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The introduction of market-based pricing in corporate lending

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Executive summary

The introduction of market-based pricing in corporate lending

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Prior to the development of the credit default swap (CDS) market, bank loans typically carried a fixed interest rate spread over a base rate, such as prime or LIBOR. The use of fixed-rate spreads, however, requires the inclusion of complex financial covenants and performance-pricing features because borrower credit quality is likely to change during the life of the contract. Over the past 10 years, CDS markets have evolved to reflect borrower-specific credit quality in a timely fashion, giving banks an opportunity to use information contained in CDS spreads in their lending business. Starting in the second quarter of 2008, banks have increasingly extended loans with interest rates tied to borrowers' CDS spreads or to a CDS index. Drawing on the results in Ivanov, Santos and Vo (2013), this paper discusses the potential outcomes and consequences of this recent financial innovation. Overall, the use of CDS-based interest rate spreads has lowered the cost of bank credit, and it has made bank monitoring less important. However, this innovation could potentially have several adverse consequences, such as reducing the benefits of relationship lending and creating spirals in borrowers' CDS spreads and loan interest rates.

The introduction of market-based pricing in corporate lending

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Abstract

We describe a recent innovation in the corporate lending business whereby banks tie the interest rate during the life of the loan to the borrowers' credit default swap spreads or to a CDS index. We also discuss the potential impact this innovation may have on bank lending and more generally on financial intermediation and identify some potential adverse effects it may have for the stability of the financial system.

¹ We thank James Traina and Phoebe White for outstanding research assistance. The views stated herein are those of the authors and are not necessarily the views of the Federal Reserve Bank of New York, the Federal Reserve System, the Securities and Exchange Commission or of Ivanov's colleagues upon the staff of the Securities and Exchange Commission. The Securities and Exchange Commission, as a matter of policy, disclaims responsibility for any private publication or statement by any of its employees.

1. Introduction

Bank lending has been synonymous with monitoring, private information and relationship borrowing. For instance, the typical bank loan up to the late 1980s used to carry a fixed interest spread over a base rate, such as prime or LIBOR. Even though borrower credit quality is likely to change after loan origination, fixed interest rate spreads are not much of a problem for banks because of the presence of financial covenants in the loan contract. Financial covenants are set such that a sufficiently large credit quality deterioration triggers a covenant violation, giving the lender the right to accelerate the maturity of the loan.

Lenders almost never call loan repayment because of existing relationships with borrowers, instead they most often force renegotiation and modify interest rate spreads to reflect the underlying credit quality of the firm [see Smith and Warner (1979)]. On the other hand, if credit quality improves, borrowers initiate renegotiation with their lender to reduce interest rate spreads, incurring economically significant renegotiation fees ranging from 10 to 40 basis points of loan amount [see Dennis and Mullineaux (2000)].

Financial deregulation in the 1980s and 1990s intensified banking competition and spurred financial innovation that challenged the traditional bank lending model. Banks started including performance-based pricing features in loans. Performance pricing grids tie loan spreads to measures of the firm's financial health, such as credit ratings or leverage ratios. For example, Table 1 presents the pricing grid from one of the loans in the sample employed in Ivanov (2012). This pricing grid is tied to the adjusted leverage ratio of the borrower and has four pricing steps. At the low rate end of the grid, the borrower pays an interest spread of 100 basis points over LIBOR whenever the adjusted leverage is between 3.5 and 4. If the financial condition of the firm deteriorates and the leverage ratio exceeds 5, the firm pays 250 basis points over LIBOR.

Ivanov (2012) reports that the use of performance-based pricing contracts became widespread in the early 1990s and that approximately half of bank loans nowadays include these pricing provisions. He finds that the primary role of performance pricing grids is to delay costly renegotiation, reducing the probability of interest spread-decreasing renegotiation outcomes, while having

Category	Adjusted leverage ratio	LIBOR spread
1	> 5.00 to 1.00	2.50%
2	> 4.50 to 1.00 but ≤ 5.00 to 1.00	2.00%
3	>4.00 to 1.00 but ≤ 4.50 to 1.00	1.50%
4	>3.50 to 1.00 but ≤ 4.00 to 1.00	1.00%

U.S.\$325 million credit agreement of Pharmacia Inc. (31 December 1998)

Table 1: Performance-based pricing

This table presents an example of a performance pricing contract from the private credit agreement of Pharmacia Inc. (31 December 1998). The LIBOR spread is tied to the firm's adjusted leverage ratio. The pricing grid maps the adjusted leverage ratio onto an interest rate spread for each pricing grid step.

little effect in case of borrower financial health deterioration. The author also argues that banks employ pricing grids as a marketing tool to stay competitive with borrowers.

As competition continued to grow, banks looked for alternative ways to innovate their lending business. This led banks to the Credit Default Swap (CDS) market, which provided them with a unique opportunity to employ borrower-specific information contained in credit default swap rates in bank lending activity. In fact, since 2008 banks have increasingly extended loans to corporations with interest rate spreads tied to the borrower's credit default swap spreads. This financial innovation is often referred to as market-based pricing and raises fundamental questions about the future of the current monitoring-based bank lending model. In the next section we describe the institutional background related to market based-pricing. The last section concludes, discussing some implications of this innovation for bank monitoring.

2. Institutional background

Market-based pricing ties loan interest rate spreads to borrowers' CDS spreads or to a Credit Default Swap index (CDX). CDS/CDX-priced loans first appeared in the second quarter of 2008.² Even though performance-based pricing adjusts interest rates spreads to reflect changes in credit quality, a drawback with this feature is

² See the following articles "Banks get tougher on credit line provisions," Wall Street Journal, May 4th 2009, "Markit offers benchmarks for pricing investment grade loans," Dow Jones Newswires, July 1st 2008, or "Banks seek market-based pricing scheme," Financial Times, July 1st 2008.

Category	Senior rating	Floor	Cap
1	AA- $\leq X \leq$ AAA	20 bps	87.5 bps
2	A <math>\leq X <</math> AA-	25 bps	100 bps
3	A- <math>\leq X <</math> A	35 bps	112.5 bps
4	X <math><</math> A-	50 bps	125 bps
U.S.\$1.5b five-year revolver of 3M Co (August 05, 2011)			LIBOR
margin is tied to company's senior unsecured LTD ratings by S&P and Moody's and one-year CDS midrate			

Table 2: Market-based pricing

This figure illustrates an example of a market-based pricing contract for 3M Co. on 5 August 2011. The LIBOR spread is tied to firm's one-year CDS spread. The contract has a pricing grid, which specifies floor spread and cap spread at each interval of firm's credit ratings. Whenever the spread exceeds the cap, the firm pays the interest rate cap; whenever the spread is below the interest rate floor, the borrower pays the interest rate floor.

that time-varying risk premia make the fixed spreads at each step of the pricing grid inaccurate. Market-based pricing circumvents this problem because CDS spreads are affected both by borrower financial health and time-varying risk premia.

Market-based pricing was advertised in the popular press as a valuable arrangement to ease banks' resistance to lend at fixed interest rates, given the highly uncertain economic conditions at the time. A 1st July 2008 article in the Dow Jones Newswire stated, while referring to banks' granting of credit lines: "The borrower is ensured continued access to capital through market cycles, and the lender, if and when the facility is drawn upon, gets a market-based price...."

Market-based pricing contracts, in addition to tying the loan interest rate spread to the borrower's CDS spread, often specify either an interest rate cap or a floor, or both, that are usually kept constant throughout the life of the loan. If the CDS/CDX stays within the floor-cap range, the borrower pays an interest rate spread on its loan that varies with the CDS/CDX. If the CDS/CDX spread exceeds the cap, the borrower pays the interest rate cap, and whenever the CDS/CDX spread is below the interest rate floor, the borrower pays the interest rate floor. Intuitively, the interest rate cap benefits borrowers, while the interest rate floor benefits lenders.

Some loan contracts tied to CDS/CDX allow the interest rate floor and/or cap to vary throughout the life of the loan. These contracts almost always tie the interest rate floor and cap to the

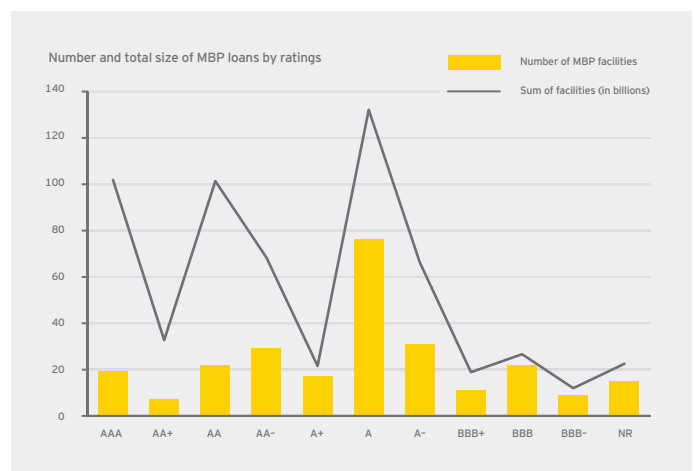


Figure 1: MBP loans by credit rating

This figure plots the number and total amount, in billion dollars, of market-based pricing loans by S&P credit ratings for the period from the second quarter of 2008 to 2012. This includes all facilities tied to CDS/CDX from DEALSCAN, before matching the DEALSCAN sample with COMPUSTAT and other bank-related databases.

credit rating of the borrower. Table 2 presents an example of one of these contracts from the sample of loans employed by Ivanov et al. (2013). According to the contract, if the borrower retains a rating above AA-, the floor is 20 basis points, while the cap is 87.5 basis points. As long as the borrower's CDS spread stays within the 20bps-87.5bps interval, the borrower pays an interest rate spread linked to the CDS spread according to a formula specified in the contract. If the borrower's financial condition deteriorates and it is downgraded to say A or A+, then the floor will go up to 25 bps and the cap will increase to 100 bps. Again, after the downgrade as long as the borrower's CDS spread stays within the 25bps-100bps interval, the borrower pays an interest rate that evolves with the CDS spread according to the formula specified in the loan agreement.

Ivanov et al. (2013) present evidence that the interest rate cap is not binding most of the time. In contrast, borrowers hit the interest rate floor relatively often. The authors argue that this is suggestive either of lender bargaining power, and as a result non-competitive pricing, or of insufficient information in CDS spreads.

Figure 1 shows that thus far banks have used the market-based

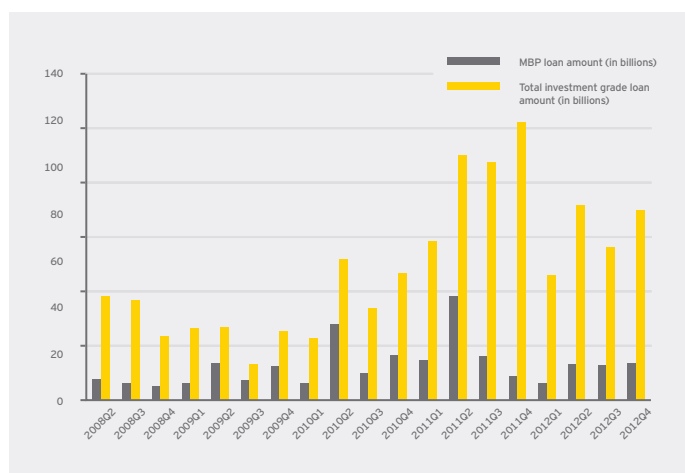


Figure 2: CDS loans and total bank lending

pricing innovation mainly in the loans to investment-grade borrowers. Figure 2, in turn, shows that these contracts became popular very quickly. Since their inception in the second quarter of 2008, CDS/CDX-based loans accounted for up to approximately one-third to a half of total investment-grade bank lending in the syndicated loan market.

Banks have used market-based pricing to extend loans predominantly to large corporations. Even though the number of CDS/CDX-price based loans issued per quarter rarely exceeds 20, the amount of total debt issued under these contracts has been as high as U.S.\$95b per quarter. The focus on large corporations is to be expected since the CDS market is dominated by large corporate borrowers.

3. Implications

When market-based pricing first appeared, the popular press focused on the conjecture that this way of setting loan interest rates is valuable because it could protect lenders against unexpected future changes in borrowers' financial condition. However, an alternative explanation for this financial innovation is that banks started using market-based pricing due to competitive pressures. Since monitoring becomes less important when banks tie loan spreads to borrowers' CDS spreads, banks can save on monitoring costs when they rely on market-based pricing.

Ivanov et al. (2013) investigate the effect of market-based pricing on the cost of bank credit for corporations. They find that borrowers save on interest spreads both at the time of loan origination, and during the life of the loan by choosing market-based pricing contracts. Their study shows that these findings are robust to controlling for credit quality and selection problems. These findings are consistent with either one of the two hypotheses put forth above. However, using results from additional tests, the authors argue that it is the reduction in monitoring costs, rather than the additional protection these contracts offer banks, that drives the decline in the cost of bank credit. For example, they document that market-based pricing contracts are associated with a much simpler covenant structure, suggesting that the interest cost savings of borrowers are explained by reduction in lender monitoring costs and in expected renegotiation costs due to covenant violation. Thus, market-based pricing appears to differ from performance pricing in that it addresses credit quality deteriorations. For example, Ivanov (2012) argues that his empirical tests suggest that the primary purpose of performance pricing is to decrease bank loan renegotiation only when borrower credit quality improves.

Ivanov et al. (2013) argue that association between market-based pricing and covenant structure could have several important effects on financial markets. For instance, market-based pricing could reduce the benefits of relationship lending, such as intertemporal interest rate smoothing or the complementarity between banks and non-bank financial intermediaries. For example, Boot (2000) argues that banking relationships could accommodate intertemporal smoothing because banks could be compensated for losses incurred early in the relationship with gains that come later. Market-based pricing has the potential to decrease the importance of such inter-period subsidies, even though interest rate caps and floors act as counterbalancing forces.

Another benefit of monitoring is that it could facilitate non-bank financial intermediation. Diamond (1991) and Hoshi et al. (1993) show that other capital market participants use the borrower-specific private information generated by monitoring and that this eases financing from non-bank sources. Since the information contained in CDS spreads is only an imperfect substitute for the information produced by bank monitoring, the widespread use of market-based pricing could lead to an increase in the cost of non-bank funding sources.

Last, Ivanov et al. (2013) explain that market-based pricing has the potential to create liquidity spirals in the cost of bank credit. For instance, shocks to the CDS market unrelated to borrower credit quality could lead to increases in CDS spreads. In turn, these increases would make credit for market-based pricing borrowers more expensive. The higher cost of credit would now lead to an increase in borrower CDS spreads and another round of interest rate spread hikes.

4. Conclusion

Even though market-based pricing was first introduced in the second half of 2008, it has become widespread among large corporate borrowers. According to Ivanov et al. (2013), market-based pricing has led to a reduction in the cost of bank credit to corporations. This cost decline does not appear to derive from the additional protection that market-based pricing offers banks against future changes in borrowers' financial condition. Instead, it appears to derive from the savings in the monitoring costs that banks enjoy when they use this innovation to set interest rates on their loans to corporations. These savings may come with some potential costs. For example, market-based pricing may introduce spirals between CDS spreads and loan interest rates.

References

- Boot, A., 2000**, "Relationship banking: what do we know?" *Journal of Financial Intermediation* 9, 7-25
- Dennis, S., and D. Mullineaux, 2000**, "Syndicated loans," *Journal of Financial Intermediation* 9, 404-426
- Diamond, D., 1991**, "Monitoring and reputation: the choice between bank loans and privately placed debt," *Journal of Political Economy* 99, 689-721
- Hoshi, T., A. Kashyap, and D. Scharfstein, 1993**, "The choice between public and private debt: an analysis of post-deregulation corporate financing in Japan," *NBER Working Paper*, 4421
- Ivanov, I., 2012**, "Contractual contingencies and renegotiation: evidence from the use of pricing grids," *Unpublished Ph.D. Dissertation, chapter 1*, University of Rochester
- Ivanov, I., J. A. C Santos, and T. Vo, 2013**, "The transformation of banking: tying loan spreads to borrowers' CDS spreads," *Working paper*
- Smith, C., and J. Warner, 1979**, "On financial contracting: an analysis of bond covenants," *Journal of Financial Economics* 7, 117-161

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