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Hedges in the Warehouse: The Banks get Trimmed

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Hedges in the warehouse: The banks get trimmed

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When banks "warehouse" loans, that is, hold them temporarily before selling them through securitizations, how do they protect themselves against credit risk? This article examines the effectiveness of hedging strategies in the context of the recent heavy losses in financial markets.

To Wall Street bankers, market conditions in the spring of 2007 looked close to perfect. The world savings glut meant that liquidity was pouring into the U.S. fixed income markets; interest rates were relatively low compared with historical averages; the U.S. economy was growing strongly; and increasingly complex asset-backed securities (ABSs) that banks had developed as a way to trade loans to other investors were being sold as fast as they could be created.

Then suddenly the financial world changed. Banks that had been posting record profits started reporting record losses. While there are a lot of well-documented reasons for the abrupt change in fortune, we focus on one seemingly obscure, but in retrospect important, part of the picture in this Chicago Fed Letter. One source of losses (although certainly not the only source) for the banks is that the loans that they were intending to hold temporarily—or "warehouse" before selling them to others—fell in value. Banks typically use hedging techniques to protect the value of such assets against declines during the warehouse period. How-ever, hedging is a difficult art where best practices are still evolving; and because of the bull market conditions that prevailed when the banks bought the loans, they may not have fully hedged their positions.

The originate-to-distribute business model

The largest and most sophisticated banks in the world, which reported the majority of the losses, use a common business model known as "originate-to-distribute" (OTD). These institutions originate loans for the specific purpose of selling them to others, typically through securitizations. This model was widely considered to be beneficial for the banks because it moves risks off the banks' balance sheets and distributes them through the financial system among investors who can match their risk tolerances with the return goals. Subsequent events have revealed that the banks actually retained more of the risks than had originally been believed; for instance, the banks retained "hung deals," which are loans intended for securitization that cannot be securitized under current market conditions. They also may not have fully hedged their risks.

The need for speed

In late 2006 and early 2007, the banks' biggest challenge was not in selling the ABSs they had created; rather, their challenge was in creating enough ABSs to meet the demand of investors. Thus, banks were more focused on upside risk (not having enough inventory to sell) than "spoilage risk" (inventory getting old and stale). The key to profitability, especially as the market became more aggressive, was to minimize the amount of time the assets were actually owned by the bank. Indeed, the warehouse

periods dropped from nine months to as short as three months for some products. Growing competition among banks for loans led to increasingly aggressive bidding for new loans from originators, with purchasers sometimes doing little or no due diligence before submitting bids. Another tactic was to vertically integrate by buying out suppliers of loans to lock away production from the competition.

Credit market turmoil

At the beginning of 2007, banks were anticipating record sales volume for securitized assets, so they were ramping up the amount of assets in their warehouses. They were also taking more risk with those assets. As the market became frothier, their ability to sell assets at tighter and tighter spreads increased. This encouraged some to originate ever-more-marginal assets. In addition, since their focus was on production and sales, hedging these warehouse lines against downside risk, which was difficult and expensive anyway, did not seem as high a priority.

When the subprime mortgage crisis began to affect the broader financial markets in mid-2007, suddenly the strategies that had been richly profitable became losers. As the markets tumbled, so too did the value of the warehoused loans. Banks that had not hedged or had hedged insufficiently found their downside unprotected.

Presecuritization warehouses

Securitizations are sold as pools of assets. Banks accumulate a large amount of assets for relatively short periods as they prepare a pool of assets for securitization. During these periods, the assets are stored in the bank's "warehouse," which is conceptually similar to a physical warehouse used to store physical goods. Like vegetables stored in a physical warehouse, loans have "spoilage risk" while in inventory. The longer a loan asset stays in the warehouse awaiting sale, the greater the risk that the loan will lose value for some reason.

Spoilage risk in the warehouse can affect single loans and groups of loans. For example, an individual loan can have an increase in default risk. A group of loans can be adversely affected when the market moves against them (whether because of interest rates or a general increase in credit risk). Both risks potentially reduce the value of the portfolio of loans. Interest rate risk is fairly well understood and relatively straightforward to hedge, leaving credit risk as the major risk of warehoused loans to the bank.

Credit risk to single loans and groups of loans comes in two forms: spread risk and default risk. Spread risk is the larger and more volatile of the two. Default risk is typically lower because most of the warehoused loans are new and few loans default soon after closing (subprime mortgages that are first payment defaults being the notable exception).

Spread risk is the risk that the market will become more conservative in its attitude toward credit risk between the time the loan is funded and the time the loan is sold. For example, a loan booked at a spread of 150 basis points (bps) over Treasuries could be sold into a securitization at a lower spread, say, 125 bps, because the securitization structure typically provides the investor with benefits, such as risk matching and liquidity, that offset the tighter spread. The difference in spreads produces a 25 bps profit for the bank because bond prices move inversely to yield (spread is a component of yield). Alternatively, if credit risk increases and the spread widens to 175 bps, then the

bank loses 25 bps. It is spread widening (increase) that banks are principally seeking to hedge.

The OTD market began to grow quickly after 2002, and in that time, market tolerance for risk steadily increased. In fact, during this period banks often found that spreads had tightened during the warehouse period. This progressive tightening increased profit margins by more than had been anticipated. It then encouraged greater risk-taking by banks because the more assets they booked, the more money they made.

The OTD business model depends on a liquid ABS market because securitization is the primary distribution channel to investors. Thus, the bank is exposed to risk if the credit market becomes more conservative or if the ABS market becomes less liquid. Both conditions arose in the second half of 2007. Banks that had originated loans in late 2006 or early 2007 in an aggressive credit market found that they suddenly could not sell the assets for a profit, if they could sell them at all. They were forced to liquidate the loans at a steep discount to what the bank believed was their "intrinsic" value, or they could hold the assets and hope for a market rebound. Still, doing the latter required them to recognize an accounting loss because the market was now simply unwilling to pay what it had been willing to pay in the recent past.

Hedging the warehouse

Hedging helps banks avoid losses by buying protection against a fall in the value of the assets. However, banks did not fully hedge their warehouse credit risk. Hedging warehouse credit risk is difficult and expensive, especially in an environment where the possibility of large short-term profits created by the bull market tended to reduce risk managers' focus on downside risk.

Hedging warehouse lines is notoriously difficult because of basis risk, which lowers hedge effectiveness or efficiency. Basis risk is the risk that there is a divergence between the asset that is being hedged (protected from loss) and the asset providing the hedge (typically a derivative contract). This divergence is the result of a mismatch between the price movement of the asset being hedged and the derivative contract used to hedge it. Hedge efficiency is measured by the correlation between the asset being hedged and the hedge itself. When efficiency is high (strong negative correlation), the contracts move in the opposite directions with the same speed and magnitude. When efficiency is low, there is little relationship between the movements of the two contracts.

Index products and related problems

The challenge is finding a credit derivative contract with the following characteristics:

- Its market value will move in the opposite direction to that of the warehoused loans; and
- Its market value will move with the same speed and magnitude of change.

To meet this challenge, a series of index products have been developed over the past several years, notably the CDX (for corporate bonds), LCDX (for corporate loans), ABX (for ABSs, including those backed by subprime loans), and CMBX (for commercial mortgage-backed securities, or CMBSs). Each index takes the form of a synthetic credit default swap that references roughly 20 underlying securities that have a uniform credit

rating at the time the series begins (e.g., BBB as of January 1, 2008). The index tranching (or slicing) helps because each loan in the OTD business model will ultimately be sliced into tranches (classes of bonds) in its final securitized form.

Since the warehousing bank is in a natural "long" credit position, meaning it holds the assets, the bank needs an opposite (or "short") position to protect against a loss in value of the assets held—so the short position needs to increase in value as the credit risk of the assets increases. Using one of the index products seems logical for this task because it is possible to get a short position in a security that is made up of assets that closely resemble the ones being hedged. For example, a bank with a CMBS warehouse line could use a short CMBX position to hedge its position.

Unfortunately, there are a number of practical challenges to using the index products to hedge warehouse positions. These include basis risk, accounting issues, counterparty risk, and liquidity risk. The hedge has basis risk because ABSs in the underlying index do not have the same risks as a pool of whole loans; thus, there will be tracking error between the two, which reduces hedge efficiency. This lower hedge efficiency means that the bank has a harder time achieving hedge accounting treatment under FAS 133, which is the accounting guidance that governs hedge treatment. Failure to achieve hedge treatment can result in unwanted earnings volatility from an accounting perspective, even if the hedge achieves its economic goals. Since banks are less likely to get the accounting benefits of hedge treatment, they are probably less likely to pursue it.

In addition, the index products are traded over the counter, as opposed to on exchanges. This means that the bank is exchanging credit risk on a pool of loans for counterparty credit risk—the risk that the other party to a trade will not meet its obligations. Generally, since most trades are made with large dealers, this risk is reduced, but it adds a complicating element to the transaction. Also, the index products can be prone to illiquidity and to an imbalance of buyers and sellers, which can distort prices. So for all of these reasons, warehouse risk managers often will not use the index products for hedging purposes. Many say they are better suited for speculative trading than they are for hedging.

Total return swaps

A total return swap (TRS) is another derivative product that is used for hedging. Under this contract, the bank pays the total return on an index (including mark-to-market gains and losses) on a loan or group of loans in exchange for a fixed payment. This fixed payment locks in the bank's return and provides an effective hedge. The TRSs are not without problems, however, as they are customized swaps that may also increase counterparty credit risk and are expensive to use because they are so customized. They may also have basis risk if the index returns diverge from the underlying assets being hedged. Thus, many banks that use these only hedge part of their position and retain some risk.

For the same reasons that hedging is difficult and inefficient, it is also expensive. For example, hedging a warehouse line with a TRS is intuitively appealing, but the hedging counterparty might be expected to take on prepayment risk, which is difficult to estimate, and would want compensation for that risk.

Default risk

The same forces that cause spread risk to increase (a general decline in economic conditions) also increase the default risk of individual assets. This risk increases the longer an asset is held on the warehouse line. Banks can control this risk by buying credit protection on individual exposures in the warehouse. However, that strategy is available only for a small number of loans (only the largest borrowers have single name credit derivatives on offer), is expensive, and is prone to many of the same illiquidity problems that the other hedging products have.

In the wake of the credit turmoil of 2007, securitization volumes have substantially declined. Banks now find that they have originated assets during times of aggressive underwriting conditions that are now aging on their warehouse lines. This combination puts further downward pressure on values.

Incentives

Another factor that discourages banks from hedging is incentives. Investment bankers generally get a large amount of their total compensation in the form of a bonus. The amount of the bonus is typically tied to a bank's revenue or profitability in a given year. The incentive system tends to be asymmetric with respect to risk because bonuses scale up rapidly as short-term profits increase, whereas the downside risk (being fired) is fixed. In a strong bull market, hedging can be viewed as an unnecessary tax that reduces profits.

Conclusion

The credit turmoil of 2007 was unprecedented in many ways. This turmoil is not yet completely resolved, so it may be too early to list the lessons learned from the events of 2007. New risks emerged, and they have not yet been completely evaluated. But some old risks, which might have been controlled, played a part as well.

Banks lost money in ways that did not seem plausible given market conditions as recently as the spring of 2007. While certainly not the only source or even the major source of losses, warehoused assets awaiting securitizations that could not be completed became a problem for some banks. When the market value of the warehoused assets fell, the banks were forced to recognize losses.

Given that the OTD business model had matured only since the last recession (in 2001), banks had not lost money on their warehouse exposures to this extent in the past. However, the importance of hedging to protect downside risk is not new. Arguably, banks should have been able to foresee a cooling of the markets and a need to hedge downside risk, even without being able to anticipate the precise course of events.

Hedging credit risk assets is both difficult and expensive. In the most recent bull market, protecting downside risk seems to have become a lower priority at some banks. However, when the market turned, the lack of downside protection exacerbated the banks' OTD losses. Incentives for bank managers, which tend to reward short-term profits over long-term risk-adjusted performance, may have played a role as well.