixed effects.

APPENDIX
Variable Definitions

Tax Planning Measures	
CETR	=The ratio of cash taxes paid (Compustat: TXPD) to pre-tax income adjusted for special items [Compustat: $(TXPD)/(PI - SPI)$]. For the purposes of the cost of debt analysis this measure is multiplied by (-1) so that an increase in the measure reflects increased tax avoidance. The measure is truncated at [0,1] interval
LRCETR	=Five year rolling average of the CETR. For the purposes of the cost of debt analysis this measure is multiplied by (-1) so that an increase in the measure reflects increased tax avoidance.
BTD	=Total book-tax difference, calculated as the difference between book income adjusted for special items and taxable income scaled by total assets. [Compustat: $(PI - SPI) - (TXFED + TXFO)/STR$], where STR is the statutory tax rate (35%).
PBTD	=Permanent book-tax difference, calculated as the difference between book-tax differences and temporary book tax differences. [$BTD - Compustat$: $(TXDI/STR)$], where STR is the statutory tax rate (35%) and TXDI is the deferred tax expense.
SDCETR	=Five year rolling standard deviation of the CETR.
UTB	=Total unrecognized tax benefits (Compustat: TXTUBEND) scaled by total assets (Compustat: AT)
Tax Shelter Score	=Tax shelter scores using the model and the coefficients from Wilson (2009). Tax Shelter Score = -4.86 + 5.20 × BTD + 4.08 × DACCR - 1.41 × LVRG + 0.76 × LNTA + 3.51 × PTROA + 1.72 × PIFOTA + 2.43 × R&D. In the above model DACCR is the performance adjusted discretionary accruals from the Modified Jones Model.
Loan Specific Variables	
SPREAD	= All-in-drawn spreads based on LIBOR-benchmarked loans. The spread includes any additional fees associated with the deal.
NOLEAD	=The number of lead-agents in a loan package
NOPART	=The number of participants (junior and lead) in a loan package
COV	= The number of covenants included in a loan.
COVL	= Dummy indicator which takes the value 1 if the loan facility has an incurrence-based (lite) covenant structures.
LPCT	= The proportion of loan held by the syndicate arrangers. Unlike the past research (e.g., Sufi, 2007), the measure aims to capture the total portion of loan held by the lead agents altogether. Therefore, if four lead arrangers hold half of the total loan amount altogether that is the ratio I use in LPCT and not 12.5 percent (50%/4) for each lead bank.
LREP	= Lead arranger reputation. I classify top five syndicate arrangers per given year in Thomson Deals database as the most reputable lenders. Next, I identify loans with the number of reputable lenders in the top quartile of the total sample distribution (LREP).
TERM	=Average loan maturity in years.
LNLOAN	=Natural logarithm of the outstanding loan amount
REVD	=Dummy indicator that takes the value of 1 if the loan is a revolving credit facility and 0 otherwise.
SECUR	=Dummy indicator that takes the value of 1 if the loan is secured via collateral and 0 otherwise.
LVRGD	= Dummy indicator of 1 if the given loan facility is in the leveraged segment – below investment grade.

RL	=Dummy variable of 1 if a given borrower has repeated lending relationship with a given "lead" lender. Any relationship that covers minimum 3 years of lender-borrower relationship receives a value of 1 and zero otherwise. The measure is retrospective and obtained by string matching borrowers to their respective lenders.
Loan Ownership Variables	
IIINT	= The proportion of institutional investors to commercial banks in a given loan facility.
IBINT	= The proportion of investment banks to commercial banks in a given loan facility
Governance Variables	
INOWN	=Percentage of institutional ownership obtained from Thomson Institutional Holdings database.
ANFLW	=The number of analysts following the firm. Obtained from IBES summary files.
G-Index	=G-Index of corporate governance from Gompers, Ishii and Metrick (2003)
Risk Mitigation Variables	
RM	=Stands for loan-level risk mitigating measures used as a variable of interest in the analysis
CSI	= Co-syndication intensity, is a dummy variable that takes the value 1 if the number of syndicate originators (NOLEAD), in a given loan, is larger than the sample median, and zero otherwise. The measure controls for lea-level risk diversification
PPP	= Dummy indicator 1 for loans that include performance pricing provisions. The measure controls for borrower-lender incentive alignment
LQM	= Composite measure of syndicate-level risk mitigation and loan quality variable. The details as to how the measure is calculated is provided in Section 3.3.
CDS	= Dummy indicator that takes the value of 1 if a given borrower has a single-name CDS trading on its debt
BOND	= Dummy indicator that takes the value of 1 if a given borrower has public debt outstanding simultaneously as its private loan.
Other Control Variables	
PTROA	=Total Pre-tax Income (Compustat: PI) divided by total assets (Compustat: AT).
LNTA	=Natural logarithm of total assets.
PIFO	=Pre-tax income from foreign operations (Compustat: PIFO) divided by total assets.
LVRG	=Long-term debt (Compustat: DLTT) divided by total assets.
PPE	=Net property, plant and equipment (Compustat: PPENT) scaled by total assets.
CIS	=Four-quarter moving average of the spread of commercial and industrial loan rates (loans worth more than $1MN) over the federal fund rates.
ZSCORE	=Altman's z-score.
AQ	=Following Cook et al. (2015), accrual quality is calculated as the standard deviation of the firm-level residuals as in Francis et al. (2005) from the following model. $TCA = CFO_{t-1} + CFO_t + CFO_{t+1} + \Delta SALE + PPEGT + \varepsilon$

	In the above model total current accruals TCA is estimated as [Compustat: $\Delta ACT - \Delta LCT - \Delta CHE + \Delta DLC$]. CFO is income before extraordinary items (Compustat: IB) minus total current accruals minus depreciation and amortization (Compustat: DP). All variables are scaled by total assets. The model is estimated for each 2 digit SIC code with 15 or more observations.
STD	= Dummy indicator that takes the value of 1 if the firm has an average loan duration less than 3 years.
ST	= Indicates banks that have been subject to capital adequacy tests from 2009 and onwards.
STN	= Indicates banks that have not been subject to stress testing
STP	= Controls for pre-stress period for the same banks that were subject to capital adequacy tests from 2009 and onwards.
MTB	= The ratio of market value of equity [Compustat: $PRCC\_F \times CSHO$] to book value of equity [Compustat: CEQ].

Highlights

- Previously documented tax-specific loan contracting premiums disappear for loans with incentive-alignment, risk diversification and/or risk transfer mechanisms in place
- Non-bank investors charge higher premiums, in comparison to commercial-banks, to compensate for their high-risk investment strategies that also accounts for tax-specific risks.
- Hold-up problems captures important portion of tax-specific risks in loan contracting.
- Firms can pursue strategies that persistently reduce their corporate tax burden without incurring material agency costs.

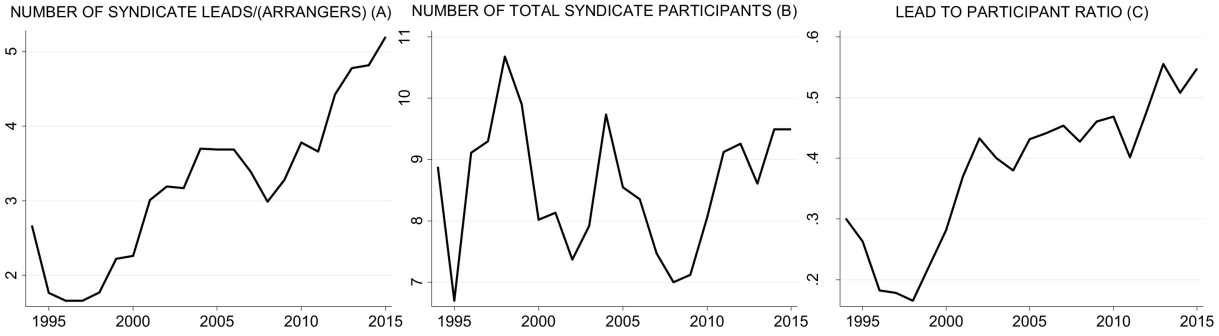
NUMBER OF SYNDICATE LEADS/(ARRANGERS) (A)
2
3
4
5
1995
2000
2005
2010
2015
NUMBER OF TOTAL SYNDICATE PARTICIPANTS (B)
7
8
9
10
11
1995
2000
2005
2010
2015
LEAD TO PARTICIPANT RATIO (C)
.2
.3
.4
.5
.6
1995
2000
2005
2010
2015

Figure 1