

INSTITUTIONAL MANAGEMENT OF CREDIT DERIVATIVES¹

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The credit derivatives market has grown dramatically in the last three years and with that growth has come new opportunities for financial institutions to take advantage of this market. In this paper, we explore these market developments and lay a conceptual framework for the strategic management of credit derivatives by banking institutions. We argue that the development of the market now means that banks need to choose a strategic path for their credit derivative operations, and more specifically whether they will use the instruments simply as a tool for portfolio management, or participate in the market as a market-maker.

The study of credit risk has gained rapidly in importance in recent years, mainly due to the emergence of the credit derivative market. Most of the research and analysis has been focused on the pricing of credit risk and or credit derivatives, while little attention has been given in the academic literature to the structural implications of the developing credit derivative market. Furthermore, even less attention has been paid to the managerial issues that arise with the development of this still relatively new market that has the potential to radically change the allocation, pricing, regulation and management of credit risk. In this paper we attempt to start a dialogue on the management issues of credit derivatives and to lay a conceptual framework for studying the issues. The central conclusion is that a banking institution needs to determine the depth and extent of its operations and more fundamentally determine whether as an institution it will be utilizing the credit derivatives market as an end-user for credit management or as a market maker intending to make a profit from trading and servicing clients.

Section one gives a brief overview of credit derivatives. The second section describes the features of this market as it concerns banking as an industry, while section three discusses some of the managerial implications. The fourth and final section concludes and provides some directions for further research and analysis.

I Introduction

A credit derivative is a financial contract where the cash flows between the trade counterparties depend on the credit quality of an underlying reference asset or series of reference assets. The most prevalent and basic form of a credit derivative is the credit default swap (CDS). Other

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common types of credit derivatives include Total Rate of Return Swaps, Credit Linked Notes, and structured credit derivatives known as Collateralized Debt Obligations. More recently there has been the development of a liquid market in Credit Spread Options and Credit Default Swap Options. More detailed descriptions of credit derivatives can be found in (Choudhry 2004).

The growth of the credit derivative market has been spectacular in the last three years. While still much smaller than the interest rate swap market, current estimates of the market size range from \$4 – 6B with the market size expected to be over \$8B by 2006 (BIS 2003). Recent data from the Quarterly Derivative Reports from the Office of the Comptroller of the Currency (OCC 2005) show that the growth of the market is still exponential and that credit derivatives are still the fastest growing aspect of the over the counter derivatives market.

Reasons for the growth in the last few years are many, but most agree that the growth surge has been due to a couple of key factors. To begin, the credit derivative market survived a period of some spectacular defaults with minimal market unease or disruption. A relatively minor number of legal disputes arose from these transactions, providing new participants more comfort on entering into the market. As market liquidity and transparency has grown, more participants have entered the market, and existing participants have been encouraged to transact more often, which in turn leads to even more transacting and transparency.

As (Kao, 2000) points out, the rise of the credit derivative market has precipitated a dramatic increase in the academic research into the pricing of credit risk, which in turn has led to practical implications in the financial industry that has made pricing more efficient and pricing models and software more widely available. Related to the increased awareness of pricing models is the acceptance by the investing community of credit as an asset class. As credit derivative products and knowledge of these products have developed, more institutional investors such as insurance companies and hedge funds have entered into the market (Fitch, 2004a).

However, we conjecture that the credit derivative market is still far from maturity and is likely to continue its dramatic growth. Besides a continuation of the factors already mentioned, a key driver for growth over the next several years is likely to be the credit risk modeling aspects that will be allowed for the setting of regulatory capital levels of banking institutions under the new Basel II guidelines that are scheduled to take effect in 2008. Credit derivatives allow for a great deal of flexibility for trading credit risks and thus allowing bank credit portfolio managers to customize their portfolios to a specific risk appetite or view on the markets. As (Reid, 2005) states, “altering credit-risk exposure through the use of a CDS can be more cost effective than transacting in the secondary market. As a result, the use of CDSs is becoming a universal mainstay of portfolio management.” The implication is that a bank ignores credit derivatives at its strategic peril.

The growth of the credit derivative market however has not been without issues. (Ali and Robbe, 2005; and Cocco, 2002) provide an overview of some of the legal and documentation issues that have hindered the market in the early stages. In particular, Ali and Robbe highlight that the development of the market may be outstripping the ability of the legal documentation to keep up.

A related issue is that of regulation. Early in the development of the market, regulation was a major concern as different regulatory bodies either issued inconsistent guidelines, or worse, issued guidelines on a case by case basis. The regulatory uncertainty undoubtedly hindered the development of the market and either slowed down or kept many participants on the sidelines as they were wary about taking on additional regulatory risks.

II Credit Derivatives and the Implications for the Financial System

With the relative maturing of the market, attention has now started to focus on the role of credit derivatives in the broader financial system and in particular on whether credit derivatives are a blessing or a curse for the markets in general. This research has taken three broad paths; (1) analysis of whether or not credit derivatives add or subtract to the general stability of the financial system, (2) the long term legal and regulatory issues, and (3) the effect of credit derivatives on the stability of the credit markets in particular. Across all of these issues is the central question of whether the existence of credit derivatives has increased or decreased financial risk. At first blush one would think that credit derivatives would help to complete the market for credit and as such the overall level of risk would be diminished. Additionally, credit derivatives allow for new entrants into the market for credit risk, and provide an easy means to transfer the credit risk and thus provide a mechanism for risk-sharing across a much broader spectrum of participants. However, several arguments have been put forward that may mitigate or override these positive effects of the market.

(Kiff, 2003) provides an extensive list of concerns that arise from the development of credit derivatives. Among the issues raised by Kiff are the lack of transparency, complexity of the pricing, the increased importance of the rating agencies, the market concentration amongst a few market makers, market effects on the cash markets for credit, bank incentives for bad behavior, basis risk, pricing risk and legal risk.

The concentration of credit risk amongst the major dealers is also a concern that has been voiced by not only market participants but market regulators as well. According to (OCC 2005), the percentage of concentration of the US based credit derivative market that is controlled by the top five banks is 96% of the market. Indeed, the largest bank in terms of credit derivatives, (J.P. Morgan Chase and Co.), accounted for 41% of the market by itself. However this was down significantly from its share just a year earlier (OCC 2004) when J.P. Morgan and Chase Co.'s share of the market was 56%.

In an overview of the financial markets, the (IMF, 2005) expressed concern that the credit derivative market may not have enough liquidity to afford an orderly settlement of contracts should a default crisis occurs. (Fitch, 2004b) as well has raised concerns about the overall liquidity of the market and the ability of the market to cope with a serious downturn. Fitch in particular has noted an absence of market makers when the quality of a specific credit begins to deteriorate.

(Batten and Hogan, 2002) review many of the legal issues of credit derivatives that may add to instability of the financial system. In particular they are concerned about the enforceability of the instruments. Among the issues that they raise are the practicalities of defining a credit event,

consistency between contracts, terminations based upon downgrades, physical settlement of contracts and the issue of affiliates of the reference asset suffering a credit event.

(Kiff, Michaud and Mitchell, 2002; Duffee and Zhou, 2001; Morrison, 2005; and Arping, 2002) are amongst a large body of research that is calling into question the desirability of credit derivatives in terms of credit market stability. The essential arguments that run throughout these articles is that while credit derivatives certainly provides risk sharing and diversification, the actions of banks in managing their positions may outweigh the benefits for the market as a whole. The major issues are a moral hazard, disintermediation, lack of monitoring incentives and an adverse selection problem. As banks offload their credit risks, they may be less diligent in their selection of clients to which they grant credit and furthermore they may be less inclined to properly monitor the credits. Furthermore, there is an incentive for them to shed the risks that they may have an informational advantage on and for which they may have better information than the market about the seriousness of the entity's credit situation. This lemons problem may thus increase the cost of credit as whole across the market.

(Wagner, 2004; and Instefjord, 2005) argue that the presence of the credit derivative market may provide flexibility and incentives to financial institutions to grant more credit to less credit worthy entities than they would otherwise and thus increase the overall level of credit risk, overriding the positive risk-sharing aspects of the credit derivatives market.

These arguments however do not fully integrate the arguments that a larger number of participants in the market, (for example the insurance funds and hedge funds), increase the overall level of analysis, thus increasing the overall level of market efficiency and monitoring. In essence, the above arguments are of a bank's informational advantage versus the market as a whole.

A major driver of the credit derivative market in the future will be the implementation of the Basle II regulatory capital guidelines (BIS 2004). These new regulatory guidelines will allow banks to calculate their regulatory capital requirements based on internally developed risk models. As banks develop their proprietary models, the credit derivative market will be the key avenue by which a bank will be able to implement credit portfolio maximization techniques and customize a bank's credit exposures in order to minimize the amount of regulatory capital needed, and maximizing a bank's return on equity.

Basle II is a paradigm shift in credit risk management with significant implications for the banking industry. Besides the managerial issues of credit modeling, and rethinking credit risk systems, there is the potential for the banking market to split into those institutions that can successfully repackage and reform their credit portfolios through the credit derivative markets and those institutions that may have not have the level of expertise or sufficient capital market liquidity to do so to the extent desired. As (Leander, 2003) quotes one Canadian bank professional, "There are a lot more tools out there than there used to be, but there still aren't as many as we'd like, particularly in the Canadian market and for Canadian names. It is not a very deep credit market and not a very deep capital market, which makes it difficult to do a lot of things that can be in the US market." The ability to accurately model credit exposures and to use

the credit risk transfer markets to maximize portfolio compositions will be key competitive factors for banking institutions.

III Managerial Implications of Credit Derivatives

While the structural implications of credit derivatives have started to be explored by the academic community, the managerial implications have been relatively ignored. (Rizzi, 2003) provides one of the few overviews of the managerial issues. Rizzi presents a risk framework that centres on the pricing, legal, credit and liquidity risks that coming with being an active participant in credit derivative trading.

In an earlier paper, (Nason, Cromarty and Maglic, 1998) provide an overview of the management structure decisions that need to be in place for the creation of a credit derivatives trading operation. In their paper they examine the functional characteristics need for a trading operation and develop a grid analysis of how these characteristics match up against the existing pockets of functional expertise in other areas of a bank. They consider four different areas of a bank where the credit derivatives trading function could exist; within the portfolio management group, derivatives group, loan syndication and trading group, or as a stand alone credit derivative unit. They put forward a set of necessary functional characteristics, namely; back office, regulatory and documentation, pricing and trading, marketing and distribution and credit analysis.

As already mentioned, there are several uses of credit derivatives that make them attractive to a financial institution. However each of these uses can be broken into two main categories; credit derivatives as a product and credit derivatives as a tool. The characteristics of credit derivatives as a product is that the bank is considering the credit derivatives operation to be a profit centre in its own right, while as a tool, the credit derivatives is an end to a means.

Examples of using credit derivatives as a product would be; structuring assets for clients such as other banks or for the bank's investor base, proprietary trading or credit derivative fund management. Likewise, examples of credit derivatives as a tool would include; loan portfolio management, credit exposure management, regulatory capital management and economic capital exposure management.

With credit derivatives as a tool, the financial institution is using the market as a means for profit maximization, whereas with using credit derivatives as a tool, the focus is generally on loss minimization or facilitation of profits through another banking activity (such as reducing an exposure limit to an existing client so another loan can be granted within lending limits). These different activities have significantly different risk implications and also present differences for the level of expertise needed to utilize the market successfully to meet their objectives. Additionally, many of the key success factors for credit derivatives as a product, have little impact on the ability of a financial institution to successfully use credit derivatives as a tool.

Table 1 lists the major issues previously discussed and breaks them down on the basis of their importance to a bank that is using credit derivatives as a tool versus an institution that is using them as a product line.

Some of the key success factors for using credit derivatives as a product would be the marketing expertise - the ability to successfully trade credit and to source counterparties. These are all skills that are necessary for any type of credit trading, whether it is bond trading or secondary loan trading and syndication. In addition to these skills, a key expertise would be the ability to model prices and risks, and to have the necessary informational technologies in place to measure and manage these competitive factors. Finally, to mitigate liquidity risks, and to source trading partners, a critical attribute for a bank using credit derivatives as a product would be the marketing or distributional capability of a competent and knowledgeable sales force.

The key success factors for using credit derivatives as a tool however are quite different. In this situation, the credit derivative is used as a means, not as an end, and thus the comparative advantages required in the credit derivative market are diminished and less critical. The key success factor for successfully using credit derivatives as a tool is to be clear about what the objectives of any transactions are and what the basis risks are between the credit derivative products used and the objectives.

Examining the OCC survey data (OCC 2005), it is clear that there is a dichotomy between banking institutions in the degree of use of credit derivatives. As stated earlier, there is a significant difference between the amount of credit derivatives activity between the top 5 credit derivative banks and all other banks combined with the top 5 banks having 96% of the usage. This is suggestive of the dichotomy between banks that are using the instruments as a product, (the top five banks) and the remainder of the banks who for the most part are using the instruments as a tool.

The credit risk from credit derivatives is analogous to the market risk of other products or services that the bank offers. Analysis of credit risk is a strength of banks that deal with corporate credits. The difference with credit derivatives is that the market value of the portfolio can be altered not only by credit events, but also by the market's perception of changing probabilities of future credit events.

A bank that is using credit derivatives as a product line will have credit risk as a competitive factor. The bank's ability to gain market share and transact successfully will depend on its ability to manage and trade credit risk. This requires market knowledge, including where credit risk can be sourced or places (bought or sold), as well as an ability to sense changes in market direction. This implies a much more dynamic approach to credit risk management than is traditionally done in a bank setting.

A closely related risk to credit risk, is modeling risk. A bank that is planning to trade credit derivatives will essentially have their profits being a function not only of their trading skill, but also of their modeling skill. While modeling skill is also important for banks that use credit derivatives as a tool, it will mainly affect their negotiation skill in transacting and for the most part simply affect bid-ask spreads that it pays on its transactions. Credit derivative pricing is still a proprietary field, with resultant rewards for those that get it right and penalties for those who get it wrong.

The human resources issue is another component. The market is still relatively young, and as such the number of experienced practitioners is still relatively small. Complicating the issue is

that, on the surface at least, credit derivatives are very simple products to understand, but they are very subtle in their unintended consequences. As the instruments become higher in value to the bank, the requirement for more experienced and skilled personnel increases.

Related to the human resource issue are the informational technology requirements of credit derivatives. If a bank is using credit derivatives as a tool, then it is likely that most credit derivative instruments can be added into the existing IT credit management system relatively easily – for example posting the credit derivative as a loan substitute. However, this band-aid solution is obviously inadequate for a market maker in the products.

A final, and critical strategic decision for all banks using credit derivatives, is the role of the corporate banker, who traditionally was a bank's first line of credit risk analysis and main credit risk structurer. It is not inconceivable that some institutions would argue that the collective analysis of the credit derivative market is more valid and accurate than the analysis of any single banker or banking institution (ignoring informational asymmetries). Then the logical step would be to treat traditional credit products as market priced commodities, and market and manage them as such. This has far-reaching implications for the monitoring role of corporate bankers and banks, and is not dissimilar to the trend of banks relying on credit scoring rather than the perception of the local banker of the integrity of a retail loan applicant.

IV Conclusions

In this analysis we have outlined the major challenges that the introduction of the credit derivatives market is bringing to the banking industry. Banks that correctly leverage the capabilities of this market will gain competitive advantages in terms of their ability to source and maintain their corporate banking clients and from more efficient management of economic and regulatory capital. For these and other reasons, mastery of credit derivatives is a strategic imperative for banks.

In his paper we illustrate that there appears to be a dichotomy of the importance of the risk issues for the management of credit derivatives. We therefore argue that banks need to choose whether credit derivatives will be used as a tool for credit management, or as a profitable product line.

Further study into the analysis of best practices in the field, particularly with those banks that are acting as market leaders is needed. Additionally empirical evidence into the practical roadblocks that seem to be limiting more banking institutions from participating in this market is will shed necessary knowledge on the managerial implications of these instruments.

Table 1

Credit Derivative Managerial Issues

**Comparison of Issues for Banks Using Credit Derivatives
as a Tool and Banks Using Credit Derivatives as a Product**

<i>Managerial Risk or Issue</i>	<i>CDs as a Tool</i>	<i>CDs as a Product</i>
Credit Risk	Exposure is mitigated by underlying instruments	Competitive factor
Modeling Ability	Marginal cost issue	Competitive factor
Liquidity Risk & Distributional Capabilities	Minimal	Competitive factor
Transaction Risk (Basis risk, negotiation risk)	Important	Significant due to number of transactions
Operations		Competitive factor
Human Resources	Relatively minor	Competitive factor
IT Requirements	Possible add-in to existing credit systems	Competitive factor
Reputational Risk	Minimal	Significant

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