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journal homepage: www.elsevier.com/locate/jfecLaying off credit risk: Loan sales versus credit default swaps[☆]Christine A. Parlour^a, Andrew Winton^{b,*}^a Haas School, UC Berkeley, USA^b Finance Department, Carlson School of Management, University of Minnesota, USA

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ABSTRACT

How do markets for debt cash flow rights, with and without accompanying control rights, affect the efficiency of lending? A bank makes a loan, learns if it needs monitoring, and then decides whether to lay off credit risk. The bank can transfer credit risk by either selling the loan or buying a credit default swap (CDS). With a CDS, the originating bank retains the loan's control rights; with loan sales, control rights pass to the loan buyer. Credit risk transfer leads to excessive monitoring of riskier credits and insufficient monitoring of safer credits. Increases in banks' cost of equity capital exacerbate these effects. For riskier credits, loan sales typically dominate CDS but not for safer credits. Once repeated lending and consequent reputation concerns are modeled, although CDSs remain dominated by loan sales for riskier credits, for safer credits they can dominate loan sales, supporting better monitoring (albeit to a limited extent) while allowing efficient risk sharing. Restrictions on the bank's ability to sell the loan expand the range in which CDSs are used and monitoring is too low.

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1. Introduction

If contracts are incomplete, then the assignment of control rights is important. Furthermore, how they are transferred can affect the value of the firm. Consequently,

a large theoretical literature in corporate finance exists on how these should be allocated between stakeholders, what happens when they change hands, and the effect that such transfers have on firm value. To date, the focus in this literature has been on equity stakes. By contrast, in this paper we focus on loans and consider how loans' cash flow rights and control or monitoring rights are transferred among agents and how their value changes when agents can unbundle them.

Our analysis differs from the theoretical literature on shareholder trading and monitoring in four key ways. First, banks face capital requirements (both from the market and from regulators) which force them to hold costly equity capital against their credit exposures. This leads to a benign motive for selling off credit exposures: If a lending opportunity whose risk is positively correlated with that of an existing loan becomes available, the bank must either raise additional equity capital or unload the credit risk of the loan. In today's financial markets, the bank has two possibilities for unloading this credit risk: through a sale of the loan or through a credit default swap (CDS).

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This additional motive for transferring loan credit risk complicates the analysis of the allocation and transfer of loan control rights. By contrast, the shareholder monitoring literature has largely ignored risk-sharing motives for trade by large shareholders, the main exception being [Admati, Pfleiderer, and Zechner \(1994\)](#).

Second, loan markets are a unique setting for evaluating control rights. Banks perform an important monitoring function that dispersed debt holders or equity holders could have difficulty fulfilling.¹ Even if a relatively large equity holder with several percent of the firm's shares seeks to affect firm policy, there are few issues on which she could easily hold sway without waging a costly proxy fight. By contrast, loans typically have numerous covenants whose violation gives the bank *de facto* control through the threat of default. We, therefore, base our model on key institutional features of the bank loan market and determine how control rights are exercised and under what conditions they can be effectively transferred to another potential monitor. This differs from the shareholder monitoring literature, which typically focuses on sales of shares from a large shareholder to dispersed investors who cannot monitor.

Third, we incorporate the ability to effectively unbundle cash flow rights from control rights. Although this has not been a major focus of the equity literature, for loans, it is a natural concern. The rapid growth of the CDS market means that economic actors exposed to credit risk can lay it off cheaply and anonymously over a long time horizon, while the control rights of the underlying loans remain with them. By contrast, the market for equity swaps is not as developed. Such swaps are bespoke and, therefore, expensive to negotiate, while options markets typically do not offer contracts over a long time horizon.²

Fourth, we extend our analysis to look at reputation motives for monitoring in a setting with repeated lending. For bank lenders, reputation is a natural focus. While most individual firms borrow at only infrequent intervals, banks are repeat players in the lending market with much more extensive track records. [Gopalan, Nanda, and Yerramilli \(2011\)](#) find empirical evidence that participants in the syndicated lending market do use excessive defaults on a lead lender's loans as an indication that the lender has not monitored its borrowers. By contrast, although some institutional investors in the equity markets have carved out a recurring role for themselves as

activists, the theoretical literature on shareholder monitoring has yet to address this issue.

Combining these elements, we obtain several key findings. First, the existence of credit risk transfer (loan sales or CDSs) leads to excessive monitoring of riskier credits and insufficient monitoring of safer credits. Second, increases in banks' cost of equity capital tend to exacerbate this effect, extending the range of credit risks where monitoring is excessive and the range where it is insufficient. Third, for riskier credits, loan sales typically dominate CDS as a means for transferring credit risk, whereas this is not true for safer credits. Fourth, once repeated lending and consequent reputation concerns are modeled, although CDSs remain dominated by loan sales for riskier credits, for safer credits they can dominate loan sales, supporting better monitoring (albeit to a limited extent) while allowing efficient risk sharing.

We begin with a simple single-period model of bank lending and credit risk transfer. A firm has a risky, positive net present value project and seeks funding from a competitive bank. After making the loan, the bank receives private information about the project's success probability. The bank is also hit by a capital shock that makes it costly to continue to hold the credit risk of the loan.³ It can lay off this risk either through a CDS or through a loan sale. The critical difference between the two is that, with a CDS, the originating bank retains ownership and thus control rights over the loan that it made, whereas a loan sale transfers these control rights to the buyer of the loan. Control rights matter because the loan's owner can enforce these control rights ("monitor the loan") at a cost. If the firm's success probability is lower than expected, monitoring prevents moral hazard by the firm's manager and raises the firm's success probability; otherwise, monitoring is wasteful.

Overall, our equilibria differ on two possible dimensions. First, either the bank always lays off credit risk (we call these pooling equilibria), or it lays off credit risk only when it knows that the firm is subject to moral hazard and should be monitored (separating equilibria). In the pooling case, risk transfer is efficient, but potential loan buyers do not learn the bank's private information; in the separating case, risk transfer is inefficient (some banks do not lay off credit risk), but loan buyers do learn the bank's information.⁴ This is important because information about the underlying loans is necessary for efficient monitoring. Equilibria also differ by whether the loan buyers monitor the loan or not. They have the ability to monitor but might not have the bank's information. This causes a trade-off between efficient risk sharing and efficient monitoring. If loan buyers do monitor, then loan sales dominate CDSs, because CDSs do not allow monitoring by the CDS seller, and the bank no longer has any economic incentive to monitor. If loan buyers do not

¹ For seminal theoretical references, see [Diamond \(1984\)](#), [Rajan \(1992\)](#), and [Diamond and Rajan \(2000\)](#). For empirical evidence of bank monitoring of publicly traded borrowers, see [James \(1987\)](#) and [Lummer and McConnell \(1989\)](#). More recently, [Mora \(2010\)](#) finds evidence that higher syndicated loan retention by the lead arranger yields improved borrower performance. Further evidence suggests that increased monitoring by the lead arranger is the cause.

² Nevertheless, recent work by [Christoffersen, Geczy, Musto and Reed \(2007\)](#) suggests that there is an active market for short-term share vote trading. [Hu and Black \(2007\)](#) discuss some of the issues raised by equity vote trading. Regulators such as the Securities and Exchange Commission share these concerns: see <http://www.sec.gov/spotlight/proxyprocess/proxy-transcript050707.pdf>. We return to this issue in the conclusion.

³ Specifically, the bank is faced with a correlated and profitable lending opportunity, which requires that it either raise more costly capital or forgo the opportunity.

⁴ This result is consistent with the [Acharya and Johnson \(2007\)](#) finding that trading in CDSs does reveal banks' inside information about impending credit problems of borrowers.

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