INTEREST RATE SWAPS AND OTHER FINANCIAL DERIVATIVES: AN INTRODUCTION

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I. INTRODUCTION

Financial derivative products have become an increasing important part of the financial markets since the early 1980s. As of late 1997, the world wide notional value of the derivatives market was estimated at $60 trillion.[1] As of year end 1998, U.S. commercial banks alone reported outstanding derivative contracts with a notional value of $33 trillion, which reflects a compound annual growth rate of 20% per year since 1990.[2]

In its most basic terms, a derivative financial product is a product that provides for payments based on, and hence is valued by reference to, changes in the value of some other asset. This definition in itself is not particularly helpful because it describes too wide a range of potential financial products. Nevertheless, the more commonly traded derivative financial products can be broken down into the following categories:

- Non-exchange-traded forward and option contracts
- Exchange-traded futures and options contracts
- Swaps, caps, floors, collars, swaptions, and forward swaps
- Mortgaged-backed securities subject to prepayment risk
- Structured notes
- Synthetic trust securities[3]

This article will focus only on the first three categories described above. In order to understand financial derivatives, one must first understand forward contracts and options, which are often referred to as the "building blocks" of financial derivatives.

II. FORWARD CONTRACTS

A forward contract obligates the contract owner to buy a given asset on a specified date at a price (known as the "exercise price") specified at the origination of the contract.[4] Typically, neither party to the forward contract makes a payment at the time the contract is executed. If, at maturity, the actual price of the asset to be delivered is higher than the exercise price, the contract owner makes a profit. If the price is lower, the contact owner suffers a loss.

Because a forward contract can be structured to provide for a cash settlement measured by reference to a specified commodity, the parties to the contract have almost unlimited flexibility to devise the measure or formula by which future commodity delivery or cash payment will be calculated. For example, a forward contract in which payment is calculated based on movement in interest rates, currencies or other monetary-based indices is a forward rate agreement. Forward contracts are frequently used in connection with the future delivery of a commodity. In this case, a producer is concerned that prices for a commodity will decrease during the production period and the buyer needing the product is concerned that prices for the commodity will increase. A forward contact is a tool to eliminate this concern because the producer and the buyer lock in a specific commodity's future price today.[5]

Forward contracts are "zero sum" agreements. The potential for gain or loss is directly related to the market fluctuations for a given commodity. The current market price for the immediate delivery of a commodity is referred to as the "spot price".[6] If the spot price is less than the forward contract delivery price, the buyer suffers an economic loss. Conversely, if the spot price is more than the forward contact delivery price, the seller suffers an economic loss.

A forward contact can also be used as a hedge when a third party to the transaction enters the scenario. For example, assume that Seller A has agreed to sell crude oil to a refiner B for $21 per barrel in six months. 30 days later, as a result of market price fluctuations in the crude oil industry, Seller A enters into a forward contract to purchase crude oil from Seller C for $20 per barrel. As a result of this transaction, Seller A has "hedged" his obligation to deliver crude oil to refiner B against the risk that crude oil prices will rise. However, Seller A has also limited his profits on the sale of the oil to $1 per barrel, irrespective of any additional price fluctuations.[7]

Forward contracts are also the basis for "short sales " and "long" positions. If a seller agrees to sell the stock of XYZ corporation to another party at a certain price on the same day, but the seller does not own the stock at the time, the seller has sold XYZ corporation stock "short". This seller is exposed to the market risk of an increase in the value of the stock between the time it agreed to sell the stock and the time the seller delivers the stock, because the seller will have to purchase the stock at the increased price to "cover" its short position. Conversely, if the market value of the stock decreases, the seller will make a profit because it will purchase the stock at the lower price and deliver it to the purchaser at the agreed price. If the same seller agrees to sell the stock of XYZ corporation to another party and the seller owns the stock, the seller has made a "short sale against the box". By owning the stock at the time the seller sold short, seller has "hedged" any losses due to a decline in price of XYZ corporation stock. The purchasers of these forward contracts are described as going "long" in the transaction.[8]

You can see from these series of offshoot transactions from the forward contract why it is described as a "building block" of financial derivatives. You can also see how quickly these transactions can become complicated.

III. OPTION CONTRACTS

An option contract is identical to a forward contract except that delivery and payment of the purchase price is within the holder's or purchaser's discretion. The purchaser has the right, but not the obligation, to purchase the commodity that forms the basis of the option contract. However, the writer of the option is required to perform under the option contract if the purchaser elects to exercise the option.[9] A "put" is an option contract that (upon exercise) requires the option writer to take delivery of a commodity at a future date or dates at a specified price. A "call" is any option contract that (upon exercise) requires the option writer to deliver a commodity at a specified price. The price specified in an option contract is called the "strike price". An "American-style option" can be exercised at any time during a certain time period whereas a "European-style option" may only be exercised on a specified date. Because the option writer is obligated to perform at the discretion of the purchaser, the option writer receives a premium that is typically paid when the option is issued, but may be paid over time.[10]

When a put or a call option can be exercised at a profit for the holder of the option, the option is said to be "in the money". If the put or strike price of a put option is below the market value of a stock, the option holder will not exercise the option because the option is "out of the money". If the call or strike price of a call option is below the market value of a stock, the option holder has a financial incentive to exercise the option because, in the absence of transaction costs, he would be able immediately to sell the stock for a profit. An option holder's risk of loss on an unexercised option is limited to the amount of the premium that he paid the option writer.[11]

The value of a put or call option will vary based on the strike price and the length of time until the option expires. As an option becomes "deep in the money", the option becomes more valuable. The option holder may decide to exercise the option or to sell the option to a third party for a premium above the premium that was initially paid to the option writer. Without going into detail, the pioneering work with respect to option pricing was done by Fischer Black and Myron Scholes in 1973, and the resulting theory became known as the Black-Scholes option pricing model.[12]

IV. FUTURES CONTRACTS

Up to this point, we have been discussing forward contracts and options without reference to exchange-traded third party markets. The absence of an exchange creates significant barriers to the growth of financial derivatives. Without an exchange, the parties to derivative contracts may only look to each other for performance, which creates a significant credit risk issue. Additionally, because there is no third party exchange, in the absence of prior dealings between the parties, the terms of each agreement must be negotiated anew creating a time and effort barrier. These issues, among others, led to the creation of exchange-traded futures and options contracts.

Although futures contracts on commodities have been traded on organized exchanges since the 1860s, financial futures are relatively new, dating from the introduction of foreign currency futures in 1972. The basic form of the futures contract is identical to that of the forward contract in that a futures contract also obligates its owner to purchase a specified asset at a specified exercise price on the contract maturity date.[13] Nevertheless, there are several important differences between a standard forward contract and an exchange-traded futures contract. An exchange-traded futures contact is regulated, exchanges have established standardized contracts for futures and exchanges monitor the conduct and trading activity of their members, which creates a certain level of market efficiency. Additionally, in the United States, the Commodities Futures Trading Commission and the exchanges have established margin requirements and the exchanges provide a clearinghouse for completion of the trades.[14] Each of these differences provides a key element that promoted the rapid growth in financial derivatives over the past several decades.

Futures contracts are typically not settled by delivery of the actual commodity that underlies the contract *i.e.* wheat, cocoa etc. Rather, these contracts generally are settled by the delivery of an exchanging futures contract or the with cash, which is settled on a daily basis through the margin account. Consequently, a futures contract is much like a portfolio of forward contracts. At the close of business of each day, in effect, the existing forward-like contract is settled and a new one is written. This daily settlement feature combined with the margin requirement allows futures contracts to eliminate the credit risk inherent in forwards.[15]

V. SWAP CONTRACTS

The interbank swap market, which is currently the core of the derivative financial products market, was created in the 1970s.[16] As discussed earlier with respect to forward contracts (and in effect, a swap is nothing more than a series of forward contracts strung together), virtually any commodity or income stream

can be the subject of a forward contact and consequently, a swap contract. Swaps are commonly based on interest rates, currency exchange rates, stock values and commodities.

A. Interest Rate Swaps

In its most basic form, a swap contract obligates two parties to exchange, or "swap," some specified cash flows at specified intervals. The most common form is the interest rate swap, in which the cash flows are determined by two different interest rates. An interest rate swap is a contract that determines its payment structure by multiplying a referenced interest rate or rate formula by a "notional principal amount." The notional amount is not the amount that must be paid by either party, but rather the reference point for calculating the payments due under the contract.[17] Included within the gambit of interest rate contracts are interest rate caps, floors, and collars, among others.

B. Fixed-To-Floating Interest Rate Swap

A fixed-to-floating rate swap may occur when an investor holds a fixed rate investment and the investor is concerned that interest rates will rise during the term of the investment, thereby decreasing the investment's value. To hedge against this risk, one alternative is for the investor to enter into a fixed-to-floating rate swap.[18] In this scenario, the investor may enter into a contract with (for example) a commercial bank to hedge against this risk. Assume that the investor holds $100,000 of bonds (the "notional amount") generating a fixed interest rate of 10%. In a fixed-to-floating rate swap, the investor agrees to the bank the 10% interest income stream during a specific period of the investment. In exchange, the bank agrees to pay the investor a floating interest rate income stream on the notional amount of the contract. The floating interest rate will be tied to an interest rate index or indices. If the index rate exceeds 10%, the investor will increase his return, but if the indexed rate decreases to below 10%, the investors rate of return will decrease.

C. Floating-To-Floating Swaps

An investor may enter into a floating-to-floating interest rate swap if the investor does not believe that the floating rate index that his investment is presently tied to adequately reflects the risk inherent in his investment portfolio. For example, assume that an investor owns a $100,000 portfolio of assets that generate a rate of return based on United States treasury securities. The investor decides to borrow $100,000 from a bank for business improvements, the loan interest rate is the bank's floating prime rate and the investor intends to pay the bank interest payments from the cash flow generated by the income stream generated from the from his investments. If the investor is concerned that the floating income stream from its investments will not correlate properly to the floating prime interest rate of the bank, the investor may want to enter into a floating-to-floating interest rate swap. The potential for loss between the two floating interest rate indices is referred to as the "basis risk". To hedge against this risk, the investor will enter into a contract to pay the treasury based floating income stream in return for receipt of a floating rate interest stream based on the bank's prime rate.[19]

D. Interest Rate Caps and Floors

Interest rate caps and floors differ from swaps in that rather that each party to the contract exchanging income streams, the payment obligation is undertaken only by the writer of the contract. In exchange for taking on the unilateral payment obligation, the contract writer receives a payment premium from the purchaser.

Interest rate caps, as the name implies, are contracts that insure that a purchaser will not be required to pay more than a certain rate of interest specified in the contract. The premium that the purchaser is required to pay will be based on the notional amount, the locked-in interest rate and the term of the contract.[20] Therefore, if a purchaser has a floating prime rate loan outstanding and is concerned that it will not be able to support the interest payments if the bank's prime rate exceeds 12%, the purchaser may enter into an interest rate cap contract for the remaining term of the loan at 12%. In exchange for a premium charged by the writer to the purchaser, the writer agrees that to the extent that the bank's prime interest rate exceeds 12%, the writer will pay the interest above 12% on the notional amount to the purchaser. If interest rates never exceed 12%, the writer of the contract will not be required to make any payments under the contract.

On the other end of the spectrum are interest rate floors. Again, as the name implies, an interest rate floor contract is designed to protect a purchaser's investment stream from dropping below a certain level. If a purchaser has a U.S. treasuries investment portfolio with a floating interest rate currently at 10% and the purchaser has determined that it will not be able to support its debt obligations if the portfolio rate floats below 8%, the purchaser may decide to enter into an interest rate floor contract. In this case, the interest rate floor would be set at 8%, the notional amount would be the value of the U.S. treasuries portfolio and the term would be set to match the maturity of the debt that the purchaser intends to support with the income stream. The writer would charge the purchaser a premium based on these criteria and in exchange, the writer would be obligated to pay the purchaser the lost interest on the notional amount only to the extent that interest rates for U.S. treasuries drop below 8%.[21]

E. Interest Rate Collars

Interest rate collars combine into one contract the interest rate cap and the interest rate floor concept. A purchaser may enter into this type of contract if he is seeking an interest rate cap, but believes that the premium being charged is excessive. An interest rate collar will provide the purchaser with the interest rate cap described above, but at the same time, the purchaser is writing an interest rate floor, agreeing to provide the collar issuer with payments if interest rates drop below a certain level. Because the collar writer has the potential for gain if interest rates drop below the pre-set level, the premium charged for the interest rate cap will be less that originally quoted.[22]

VI. SWAP EXECUTION AND DOCUMENTATION - MASTER AGREEMENTS

Interest rate swaps are generally drafted on standardized forms developed by the International Swaps and Derivatives Association (ISDA). While these forms are "standardized", there is still flexibility in structuring the terms of the swap agreement. To the extent that the parties to a swap agreement intend to enter into a number of swap agreements over time, they will typically enter into a "Master Agreement" that will govern all the general terms of their arrangement. When it is time to enter into a new swap, the parties will spell out those terms (*i.e.* the length of the swap, the interest rate and the notional amount) in a "confirmation" which can be signed and distributed by the parties via facsimile. The confirmation will also expressly reference the parties to and date of the Master Agreement governing the transaction.

Under contract law, the approach of the ISDA Master Agreement is to treat each transaction as part of one master agreement. This provides the issuer with two advantages. First, this facilitates the netting of payment process on all the transactions. Second, and more importantly, in the event that one of the parties were to become insolvent, this approach precludes a trustee from including in the estate of the debtor all the profitable contracts and rejecting all the unprofitable contracts (see Section VIII below for a further discussion of bankruptcy issues).[23]

There are two basic types of ISDA Master Agreements, the "multicurrency--cross border" form and the "local currency--single jurisdiction" form. The parties to the master agreements typically "customize" their form using standardized schedules published by ISDA. As you can gather from the titles, the multicurrency form is more flexible because it specifically contemplates difference currencies and different choices of law. The local currency form can only be used for U.S. dollar interest rate swaps, commodity and equity swaps and related contracts and both of the counterparties must be located in the United States (or theoretically, another country).[24] As mentioned above, the ISDA Master Agreements have helped the rapid expansion of the swap market by providing a standardized form, leading to a certain degree of consistency and efficiency in the marketplace.

VII. COLLATERALIZING SWAPS AND USING SWAPS AS COLLATERAL

An interest rate swap agreement is classified as "debt" under a credit agreement, although it can also be a balance sheet asset. Depending on the nature of a particular borrower, a lender may require the borrower to hedge some or all of its floating interest rate exposure under the credit facility. Regardless, in any relatively sophisticated credit facility, one issue that should be raised with a lender at the outset of drafting is whether there will be a specific basket for interest rate swap agreements, whether the swap agreements themselves will be part of any collateral package securing the credit facility, and whether the interest rate swap agreement itself may be collateralized. Furthermore, to the extent that the lender is giving the borrower the option (but not requirement) of entering into an interest rate swap agreement and the lender is allowing the borrower to collateralize the swap agreement, the lender should consider requiring that any collateralized swap agreement be entered into with a member of the lending group. The answers to these issues will drive changes to various provisions in the credit agreement.

Swaps generally may fall into one or more categories of collateral for perfection purposes. Swaps may be "investment property" under the Uniform Commercial Code if the underlying delivery at the end of the contract is a security or commodity.[25] A pure interest rate swap is specifically excluded from the definition of "security" under the 1933 Act and the Securities Exchange Act of 1934.[26] Under the new Uniform Commercial Code, a pure interest rate swap should be considered an "Instrument" which is "a negotiable instrument or any other writing that evidences a right to the payment of a monetary obligation...and is of a type that in ordinary course of business is transferred by delivery with any necessary endorsement or assignment."[27] Nevertheless, to the extent that you are taking a security interest in an interest rate swap agreement, the granting provision should specifically mention that interest rate swap agreements are intended to be pledged under the document.

On the other side of the transaction, the financial institution counterparty to an interest rate swap agreement may want the purchaser to pledge collateral to secure that party's obligations under the swap agreement. This has become increasingly common since the sustained world market crisis in 1997 and

1998.[28] Collateral securing swap obligations cannot eliminate all risk, but it does help diversify the financial institution's risk. Obviously, the best type of collateral is readily liquidated assets such as cash or government securities.

VIII. BANKRUPTCY ISSUES RELATED TO SWAPS AND DERIVATIVES

The two basic characteristics of swap agreements that generally are of most concern whether a swap party becomes insolvent are the termination provision and the netting provision. The basic premise of a swap agreement is that both parties will be able to satisfy their ongoing payment obligations under the document. To the extent one party is unable to perform, the agreement provides for early termination. Upon early termination, a payment is computed that is intended to compensate each party on a net present value basis for the expected future payments that would have been made but for the early termination. These obligations are then "netted" against each other for a final settlement payment to one party or the other. Nevertheless, to the extent that the parties have entered into multiple swap agreements, the early termination provision of each of those swap agreements would be triggered either directly or through a cross default provision. Then, in the absence of any bankruptcy court interference, all of the contracts would be netted to determine a final payment amount.[29] The primary issue then, is whether a bankruptcy court will allow early termination of the swap contract and the netting of payments (and access to any collateral in the event of a shortfall).

The federal bankruptcy code was amended in 1990 to provide protections for financial institutions in swap agreements. Specifically, a broad definition of "swap agreement" was added to Section 101(53B) of the bankruptcy code. Additionally, Section 560 was added to the bankruptcy code to provide for "a swap participant's contractual right to terminate a swap agreement and offset any amounts owed under it in the event that one of the parties to the agreement files a bankruptcy petition...." Therefore, a swap participant is unaffected by the automatic stay in bankruptcy. While these provisions went a long way in protecting swap participants, some issues still remain unresolved, such as guarantees of swap obligations.[30]

IX. CONCLUSION

From the concept of a simple forward contract, a multi-trillion dollar industry has developed in financial derivatives. There is even a fast growing market in "weather derivatives" that is utilized primarily by energy suppliers against the risk of unseasonably hot or cold temperatures.[31] While a great deal of uncertainty with respect to derivatives has been settled through the enactment of statutes and drafting of ISDA Master Agreements, the world of derivatives will continue to evolve and adapt as the world market changes.

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1 Widder, "No End to Debate on Derivatives Rule, " Chi. Tribune, October 2, 1997, at Sec. 3, 3.

2 Alan Greenspan, An Address before the Futures Industry Association, March 19, 1999.

3 *See* Steven D. Conlon & Vincent M. Aquilino, Principles of Financial Derivatives: U.S. and International Taxation (Warren Gorham & Lamont 1999) (hereinafter, Principles of Financial Derivatives).

4 Charles W. Smithson, *A Building Block Approach to Financial Engineering: Introduction to Forwards, Futures, Swaps, Options, and Hybrid Securities*, Practising Law Institute SWAPS & Other Derivatives in 2001 (2001) (hereinafter, Smithson).

5 Principles of Financial Derivatives at A1-10 and A1-11.

6 *Id.* at A1-11.

7 *Id.*

8 *Id.*

9 Smithson at 17.

10 Principles of Financial Derivatives at A1-14 and A1-15.

11 *Id.*

12 Smithson at 18.

13 *Id.* at 13.

14 Principles of Financial Derivatives at A1-19 and A1-20.

15 Smithson at 14.

16 *See* Rizzello, "The Development and Evolution of Derivative Products," in The Handbook of Derivative & Synthetics 10 (R. Klein & J. Lederman eds., 1994).

17 Principles of Financial Derivatives at A1-22.

18 *Id.* at A1-22 and A1-23.

19 *Id.* at A1-24.

20 *Id.* at A1-25.

21 *Id.* at A1-26.

22 *Id.* at A1-28.

23 *Id.* at A1-36.

24 *Id.* at A1-37.

25 *See* U.C.C. Sec. 9-102(49).

26 *See* Title III, Commodities Futures Modernization Act of 2000.

27 *See* U.C.C. Sec. 9-102(47).

28 Michael C. Clarke, *Safety, Soundness, Innovation and Opportunity: Collateral in the OTC Derivatives Market*, Practising Law Institute, SWAPS & Other Derivatives in 1999 (1999).

[29] Principles of Financial Derivatives at A4-46.

[30] *Id.* at A4-48. *See also*, Rebecca J. Simmons, *Bankruptcy and Insolvency Provisions Relating to Swaps and Derivatives*, Practising Law Institute, Nuts & Bolts of Financial Products 2002: Understanding the Evolving World of Capital Market & Investment Management Products, February 2002.

[31] Joseph Hrgovcic, Global Energy Business Vol. 3, No. 4, August 1, 2001.