Implementing Credit Derivatives

Strategies and Techniques for Using Credit Derivatives in Risk Management

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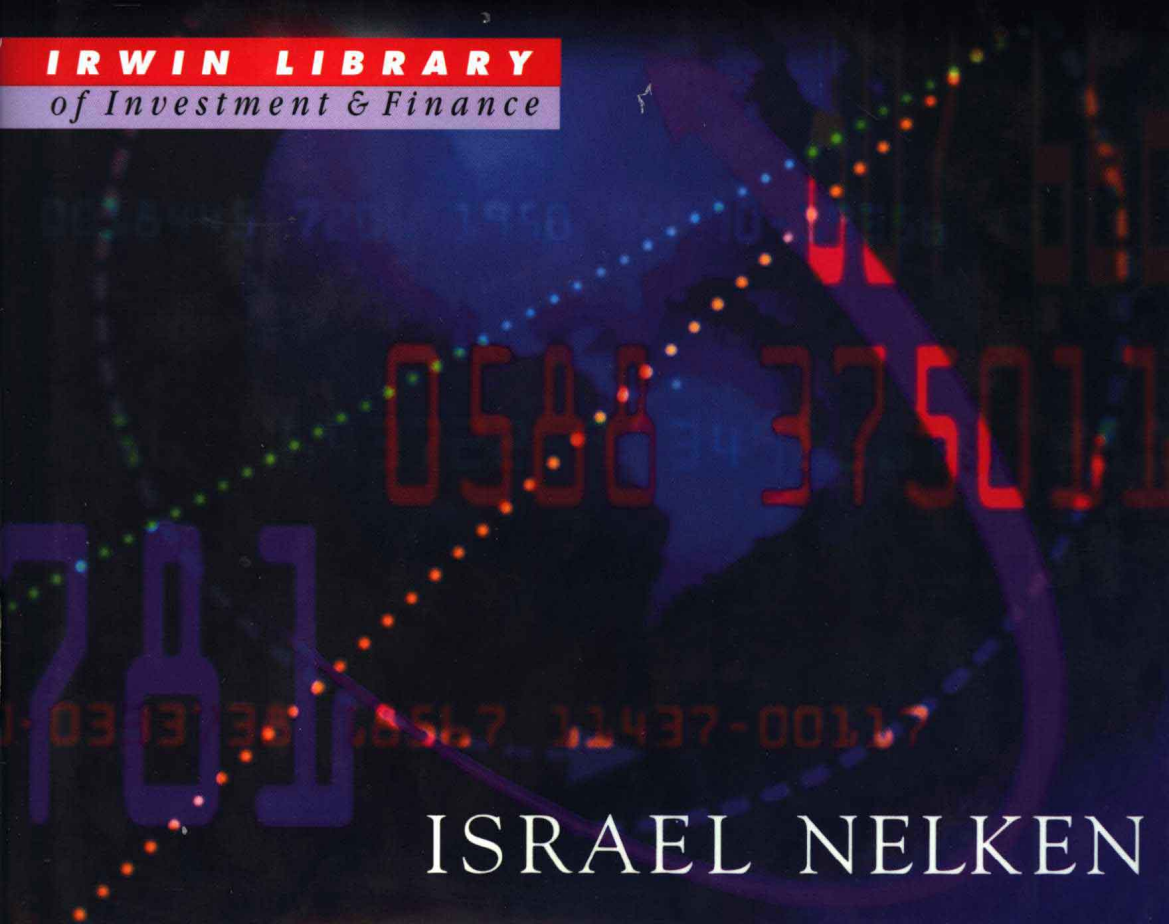

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Preface

Credit derivatives are generating a lot of interest within the financial community. Simply put, these instruments allow the transfer of credit risk between market participants. There is a distinction between "credit risk" and "market risk." *Market risk* is the risk that the market may move against your position. *Credit risk* is the risk that a counterparty will not pay amounts owed to you due to financial distress. Consider the holder of an over-the-counter call option of a stock. The owner of a call option faces market risk as the underlying stock price may decline and the call will expire out of the money. The owner of the call also faces credit risk. The stock price may go up, so the option expires in the money. At the same time, the writer of the call option may default and not pay the amount due on expiration.

Every market participant accumulates credit risk. An employee of a company gets paid once a month. If the company were to default before the month is over, the employee will not get paid. A merchant ships an item to a client and the client may default before the invoice gets paid. Hence credit is the largest source of risk and it impacts all market participants.

While the concept of credit risk is quite old, instruments for trading this risk are a very recent development. As with any developing field, there are some "growing pains." However, credit derivatives as an asset class can only grow in importance.

This book is a compilation of our "Credit Derivatives" course taught to many delegates all over the world. In the course we tend to emphasize the intuitive understanding of the concepts rather than show formal or cumbersome mathematical proofs. The book follows the same format. Wherever possible, we concentrate on the essence of the products and their implications.

The material in the book comes from many sources.

- Newspaper articles.
- Magazines, such as *Risk Magazine* or *The Economist*.
- Websites, internet discussion groups, and web-based magazines (webzines).
- Private discussions and interviews.

By far the most important sources of information are the delegates that have taken the "Credit Derivatives" course. They come from a variety of backgrounds and disciplines and have different interests and capabilities. All the delegates have one thing in common: the strong desire to understand and develop this asset class and fully comprehend its implications.

I wish to thank Claude Brown of Clifford Chance who has kindly volunteered to write Chapter 3. Claude is a specialist in the legal issues surrounding credit derivatives and has the unique ability to explain complex legal terms to anyone. The people at McGraw-Hill and especially Stephen Isaacs also deserve a big thank you for making this book possible.

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CHAPTER 1

Introduction

CREDIT DERIVATIVES

There are many types of credit derivatives. They are a new way to look at and hedge credit risk. In this book, we look at how financial engineering is used to create many different types of structures. We discuss many different structure types: default swaps, default options, total return swaps, credit link notes, etc. We connect the credit derivatives and the repo trades. An important point is to focus on the design of credit derivatives from the investor's point of view. A financial engineer can design a very beautiful and a very interesting structure with a lot of bells and whistles, but at the end somebody has to buy it. So any type of structure has to answer a need, whether perceived or real. With credit derivatives, one also has to worry about the legal issues, the precise definitions of "default," "cross acceleration," and so on. In this book we also compare the J.P. Morgan CreditMetrics system with CreditRisk+ by Credit Suisse Financial Products (CSFP). We also discuss pricing models of credit derivatives and review several examples, and look at the appropriate use of a pricing model.

The field of financial engineering is exploding. In addition to derivative products in equities, currencies, commodities, or interest rates, we now have derivatives in weather, catastrophe-linked bonds, and so on.

Morgan Stanley, for example, was rumored to be designing volatility and correlation derivatives. For each day that market volatility is above a certain amount, the writer will pay the holder of the volatility option.

The point is that all different kinds of derivatives are appearing on the scene. Until recently, there was no way to unbundle the credit risk from the interest rate risk of a bond, or the credit risk from the interest rate risk of a loan. There was no way to take a view on the interest rate without also taking a view on the credit risk, or, the danger that a borrower would simply fail to meet its interest

payment or repay its debt. You bought a bond and you got the total return of that bond, but you were also exposed to the credit risk of that borrower, and there was no way to unbundle them. On the other hand, there was a way to unbundle the market risk of the bond, because if you received fixed income payments on the bond, you could swap them into floating rate payments, for example. But there was no way to unbundle the credit risk of the bond, and that's what we are talking about. How do you unbundle that?

Now, think about the growing market for derivatives on all different kinds of underlying instruments. Some companies have currency exposures, but not all of them. Some have interest rate risks but, again, not all of them. On the other hand, everyone has credit risks.

As you know, we started talking about credit derivatives in the early 1990s. A conference was held in New York, and a few people attended. Each bank sent one or two people, to test the waters, and then the topic died out for a while.

There are many different estimates for the size of this market. We will look at all kinds of estimates and how they are arrived at. It's hard to get precise numbers for the credit derivatives market because:

- They are over-the-counter transactions. Hence, there are no precise numbers reported from an organized exchange.
- Banks may define the same product in different ways. For example, one reports a repo trade while another reports a total return swap, a type of credit derivative.
- The market itself is changing from day to day. New structures are being created, bought, and sold. New players are constantly entering the market, so we are trying to estimate the size of a "moving target."

RELATIONSHIP ISSUES

Banks are in the business of lending money. But many banks have developed specific niches, often because their portfolios of loans are too heavily concentrated in a single geographical region or industry. In such cases, when times are hard for one borrower, the chances are that all of them are suffering, leaving the bank exposed to widespread defaults. So the bank finds itself in a difficult posi-

tion: The relationships that the bank has successfully built and the niche that it specializes in may hurt it the most.

The bank may wish to offload some of its heavily concentrated loans in the secondary market. This will hurt the relationships the bank has successfully built. Its clients are very sensitive to a developing relationship. Borrowers are not going to be very pleased with the bank selling off their loans.

Assume that you are a banker who has loaned a lot of money to your top corporate client. You are very nervous about whether the client will succeed or not. If you sell off the client's loans, they are going to be very upset with you because you are their top banker, you work together, and you are supposed to be in a solid relationship. In addition, the clients always come to you with their business—equity underwritings, bond issuances, and structured finance deals. You are their main banker and now you are saying, "I like being your main banker, but I don't exactly trust you." That is not a very relationship-enhancing attitude.

Borrowers have resisted the development of a secondary market for bank loans. The market exists, but it is a tiny one and it has to do with troubled loans, usually involving companies that are almost in default. Banks are also not very happy sellers of loans, because selling loans is a relationship issue and causes a potential loss of lucrative advisory work.

THE CREDIT PARADOX

The "relationship versus credit exposure" dilemma is sometimes known as the credit paradox. Assume that you are a bank manager. One of your employees, the relationship manager who deals with your top client, comes to you and says, "Our top client has already borrowed 200 million pounds and now they want to borrow another 100 million. They want another big line and we have to approve it because they're our key client, and they might take the business from us to somewhere else." On the other hand, out comes your credit risk manager who says, "You know, they already borrowed 200 million and now they want another 100 million and if they go under, we are going to have a serious problem." Now, you are the manager. There is a dispute between the relationship manager and the credit risk manager, and it is up to you to resolve it.