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How do lenders monitor? A discussion of Shan, Tang, and Winton (2019)[☆]



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ABSTRACT

Credit default swaps (CDS) represent a major innovation in debt markets, allowing lenders to transfer credit risk to a counterparty by paying a premium. Shan, Tang, and Winton (2019) explore whether the availability of CDS affects the monitoring incentives of lenders. Their paper finds that CDS leads to looser loan terms (less collateral and looser covenants), consistent with a reduction in monitoring incentives. I examine several aspects of their study, including whether loan provisions and CDS should serve the same purpose, and differences between CDS and non-CDS borrowers. In total, although the authors present empirical evidence consistent with their prediction, the sample selection and research design potentially limit the generalizability of the authors' results.

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1. Introduction

Credit default swaps (CDS) represent one of the most significant innovations in the debt market in the past several decades. CDS are contracts which compensate lenders in the event of a "credit event", such as the borrower failing to make a debt payment or going bankrupt. While ostensibly in place to allow lenders to hedge exposure to risky borrowers, a number of studies have emerged that look at unintended consequences of CDS, where CDS has resulted in distortions in investment and financing policy. [Shan et al. \(2019\)](#); hereafter STW) contributes to this literature by examining if and how lender monitoring incentives change when CDS trading is initiated on a borrower's debt; they focus on collateral requirements and the strictness of financial covenants. STW provides evidence that the initiation of CDS leads to less collateral and looser financial covenants. Furthermore, they provide robustness tests to control for endogeneity in the selection of CDS firms. A notable contribution of STW is that they provide empirical evidence that CDS improves the efficiency of bank loan contracting, in contrast to other studies that focus on the negative, unintended consequences of CDS trading. To the best of my knowledge, this is the first study to provide such evidence.

The results in STW provides a convincing argument and compelling evidence that bank lenders substitute CDS for looser loan contract provisions. In this discussion, I examine two aspects of their study that I consider important for understanding and interpreting their results. First, I consider the assumption underlying STW that collateral and financial covenants (which I collectively term *monitoring provisions*) and CDS are substitutes. Specifically, I consider the ways that CDS and monitoring provisions are similar and different, and present theory of why they may be complements in some cases rather than substitutes.

[☆] I appreciate the helpful comments of John Core, John Donovan, and Ed Owens.

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Second, I examine the differences between CDS and non-CDS firms. Descriptive evidence in STW shows significant differences between the groups. STW uses different econometric tests (including two-stage instrumental variable analysis and sample matching) to address this selection issue. I consider how differences between CDS and non-CDS firms have implications for the choice of debt market that the borrower enters, and how this choice affects the CDS/monitoring tradeoff. I further examine whether the sample selection in STW—they draw their sample from all borrowers with at least one private loan—affects the inferences from the analysis. I draw the following conclusions. First, CDS firms share characteristics with firms that issue public bonds, as opposed to non-CDS firms, which appear to be like borrowers that issue private bank loans. Second, the sample selection of STW, featuring borrowers who take private loans although they likely could access the public bond market, may make the conclusions from STW difficult to generalize.

I conclude this discussion with an alternative interpretation of the results of STW. CDS and monitoring provisions serve distinct purposes, with CDS addressing all credit risk and monitoring provisions addressing agency conflicts. The finding that CDS and monitoring provisions are negatively associated is not due to substitution between the two, but rather a function of a lack of ability and incentive to monitor by lenders to CDS firms. Contrasting this interpretation with that of STW, I recommend that an interesting avenue for future research is to examine variation in the incentive and cost of monitoring, particularly among lenders with alternative means to address credit risk.

2. Do CDS and monitoring provisions serve as substitutes?

STW derives its hypotheses from two apparently conflicting theories. The first, which I term the *monitoring* theory, predicts that lenders purchasing CDS will forgo costly monitoring (Morrison, 2005; Parlour and Winton, 2013). The lack of monitoring leads to fewer constraints on the borrower's actions, leading to increased agency conflicts. Unchecked agency conflicts will lead, in turn, to a higher risk of default. The second theory, which I term the *screening* theory, predicts that lenders purchasing CDS will become more aggressive negotiators should the borrower experience poor performance (Bolton and Oehmke, 2011). The CDS, in this case, reduce the lender's incentive to negotiate a workout of a troubled borrower, because they will get paid by CDS counterparty should a credit event occur. Borrowers, aware of lenders' tougher negotiating stance, will have incentive to avoid default, and will make choices (either by exerting extra effort or avoiding overly risky actions) to avoid poor performance. Thus the screening theory predicts CDS leading to a lower risk of default.

The monitoring and screening theories indicate somewhat different roles for CDS. Under the monitoring theory, the effect of CDS is limited to the borrower's actions; CDS reduce the lender's incentives to monitor the action of the borrower, leading to an increase in the cost of agency conflicts. Under the screening theory, CDS are related more broadly to borrower performance. That is, the lender will take an aggressive negotiating position with poorly performing borrowers regardless of the reason for the poor performance, whether it is agency conflicts or poor performance that is not based on the specific actions of the borrower.

The insight that default risk derives from different sources informs the first part of this discussion. As a starting point, consider a risky borrower who approaches a lender for a loan. I restrict the concept of "risk" in this case to be default risk. There is a stochastic distribution of performance outcomes for the borrower leading up to the loan maturity; in some cases the borrower's performance is sufficient that the lender will receive all contracted principal and interest, while in other cases the borrower's performance is poor and the borrower defaults, leading to the lender receiving less than their contracted repayment amount. The lender will assess the likelihood of each state, and the expected payoff from each, when determining the initial contract terms to offer. In this sense, the loan's ex ante default risk is the weighted average of the expected probabilities for solvent and default states.

I split default risk into two conceptually distinct sources. *Inherent risk* is the risk of default based on the underlying economic features or characteristics of the borrower. This could be the likelihood of default related to the opportunity set the borrower faces, or due to economic shocks outside of the borrower's control. This risk is *state-dependent*; there will be some states of nature where the borrower defaults and others where they do not, even when the borrower is taking the optimal action given the state of nature.

The second source of default risk I term *agency risk*. This is the risk described in the voluminous agency literature where borrowers of risky debt have incentives to extract wealth from creditors to themselves or to all equity investors (Jensen and Meckling, 1976; Smith and Warner, 1979). Possible manifestations of agency risk include embarking on an excessively risky investment course after loan initiation, or taking perquisites. Following the characterization from above, agency risk is *action-contingent*; it is risk explicitly caused by borrower action. Inherent and agency risk sum to be the total default risk of the borrower. Although they are conceptually distinct, in practice inherent and agency risk are likely to be positively correlated. For example, Berlin and Mester (1992) argue that borrowers facing poor performance have greater incentive to take actions that benefit shareholders at the expense of lenders. Similarly, Aghion and Bolton (1992) describe a wealth-constrained entrepreneur making a state-contingent action in a debt contract which leads to potential agency conflicts. Inherent and agency risk are therefore likely to be correlated in practice.

STW bases its hypothesis—that CDS availability leads to looser monitoring provisions—on the idea that CDS and monitoring provisions serve the same purpose. Here I reconsider this assumption. Based on the standard design of a CDS, the contract will be triggered and the CDS purchaser will be paid following any relevant “credit event”.¹ Although the definition of credit event varies slightly across contracts, the term typically means some sort of default by the borrower.² Putting this into the structure I discuss above, CDS can be used to address either inherent or agency risk (or both); the contract will be triggered by any of the contractually stipulated credit events, regardless of the reason it was triggered. Thus, although STW characterizes CDS as a means to address agency conflicts, in practice these are likely to be useful even when the borrower does not present any agency risk; CDS could also provide protection against inherent risk, which is not borrower action-contingent.

Monitoring provisions such as covenants have typically been conceived as a means of controlling agency conflicts. For example, [Smith and Warner \(1979\)](#) show how lenders can control various manifestations of the agency cost of debt—dividend payments, claim dilution, asset substitution, and underinvestment—by placing contractual restrictions on borrower actions. Similarly, [Garleanu and Zwiebel \(2008\)](#) present evidence that financial covenants serve a similar role in limiting agency conflicts.³

Considering these roles of CDS and financial covenants collectively, the substitution effect that STW proposes is reasonable: Since CDS and financial covenants both address agency conflicts, lenders could use them interchangeably in the face of conflicts with the borrower. Taking a more expansive view, however, yields a plausible alternative, where lenders address inherent risk using CDS and agency risk using covenants. How this manifests in a contract represents a complex set of trade-offs. Variables include the magnitude or severity of agency conflicts; the degree of inherent risk the borrower presents; the ex-ante uncertainty the lender has projecting these respective risks; and the interaction between inherent risk and agency risk. STW presents a straight-forward and intuitively appealing argument, and one that their evidence supports. It is important, however, to understand the full nature of risk that CDS and financial covenants address in the contract; the reality may be more complex and nuanced.

3. Differences between CDS and non-CDS firms

In compiling their sample, STW collects a loan-level dataset using private loan data from Dealscan. They then collect data on CDS trading, partitioning their sample between CDS firms (having at least one CDS traded during their sample period of 1994 through 2005) and non-CDS firms (not having any CDS traded). From a research design standpoint, the ideal setting to test the impact of CDS trading on loan contract design would be random assignment of firms with loans to CDS and non-CDS groups. Realistically CDS are not randomly assigned, but rather are a function of a number of complex and interrelated factors. STW acknowledges this issue and exerts considerable effort trying to address it econometrically. In this section, I examine how these innate differences in CDS vs. non-CDS firms manifest in choice of debt market for the borrower. I follow with a discussion of STW's sample selection and how this presents certain inference challenges.

3.1. Debt market selection

[Denis and Mihov \(2003\)](#) examine how borrower creditworthiness affects which debt market a borrower enters. They develop a pecking order of debt with three partitions based on performance and credit risk. The best performing, lowest risk borrowers will be able to access debt capital from the public bond market. These borrowers will almost without exception have an agency credit rating, are large, and well-performing. The second tier of borrowers, with higher risk than borrowers in the public bond market, typically go to the private bank loan market. In addition to being higher risk, these firms are smaller, more likely to have weaker performance, and less likely to have credit ratings. The third, riskiest tier of borrowers get their debt capital from a variety of sources: private placements (e.g., 144A issues), high yield public bonds, and loans from non-bank sources. I illustrate the [Denis and Mihov \(2003\)](#) pecking order of debt in [Fig. 1](#).

STW, in [Table 2](#), contrasts various features of CDS and non-CDS firms. Their descriptive analysis shows that CDS firms are larger, have higher and less volatile returns, and have much greater visibility with analysts. Additionally, CDS firms are much more likely to be rated than non-CDS firms (90.3% vs. 36.5%), and are rated higher when they do have ratings (BBB vs. BB+). Finally, and most importantly, CDS firms issue, on average, approximately six times more bonds than non-CDS firms (4.116 vs. 0.665). In terms of both borrower characteristics and debt market choices, CDS firms appear more similar to public bond market borrowers than bank loan market borrowers.

Recalling that STW restricts their sample to only those borrowers with private debt, this suggests that the CDS firms represent an unusual (or even idiosyncratic) subset of borrowers in the private loan market, specifically those borrowers who

¹ To ensure consistency and promote liquidity in the CDS market, most contracts follow a standard contract from the International Swaps and Derivate Association (ISDA).

² [Packer and Zhu \(2005\)](#) note the three most common credit events: bankruptcy, payment default, and credit restructuring.

³ The bulk of the evidence on financial covenants draws on [Smith and Warner \(1979\)](#) in attributing use of covenants to agency conflicts. This includes literature that considers financial covenants as “trip wires” (e.g., [Dichev and Skinner, 2002](#); [Christensen and Nikolaev, 2012](#)), which consider the contingent transfer of control rights as a means to prevent agency conflicts in the face of deteriorating borrower performance. An exception is [Demerjian \(2017\)](#), which links financial covenants use to uncertainty; this perspective is closer to linking financial covenants to controlling the costs of inherent (rather than specifically agency) risk.

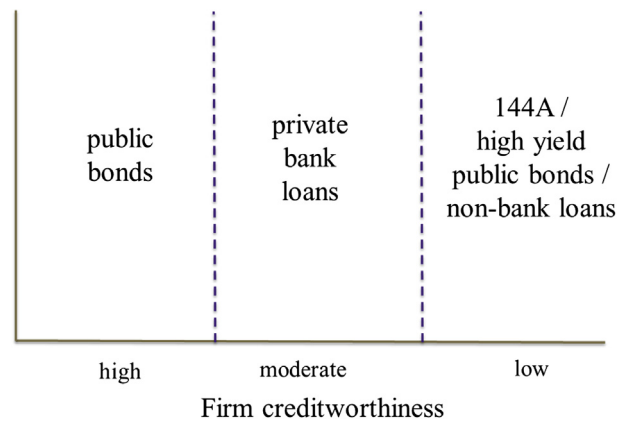


Fig. 1. Choice of debt market. This figure illustrates the selection of debt market based on creditworthiness, based on Denis and Mihov (2003).

can access both the public bond and private loan markets concurrently. These differences between CDS and non-CDS firms have implications for CDS cost, monitoring capability, and monitoring demand. I summarize these differences in Fig. 2.

As described earlier, borrowers in the public bond market tend to be the highest quality, having low default risk and higher credit ratings. It follows that these borrowers would have low inherent risk and a correspondingly low risk of agency conflicts. Given the size and significant analyst coverage of these borrowers, they should also have rich, transparent information environments. A drawback of public bond borrowing is that lenders (i.e., bond investors) have little access to public information; these are traditionally “arm’s length” transactions where the lender is reliant primarily on public information in assessing the terms of the bond. Additionally, the dispersed ownership structure of bonds makes renegotiation difficult due to coordination problems.

Borrowers in the private loan market have, on average, lower credit quality than public bond borrowers. This suggests they will have both higher inherent risk and a greater risk of agency conflicts. With smaller size and less analyst visibility, these borrowers will also have more opaque public information environments. Banks mitigate this lack of public information by acquiring private information; the collection and processing of private information is one of the key advantages of banks in providing credit (Fama, 1985).⁴ Finally, bank loans have a more concentrated ownership structure—bank syndicate size ranges up to possibly dozens of participating banks, whereas public bonds can have hundreds of investors—which facilitates the coordination necessary for renegotiation.

In terms of implications, differences in risk and the availability of information create variation in the lenders’ ability and incentive to monitor. For lenders to public bond borrowers, CDS should be low cost due to the low risk—both inherent and agency—that the borrower presents. Without access to private information but with high quality public information, lenders will have moderate monitoring capability. Due to the low default risk of the borrower—both inherent and agency—there will be little incentive to monitor. In contrast, bank lenders will have greater access to private information about loans with greater default risk; this leads to both greater ability and greater incentive to monitor borrowers. This could lead lenders to CDS borrowers laying off total credit risk with CDS, while lenders to non-CDS borrowers monitor to lower the cost of agency conflicts and pay additional compensation to the lender for their higher inherent risk. The descriptive evidence in STW reveals a significantly higher spread for non-CDS firms of over 100 basis points (162.9 vs. 267.3). This interpretation is consistent with results in STW, although on a conceptual level it differs from the authors’ explanation.

Given the difference in information environment between public bond and private bank lenders, a potentially useful avenue to expand on the work of STW is to integrate measures of reporting quality into their selection and matching models. For example, Bharath et al. (2008) show that information environment affects the choice of debt market; borrowers with lower reporting quality tend to seek bank loans rather than issue public bonds. Understanding how information environment, monitoring ability, and monitoring incentives interact would help clarify STW’s findings.

3.2. Sample selection

As discussed in the prior section, CDS firms have features more common in public bond borrowers, while non-CDS firms appear similar to private bank borrowers. Based on STW’s sample selection criteria—all sample observations must have a private loan—the empirical tests comparing CDS and non-CDS firms amount to comparing what I term *bond and loan* borrowers to *loan only* borrowers. In this section, I consider the implications of this design choice and how it influences the inferences from the study.

⁴ Bharath et al. (2008) note that borrowers seek debt from banks because of a lack of quality in their publicly reported financial information.

Public Bond Market	Private Loan Market
<u>Features of borrowers / market</u>	
High quality borrowers <ul style="list-style-type: none"> • Low inherent default risk • Low risk of agency conflicts 	Moderate quality borrowers <ul style="list-style-type: none"> • Moderate inherent default risk • Moderate risk of agency conflicts
Superior information quality	Inferior information quality
No access to private information	Access to private information
Dispersed ownership structure	Concentrated ownership structure
<u>Implications for CDS / monitoring</u>	
Low cost CDS	More costly CDS
Moderate monitoring capability	Superior monitoring capability
Low monitoring demand	High monitoring demand

Fig. 2. Implications of debt market choice. This figure illustrates differences in the features of public bond and private loan market borrowers, as well as implications on CDS cost and monitoring.

Although the [Denis and Mihov \(2003\)](#) pecking order of debt does not predict that borrowers would borrow from varied loan markets, the literature provides some theory and evidence on why firms would borrow from both the public bond and private loan markets concurrently. Borrowers with commercial paper—very short-term public bonds issued by the largest and most liquid firms—sometimes use revolving lines of credit from banks as back-up facilities should there be a disruption in the commercial paper market ([Gatev and Strahan, 2006](#); [Sufi, 2007](#)). Alternatively, cross-monitoring theory suggests that public bond holders can free ride on the monitoring of banks ([Booth, 1992](#); [Datta et al., 1999](#)). In this sense, firms can get loans as a way for a bank to publicly certify their credit quality, and then pursue public bonds with more favorable terms.

The commercial paper back-up and cross-monitoring explanations have different implications for monitoring. If the private loan market is being used as insurance against liquidity problems in the short-term public commercial paper market, then the firm's choice of debt market is unrelated to monitoring. If the cross-monitoring hypothesis is true and firms are using private debt to signal their quality, then total default risk should be lowered and CDS should be less expensive. In this case, the firm's decision to enter the private loan market is closely related to monitoring. Given the primacy of monitoring in STWs theory, this issue potentially clouds the inferences from this study.

Additional empirical analysis could help distinguish between these two explanations and enhance the inferences from STW. The empirical tests in the study could be run on the current sample, but exclude any borrowers that have public bonds (or possibly, that have ever had public bonds). This would alleviate the concern that the public bond borrowing, as opposed to the CDS itself, is driving the result. The possible issue with this approach is that there may be very few bank loan-only CDS firms.

4. Concluding remarks

Since their creation in the 1990s, credit default swaps have come to serve an increasingly important role in debt capital markets. Despite their benefits, which include risk diversification for lenders, a number of studies have identified various costs that may accrue through use of CDS. STW finds evidence of one of these unintended consequences of CDS: a loosening of loan covenants and lower likelihood of collateral requirements in private loan contracts. The lowered incentive to monitor induced by CDS availability has potentially serious implications for lenders, CDS counterparties, and could lead, ultimately, to increases in systemic risk.

STW presents convincing theory and evidence on the role of CDS in loan contracting. This being said, there still remain a number of important aspects of the relation between CDS and loan contracting to explore. I consider two. First, lenders face risk from multiple sources. These include risk inherent to the borrower, as well as agency risk that is based on some harmful borrower action. CDS, which pays off to the purchaser when a credit event takes place, may or may not be a substitute for monitoring provisions such as covenants or collateral. Understanding the multifaceted nature of borrower risk, and how different mechanisms (contractual and non-contractual) address them is an important step to understanding the costs and benefits of CDS.

Second, the sample selection in STW results in an unusual set of borrowers: although they borrow from the private loan market (by design), they share features with borrowers in the public loan market. Whether STW's results can be generalized beyond their setting depends on an expanded understanding of how borrowers and lenders match in lending markets, and the implications this has for risk and monitoring incentives. Even with potential issues, STW represents a positive step in understanding whether and to what extent CDS increases in the riskiness of bank loans, and provides a strong foundation for future research in this area.

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