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Financial Crisis Inquiry Commission Preliminary Staff Report Derivative Overview

United States: Financial Crisis Inquiry Commission (FCIC)

Financial Crisis Inquiry Commission

Preliminary Staff Report

OVERVIEW ON DERIVATIVES

June 29, 2010

This preliminary staff report is submitted to the Financial Crisis Inquiry Commission (FCIC) and the public for information, review, and comment. Comments can be submitted through the FCIC's website, www.fcic.gov.

This document has not been approved by the Commission.

The report provides background factual information to the Commission on subject matters that are the focus of the FCIC's public hearings on June 30th and July 1, 2010. In particular, this report provides information on derivatives. Staff will provide investigative findings as well as additional information on these subject matters to the Commission over the course of the FCIC's tenure.

Deadline for Comment: August 12, 2010

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I. INTRODUCTION

A derivative is a financial contract whose price is determined or "derived" from the value of an underlying referenced item, which may be an asset, commodity, rate, index or event. Derivatives range in complexity from relatively simple interest rate swaps – in which investors exchange a floating-rate payment for a fixed-rate payment – to more exotic contracts such as synthetic collateralized debt obligations. Whether measured by trading volume, outstanding amounts or risk exposures, derivatives markets are a very large and significant sector of the US financial system.

The history of derivatives markets in the US can be traced back to 1851,[1] when the Chicago Board of Trade first began trading contracts for future delivery, providing farmers the opportunity to negotiate a guaranteed price for their crops before they were harvested. Futures and options markets grew in scope and scale, and derivatives exchanges emerged in major cities throughout the country, encompassing a range of agriculture, mineral, energy and metal commodities.

The modern era of derivatives markets began in the 1970s as a result of two major events. The first event was the breakdown of the Bretton Woods international fixed exchange rate system, which reintroduced exchange rate fluctuations into the financial system. The second event was the creation of an options pricing formula by Fischer Black and Myron Scholes in 1973. It allowed investors to calculate the value of an option from the market price of the referenced item.[2] These events, together with the new computational strength of computers, propelled the growth and development of derivatives.

The volume and variety of derivatives trading have grown dramatically over the past two decades. Global over-the-counter (OTC) derivatives grew seven-fold from $88 trillion in notional amount outstanding ($2.63 trillion in gross market value) at the end of 1999 to $615 trillion notional amount outstanding ($21.6 trillion gross market value) at the end of 2009. At its peak at the end of 2007, the credit derivatives segment of the market totaled $58.2 trillion in notional amount outstanding ($2.02 trillion in gross market value).[3] The trading volume for exchange-traded futures and options reached $2.4 quadrillion for the 12 months ended June 30, 2008.[4]

Many financial and commercial firms as well as governments use derivatives to hedge or manage their risks. For the financial system as a whole, derivatives can improve market efficiencies by providing price discovery and by transferring risks to those more willing

[1] The CBOT started trading forward contracts in 1851 and standardized futures in 1865. See *CME Group Magazine*.
[2] Black, Scholes, *The Pricing of Options and Corporate Liabilities*, 1973.
[3] See Section V for a definition of credit derivatives.
[4] Data sourced from the Bank for International Settlements. See section III for the definitions of notional amount and gross market value.

and able to bear them. However, headline scandals and large-scale losses involving certain types of derivatives have occurred during the past two decades, and particularly during the financial crisis. These have drawn attention to the risks involved in the use of derivatives, both to individual firms and to the stability of the financial system.

II. ECONOMIC BENEFITS AND RISKS OF DERIVATIVES

A. USES

There are two primary economic benefits provided by derivatives markets: *risk shifting* and *price discovery*.

1. Risk Shifting

Market participants can use derivatives to shift their risks either to hedge, reducing their overall risks, or to speculate, adding to their existing risks.

Used effectively, derivatives can help to promote market efficiencies by enabling individuals or entities to shift the risk they are unwilling or unable to assume to those who are able or willing to do so. For instance, pension funds are generally risk-averse firms that use derivatives, such as interest rate swaps, to transfer or reduce inflation and interest-rate risk associated with their investment portfolios to risk-taking entities such as hedge funds.

Derivatives can also be used to more precisely tailor risks to meet the preferences of particular investors. For example, portfolio managers can use derivatives to customize trades to gain exposure to or hedge against very specific risks, rather than simply trading an existing instrument.

Hedging

When derivatives are used for hedging, they reduce or eliminate the exposure to an existing risk. For example, a bank with long-term assets and short-term funding liabilities can use an interest rate swap to hedge against fluctuations in its funding costs by paying a fixed interest rate and receiving a variable payment linked to an interest rate similar to those on its short-term liabilities. This derivative would generate a higher payment to the bank when short-term interest rates increased, thus compensating the bank when the market rate increased on its variable rate funding. Another example is a European investor that wants the equity price risk of high-tech U.S. firms but does not want the exchange rate risk between the dollar and the euro. A foreign exchange swap or option could be used to reduce the exchange rate risk and enable the investor to retain the risk and return of the high tech stock portfolio.

In some cases, derivatives contracts can act as a hedge for both counterparties, and thus effectively eliminate their risks in the marketplace. For example, when a farmer hedges by selling grain in the futures market and a food processor hedges by buying its grain inputs forward in the futures market, they both eliminate their market price risks.[5]

Derivatives can also be used as tools for risk management because they allow organizations to select risks they are more capable of bearing and transferring or minimizing risks they are less willing and able to bear. This helps reduce the uncertainties associated with conducting business and frees up funds which can be allocated toward more productive investments. For example, a firm may be contemplating extending its business into renewable energy technologies but is concerned about the risk of falling energy prices. An exchange-traded natural gas future or OTC swap could be used to reduce the energy price component of the investment project.

Speculating

Another purpose of derivatives is for *speculating*, which is when an individual or firm takes a position through derivatives with a directional view of the market. For example, a trader can buy a *call option* whose value increases with an increase in the price of an underlying stock. A *call option* is a contract that provides the contract holder the right to buy a specific quantity of an underlying security from the option seller at a specified price, also known as the *strike price*. If the stock's price rises above the option's strike price, the trader could profit by exercising the option to buy at the strike price and then sell at the higher prevailing market price.

One form of speculation is arbitrage, a strategy in which investors exploit market inefficiencies that may yield price differences between two assets with similar returns. For instance, derivatives can be used to capture risk-free profits from two currencies when interest-rate parity is not maintained.

2. Price Discovery

The second primary economic benefit of derivatives markets is their role in making markets more efficient by contributing to price discovery. The trading of derivatives provides additional information about the market's view on the value of the underlying asset or commodity.

When transparent, derivatives markets have advantages over cash markets in providing price discovery. Due to their lower trading costs, greater liquidity and the standardization of the reference entity, derivatives markets often serve as the primary markets for

[5] Of course there will likely remain some basis risk associated with the standardized futures and there will be some credit risk with the clearing house. In practice these may be very small.

determining the prices of commodities, financial assets and the market value of certain risks and events. The benefits of price discovery are increased when derivatives are traded on exchanges or through clearing houses which provide greater public access to price information.

B. RISKS

Derivatives also pose potential risks to firms and to the financial system. Derivatives transactions are generally leveraged since parties to these transactions initiate the transaction with little money down. In any financial transaction, the degree of leverage is determined by the collateral required to secure the transaction. If no collateral is required then the economic leverage is infinite. While the use of leverage has the potential to yield high returns relative to the capital invested, it also has the potential to yield large losses.

Table 1: Concentration of Derivatives Activity

	Top 5 Banks		Other Banks		All Banks	
	US$ bn	Percent	US$ bn	Percent	US$ bn	Percent
Futures & forwards	22,670	11.1	2,034	1.0	24,704	12.1
Swaps	132,513	65.1	3,090	1.5	135,602	66.6
Options	28,809	14.2	904	0.4	29,714	14.6
Credit derivatives	12,546	6.2	894	0.4	13,440	6.6
Total	196,538	96.6	6,922	3.4	203,460	100.0

Source: OCC data from Call Reports. Notional amounts at year-end 2009.

Table 2: Total Credit Exposure as Percent of Capital

	2001	2002	2003	2004	2005	2006	2007	2008	2009
JPMorgan Chase	439	427	548	361	315	347	419	382	265
Goldman Sachs								1,024	766
Bank of America	95	114	119	143	97	93	115	179	151
Citibank	123	147	198	221	267	268	223	278	180
Wells Fargo									60
Top 5 Banks	175	180	243	228	205	220	239	330	284

Source: OCC Fact Sheet, from Call Reports.

Derivatives have also been criticized as tools for avoiding prudential regulations, which is enabled in part by their off-balance sheet nature. Financial firms might take risks through derivatives in order to avoid greater capital requirements for the same risks taken from investing in the underlying securities and holding them on the balance sheet. As an illustration, European banks bought credit protection (in many instances from AIG) through credit default swaps in order to reduce their capital requirements and thereby increase their balance sheet leverage. Additionally, U.S. banks are not allowed to hold corporate shares or bonds on their balance sheet, but they are allowed to transact and even act as dealers in derivatives, such as equity swaps, that are based on such securities.

Additionally, a large share of derivatives is traded over-the-counter where it is not subject to regulatory oversight and is exposed to greater counterparty credit risk. As shown in Table 1 and Table 2, this counterparty credit risk is highly concentrated, which may raise concerns about financial stability in the event of the failure of a major market participant. Table 1 shows that 97% of derivatives on the books of U.S. banks are held by the largest five banks. Table 2 shows the total credit exposure of these banks relative to their capital. At the end of 2009, the sum of current credit risks and potential future credit risks from their derivatives portfolios was 284% of the banks' capital.

III. EXCHANGE-TRADED VS. OTC MARKETS

The economic and institutional structures of financial markets play a critical role in determining how prices are established or discovered. These structures also shape the stability and orderliness of the marketplace. There are two basic ways the derivatives markets are organized, as *over-the-counter* markets or as *exchanges*, although some recent electronic trading facilities blur the traditional distinctions.

A. DERIVATIVES EXCHANGES

Exchanges are centralized places or electronic platforms that bring together all types of market participants under a common set of rules. The oldest derivatives exchange is the Chicago Board of Trade, which has been trading contracts for future delivery since 1851 and standardized futures contracts since 1865. CBOT merged with the Chicago Mercantile Exchange in 2007 and with New York Mercantile Exchange in 2008, creating the CME Group, which is today one of the world's largest derivatives exchanges.[6]

An exchange centralizes and disseminates the communication of bid and offer quotes to all market participants who can respond by selling or buying at one of the quotes or by countering with different quotes. This allows any market participant to buy as low or sell as high as anyone else according to exchange rules. Exchanges often also provide the clearing facilities through which post-trading activities such as confirming trades and handling payments are completed.

The two most common types of exchange-traded derivatives are futures and options. Exchange-traded derivatives have standardized terms such as size, grade and settlement dates. However, some exchanges offer a trading facility for "flex options" in which investors can submit requests for quotes on customized contracts.

[6] The *Futures Industry* magazine collects information on exchanges worldwide.

1. Physical Trading vs. Electronic Trading

The advent of electronic trading has led to the decline of physical trading floors and pit trading. Many traditional trading floors are now being closed and the communication of orders and execution of trades are being conducted entirely through electronic means. The London Stock Exchange and NASDAQ stock exchange are completely electronic, as is Eurex, the world's second largest futures exchange. Many others, such as the CME, offer both floor and electronic trading. In its shift toward electronic trading the NYSE recently purchased the electronic trading platform Archipelago in 2006 and became NYSE Arca.

Electronic trading enables exchanges to list new contracts more cost effectively and to maintain trading in a wider array of contracts than was economically viable under floor trading. Electronic trading also provides a better audit trail for the enforcement of market rules. It also has the potential for network linkages between exchanges so bids and offers can be executed on competing platforms to achieve the best execution.[7]

2. Role of Clearing Houses[8]

Derivatives exchanges in the US have been employing clearing houses for over a century to clear and handle post-trade processing. A clearing house helps confirm trades and mediate disputes, *novates* the trades so that each side of the trade then faces the clearing house as a counterparty, and then handles subsequent payments and settlement.[9] The creditworthiness of the clearing house is backed by the collateral of investors (called margin), the capital of clearing members, the clearing house's own capital and emergency lines of credit from outside banks. On a daily basis the clearing house marks all contracts to market and collects additional margin from traders for any price movements.

B. OTC DERIVATIVES MARKETS

OTC derivatives markets are not centralized; they are less formal networks of trading relationships focused on one or more dealers. Dealers act as market makers by quoting prices at which they will sell (ask or offer) or buy (bid) to other dealers and to their clients or customers. OTC dealers convey their bid and ask quotes and negotiate execution prices over the telephone, through instant messaging, or through electronic bulletin boards (where quotes are posted but not executed) and electronic order-matching platforms. Dealers may quote different prices to different customers.

[7] There are eight options exchanges in the US that trade many of the same equity-linked contracts.
[8] The term clearing house has traditionally been used to describe the post-trade processing at exchanges, and it is the term used internationally by the Basel Committee on Payment and Settlement Systems. More recently the term "central counterparty" was introduced in an attempt to distinguish these new organizations from those associated with exchanges.
[9] The term "novate" means to write the contract anew.

1. Market Participants

There are two types of participants in the derivatives market: *dealers* and *end-users* (customers). End-users use derivatives to hedge or to speculate. End-users of derivatives include government entities, private or institutional investors, large corporations, and pension funds. Dealers are entities, usually large commercial banks or broker-dealers that make markets in OTC derivatives. While OTC derivatives are sometimes brokered between two end-users, they are generally traded between a dealer and their customer or between dealers. Table 3 below lists the top bank holding companies with large derivatives positions in 2006 and 2009; the figures include both dealer and end-user activity by these companies.[10]

Table 3: Top Holding Companies with Most Derivatives Contracts

2006	2009
JPMorgan Chase & Co.	JPMorgan Chase & Co.
Citigroup Inc.	Bank of America Corporation
Bank of America Corporation	Goldman Sachs Group, Inc.
Wachovia Corporation	Morgan Stanley
HSBC North America Holdings Inc.	Citigroup

Source: OCC Quarterly Report on Bank Trading and Derivatives Activities (2006, 2009)

Note: List only includes US charted bank holding companies. In 2009, large broker-dealers were re-chartered as bank holding companies.

There are also third-parties involved in the various phases of OTC derivatives trading. In the pre-trade process there are inter-dealer brokers (IDB), which are firms that act as intermediaries between major derivatives dealers, such as ICAP, GFI Group and BGC Partners. In the post trade process there are firms that do trade capture, trade validation, trade confirmation, trade settlement and reconciliation. In addition there are third party data providers such as Markit, CreditEx and Bloomberg. The Depository Trust & Clearing Corporation (DTCC) offers trade confirmation and trade repository for credit derivatives, and they now capture the vast majority of trades in that sector. Other noteworthy services are provided by Tri-optima, which helps compress offsetting or nearly offsetting positions on a trilateral basis and provides portfolio reconciliation services for end-of-day valuation and margining. In addition, there are clearing houses and other central counterparties that function to guarantee the trades.

[10] It is difficult to obtain information on top dealers and end-users of derivatives. While OCC provides a list of commercial banks with the most derivatives contracts it does not specify for which derivatives the bank was an end-user or dealer.

2. Interdealer Market vs. Dealer-to-Customer Market

The OTC derivatives market is bifurcated into an *interdealer* market and a *dealer-to-customer* market. In the interdealer market, dealers quote prices to each other in order to transfer to other dealers some of the risks they incur in trading with customers. Dealers can have direct phone lines to other dealers enabling traders to obtain multiple dealer quotes in a few seconds. To make this process more efficient, some OTC markets have interdealer brokers (IDB) that help market participants get a broader, multilateral view of the market. The dealers send quotes to the interdealer broker, who broadcasts the information by telephone, squawk box,[11] or by listing on an electronic bulletin board. The bulletin boards show bid and ask prices and quantities, and sometimes execution prices and quantities. In order to trade, the dealer must phone or instant-message the IDB; this is referred to as a *broker-assisted trade*. Interdealer brokers are increasingly deploying electronic trading platforms that allow participating dealers to directly post quotes and execute trades.

In the dealer-to-customer market, dealers use a variety of tools to convey their quotes to customers, depending upon the characteristics of the customers and the derivatives product that they are trading. For so-called "active and sophisticated traders," such as hedge funds and other non-dealer financial firms, dealers send quote sheets on standard OTC derivatives contracts, sometimes several times a day, through email or through the Bloomberg network. Active and sophisticated customers are apt to receive such quote sheets from several dealers. Some dealers offer these customers access to an electronic bulletin board through which they can immediately and continuously observe the dealer's quotes. If these customers want to trade something that is more customized, they will need to contact a dealer directly in order to get a price quote. Similarly, if a dealer wants to trade something less standardized, they will need to seek out customers to contact directly.

Other customers may trade less actively and may also be less sophisticated. Such customers may contact their dealer directly through phone, instant-messaging, or email to obtain individualized quotes or to check market prices.

The process of trading OTC, whether interdealer or dealer-to-customer, is often called *bilateral trading* because only the two participants to the trade directly observe the execution. However, some OTC trading activities have limited multilateral characteristics due to the function of interdealer brokers for some markets and to the use of electronic bulletin boards and trading platforms.

[11] A squawk box is an intercom system used by a broker's customers.

3. Clearing

Another factor that is transforming OTC derivatives markets and blurring the distinction between them and exchange markets is the growing role of clearing organizations for OTC transactions. Traditionally, OTC derivatives were cleared bilaterally between the counterparties. That began to change with the establishment of the London Clearing House's SwapClear, which has provided central clearing of plain vanilla interest rate swaps in the interdealer market since 1998. It now claims to clear the vast majority of eligible swaps in the interdealer market.

Several exchange-related clearing houses also offer clearing for OTC contracts, sometimes by converting them into futures contracts. This development was accelerated by NYMEX after the failure of Enron. In October 2008, responding to pressure from the Federal Reserve Bank of New York, sixteen major dealers of OTC credit derivatives signed a letter of commitment to centrally clear trades, and today there are several competing organizations for that business.

4. ISDA Master Trading Agreement

The majority of OTC derivative transactions are traded under the ISDA Master Trading Agreement (MTA), first introduced by the International Swaps and Derivatives Association (ISDA) in 1987. ISDA, established in 1985, is a global financial trade association that represents OTC market dealers.[12]

The MTA provides standardized and generally accepted documentation that can be used by the various counterparties associated with a derivative. The Agreement specifies the various events that could affect the terms of the derivatives contract such as bankruptcy, default, or restructuring. The Agreement also provides documentation of all the parties to the derivative and the amount owed by each; this information can be used to net out the amount payable for that derivative at the end of the derivative's term or in the event of bankruptcy. In addition to the MTA, a Credit Support Annex provides terms under which counterparties can seek to reduce the net credit risk between them through the use of collateral and other means to secure their derivatives transactions.

C. THE SIZE OF DERIVATIVES MARKET

There are three ways to measure the size of the derivatives market: *notional amount outstanding*, *gross market value*, and *trading volume*.

In general, measuring the size of the OTC derivatives market is difficult because the markets are unregulated and there are no transactional reporting requirements. Limited data is available from regulated banks and broker-dealers that are required to report

[12] See ISDA website, www.isda.org.

aggregate information on their use of derivatives.[13] The BIS also compiles data on derivatives markets around the world but relies largely on the reporting by a small number of dealers through their respective central banks. There is no centralized data on transactions that either do not go through a dealer or go through a dealer that does not report to BIS.

Trading volume on derivatives exchanges totaled $2.4 quadrillion for the 12 months ended June 30, 2008. A comparable measure is not available for OTC derivatives.

1. Notional amount outstanding

Notional amount outstanding is the amount of the underlying asset on which derivatives are based.

In interest rate swaps, notional amounts do not reflect the size of the exposure or potential obligation between the parties. For example, an interest rate swap may be based on the interest payments on $1 million in notional amount. Only the net obligations are paid on typical interest rate swaps. In other words, party A, agreeing to pay a fixed rate of 10 percent would pay $100,000 each year over the term of the contract, less the amount determined by the same notional amount applied to the floating rate. In return, party B would be in the opposite situation. On the payment date, the difference between the two rates applied to the notional principal – the net of the two interest payments – would be paid to the entitled party. That amount is a small fraction of the notional amount outstanding. As a result, the notional amount outstanding is not a perfect measure of the sum of risks in the OTC derivatives market.

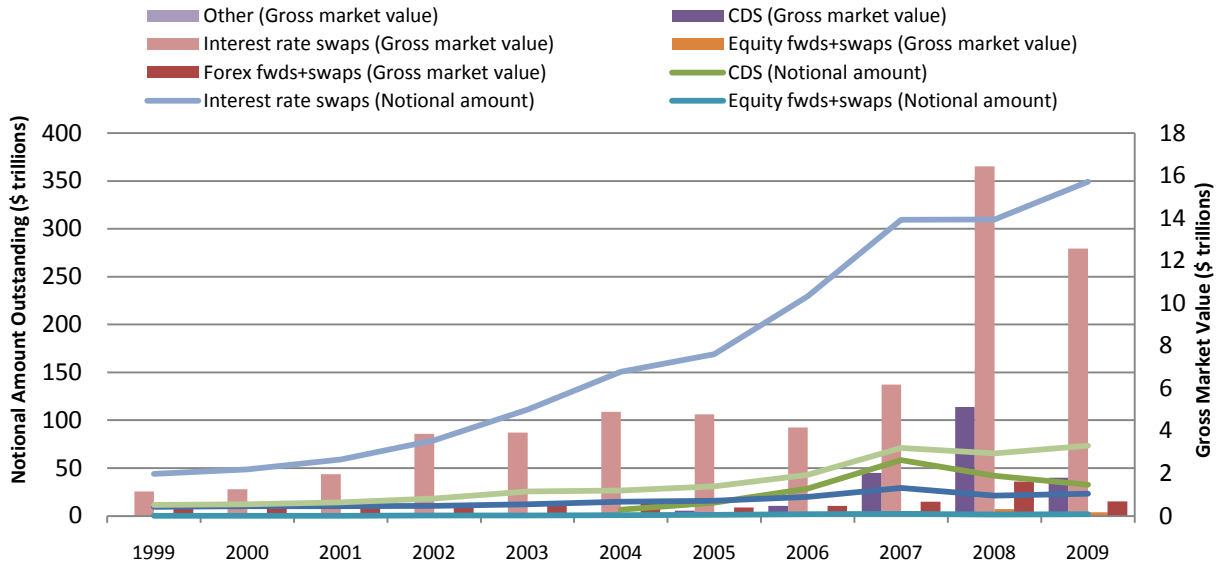
2. Gross market value

The gross market value or replacement cost of derivatives is based on the mark-to-market value of outstanding OTC derivatives contracts.[14] Figures 1 and 2 show the order-of-magnitude difference between the notional amounts outstanding (illustrated in both figures by lines and measured according to the left-hand scale) and the gross market value of those positions (illustrated by columns and measured according to the right-hand scale).

[13] Information on the global size of the OTC derivatives market is available from semiannual surveys conducted by the Bank for International Settlements (BIS). Data about US banks is available quarterly from the Office of the Comptroller of the Currency. Monthly data for exchange-traded derivatives is available from the Futures Industry Association.
[14] Level 1-3 assets show investors the amount of certainty that pertains to the valuation of a financial asset.

Figure 1

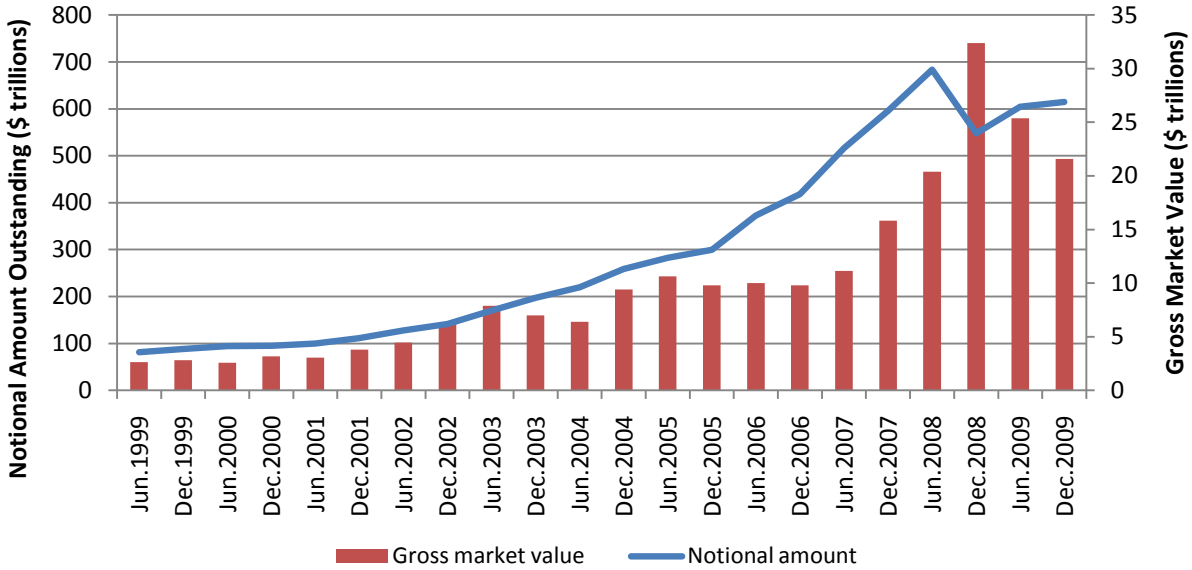
Notional Amount Outstanding and Gross Market Value of Select OTC Derivatives



Source: Bank for International Settlements
Note: Values are as of end of December.

Figure 2

Notional Amount Outstanding and Gross Market Value of Global OTC Derivative Market*



Source: Bank for International Settlements
*Total is based upon Total Contracts of OTC Derivatives

IV. TYPES OF DERIVATIVES

Derivatives can be classified by the product underlying a derivative and by the relationship between the derivative and the underlying product. This relationship is exhibited in three main types of derivative contracts: *future/forwards*, *options*, and *swaps*.

In a *futures* or *forwards* contract the purchase or sale of an asset is designated at a future date but at a price specified today. Futures contracts are standardized contracts purchased or sold on an exchange, while forward contracts are less standardized and are traded OTC. In futures and forwards contracts, the risks of changes in the prices of the underlying product (asset, index, rate, etc.) are transferred between counterparties over the life of the contract.

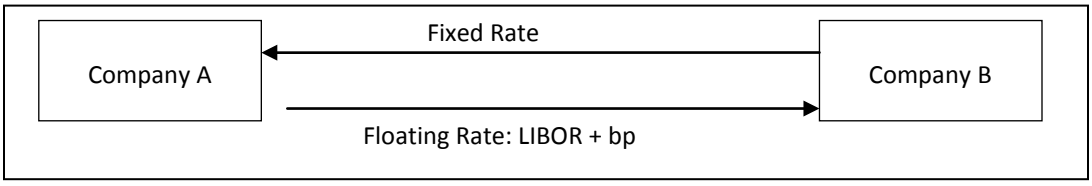
In an *options* contract, the buyer of the contract has the option or the right to buy (call option) or sell (put option) an asset. The price at which the sale takes place is specified at the time the parties enter into the option. *Swaps* are contracts to exchange a stream of cash flows on specified future dates based on the value of the underlying asset, price or rate. The two most common swaps are *interest rate swaps* and *currency swaps*. Complex derivatives are created by combining these more simple derivatives with each other or by combining them with traditional securities and loans to create *hybrid* instruments or structured securities.

A. INTEREST RATE SWAPS

Interest rate swaps are the largest OTC derivative by product within the global OTC derivative market followed by foreign exchange derivatives, credit default swaps, and equity swaps. [15] At the end of 2009, the total notional amount outstanding of OTC interest rate swaps was $349 trillion ($12.6 trillion in gross market value).

The first major interest rate swap can be traced back to a transaction in 1981 between IBM and the World Bank. Since then, the market for interest rate swaps has steadily increased. From June 1998 to June 2008, the total notional amount outstanding of interest rate swaps increased from approximately $30 trillion to $357 trillion.

Figure 3: Interest Rate Swap

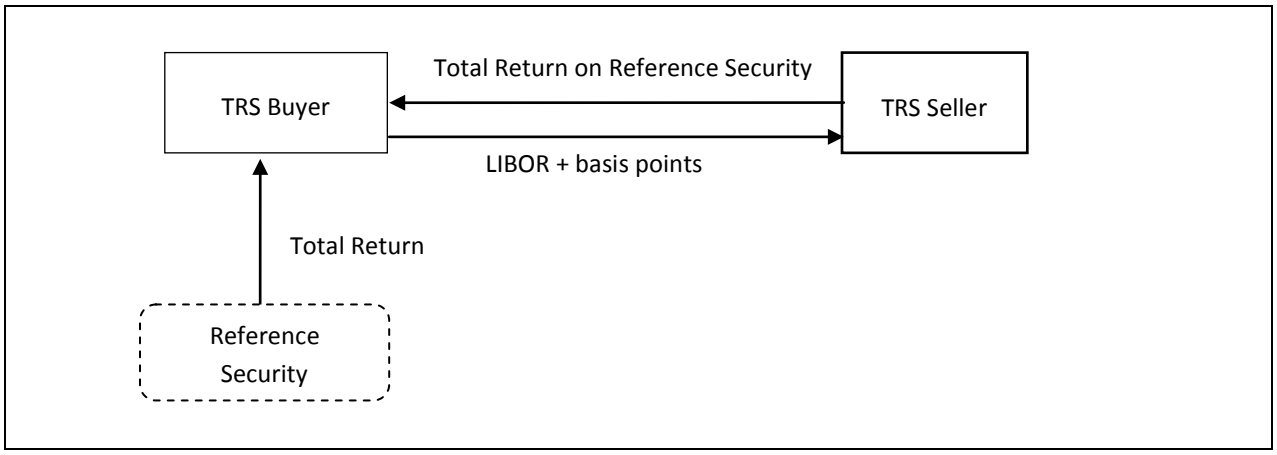


[15] According to BIS, the product category "unallocated" is ranked the second-highest, after interest rate swaps, in terms of notional amount outstanding. The "unallocated" category is not defined and may include derivatives that blend different product types. The notional amount outstanding for the "unallocated" category in December 2009 was $73.46 trillion, representing $2.44 trillion in gross market value.

Under an interest rate swap, one party agrees to pay another a series of interest payments over the life of the swap based on a pre-specified interest rate that is floating (usually linked to LIBOR, which is the London Interbank Offered Rate) or fixed and based on the notional amount. At the same time, the second party agrees to make payments over the term of the swap based on either a fixed or floating interest rate. The most common interest rate swap involves the exchange of a fixed interest rate and a floating interest rate. Similar to other swap arrangements, cash flows are paid in the same currency and at pre-specified payment periods – monthly, quarterly, or annually. On each payment date, the difference between the two interest payments is turned over to the entitled party. The notional amount of the swap is never exchanged.

Companies use interest rate swaps to change their economic exposures. For example, a firm with outstanding floating-rate debt can hedge against a rise in interest rates by using an interest rate swap to make payments at a fixed rate and receive payments at a floating rate. The floating-rate payments it receives from the swap can be used to help offset the floating rate payments on the loan, effectively converting a floating-rate loan to a fixed-rate loan. Investors also use interest rate swaps to speculate on changes in interest rates.

Figure 4: Total Return Swap



B. TOTAL RETURN SWAPS

The *total return swap* (TRS) was first introduced in 1987 by Salomon Brothers on mortgage assets.[16] In a total return swap, the underlying reference security can be any security or basket of securities. The TRS buyer receives the total return on the reference security, which includes both the change in price and any interest or dividends. These flows are represented in figure 4. In exchange, the TRS buyer agrees to pay a fixed or floating

[16] Tavakoli, Janet. 2001. *Credit Derivatives and Synthetic Structures, 2nd Edition.* John Wiley & Sons.

payment such as LIBOR plus a spread. It should represent a comparable return to holding the security once funding costs are taken into account. This swap enables an investor to take a long position in a security or security index without having to fund the investment or to hold the exposure on its balance sheet. TRS are sometimes used to gain access to foreign markets where international capital inflows involve high transaction costs.

An *equity swap* is a type of total return swap in which the underlying asset is a stock. While it is unclear when the first equity swaps were used, one of the first major equity swap contracts was a 1990 transaction in which Amoco utilized an equity swap to earn a return on a Japanese stock index.[17]

In general, equity swaps are used by investors as a substitute for directly holding a stock. Equity swaps are similar to other OTC derivative agreements in that two parties agree to exchange sets of future cash flows based on the reference security at a predetermined future date. However, in an equity swap two parties make payments where at least one set of payments is based on the rate of the return on a stock, "basket of stocks," or a stock index. The other set of payments are based on a fixed or floating rate or a return on another stock or index which is assessed at the end of the swap.[18]

C. FOREIGN EXCHANGE SWAPS

Currency fluctuations pose a significant risk to participants in cross-border markets. Foreign exchange derivatives, such as *foreign exchange swaps*, were introduced to protect currency holders from the potential loss in purchasing power due to shifting foreign exchange rates. The notional amount of foreign exchange swaps was approximately $10.5 trillion in 2000 and $23.1 trillion in 2009; the market value was $283 billion in 2000 and $683 billion in 2009.[19]

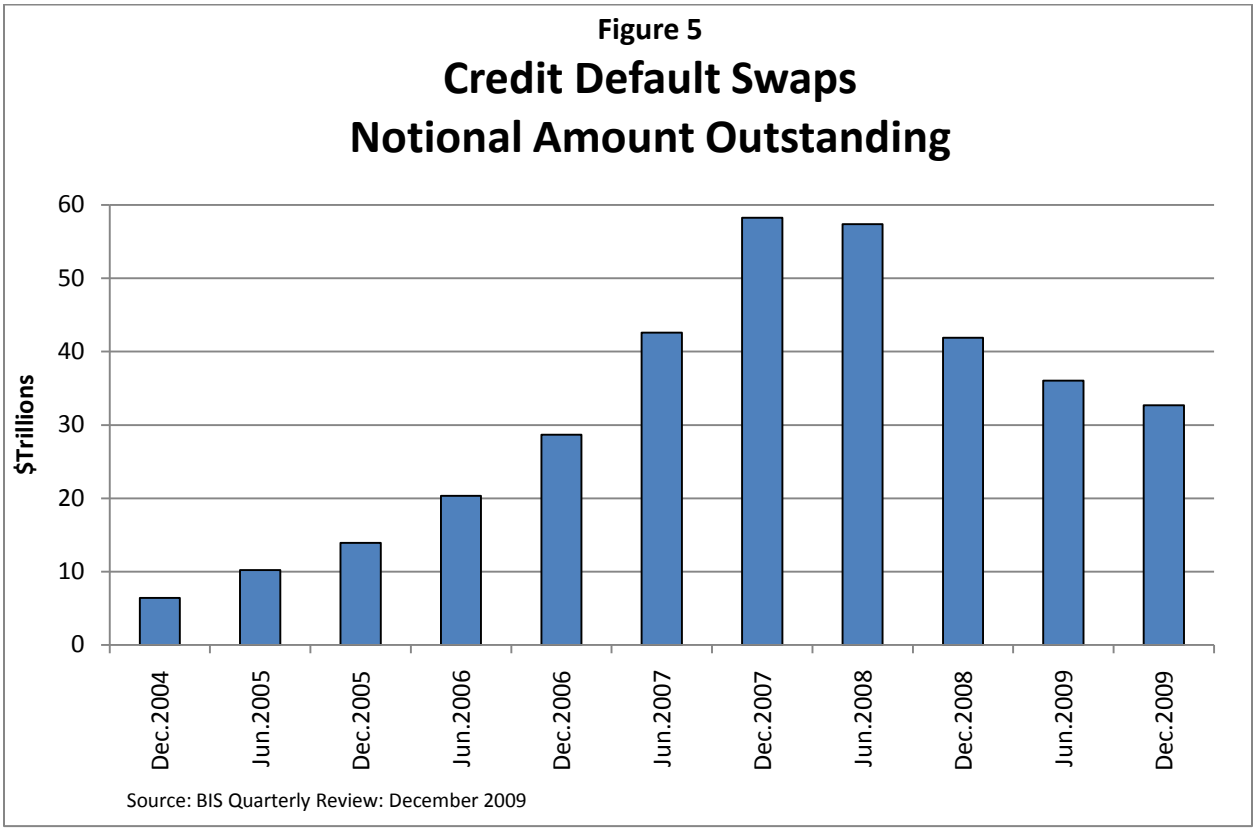
In the case of a foreign exchange swap, the underlying products are two different currencies. In general, foreign exchange swaps have two settlement dates, the start date and the end date. At the start date currencies are exchanged between the counterparties at a predetermined exchange rate, also known as the swap rate. At the end date, the currencies are exchanged back at another predetermined exchange rate. While foreign exchange swaps allow investors to hedge against currency fluctuations, they also can be used by those speculating on currency fluctuations.

[17] Chance, Don M., *Equity Swaps and Equity Investing*, July 25, 2003
[18] Ibid.
[19] Bank of International Settlements. The amount of foreign exchange swaps include a small amount of forwards.

D. CREDIT DERIVATIVES

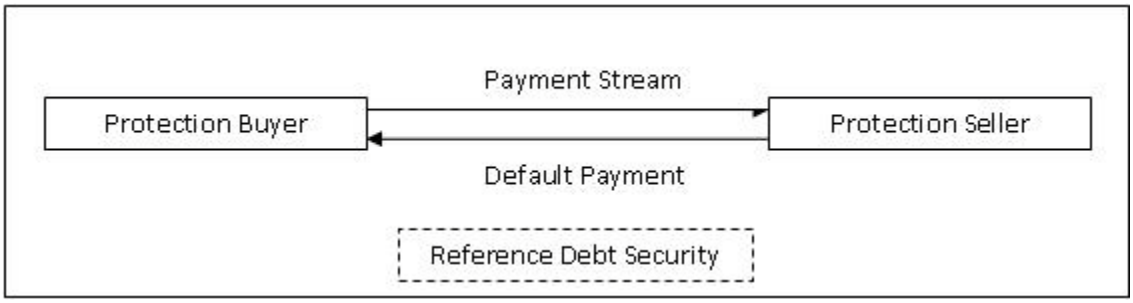
The concept of the *credit default swap* emerged in 1994, when JPMorgan utilized the swap to transfer the credit risk of its client, Exxon, to the European Bank of Reconstruction and Development. Since then, the demand for CDS has increased substantially. The notional amount of global outstanding credit default swaps (CDS) grew from $6.4 trillion at the end of 2004 to a peak of $58.2 trillion at the end of 2007, but declined in December 2009 to $33 trillion (Figure 5).

Figure 5



In a credit default swap, one party transfers to another party the default risk associated with a referenced debt without transferring the ownership of the underlying debt. The referenced debt security is a bond or a loan obligation of one or more reference entities, such as a corporation or government, or a basket of loans. Like other derivatives, credit default swaps can be used for speculating or for hedging. When the CDS buyer owns the underlying reference security, the CDS is used to hedge its default risk.

Figure 6: Credit Default Swap



The CDS protection buyer makes periodic payments to the protection seller during the life of the CDS contract. In return, the CDS seller provides protection in the event of a default or specified "credit event" related to the referenced debt.

When a credit event occurs, the CDS seller pays the CDS buyer the *par* value of the bond (also referred to as the face value) in exchange for the bond, or it makes a cash payment which is determined by an auction. For example, when Fannie Mae was placed into receivership it triggered a credit event. After an auction determined the recovery value of its referenced debt to be between 98% to 99%, the protection sellers paid one to two cents on the dollar to protection buyers.

In the CDS contract, both parties agree on which set of "credit events" for which the CDS buyer will be compensated. ISDA has created standardized terms to define a credit event, which most commonly includes bankruptcy, various forms of defaults, and restructurings.

V. REGULATION OF DERIVATIVES

A. BRIEF HISTORY OF DERIVATIVES REGULATION

The first federal law governing derivatives was the Futures Trading Act of 1921. However, the Supreme Court ruled it unconstitutional.[20] In response, the Congress passed the Grain Futures Act in 1922. It established legal contract markets and requirements for record keeping and trade reporting, and empowered the government to audit these markets and market participants. In addition, it created the Grain Futures Administration as an agency within the Department of Agriculture in order to administer and enforce these new powers.

The current federal law governing derivatives and derivatives markets is the Commodity Exchange Act (CEA), which created the Commodity Exchange Commission as the responsible regulatory authority. First passed in 1936, the CEA has undergone numerous amendments. The 1936 Act provided for position limits, prohibited fraud and manipulation and required derivatives or certain agricultural products be traded on

[20] Hill v. Wallace 259 U.S. 44 (1922)

regulated exchanges. It required the registration of futures commission merchants and required them to maintain customer funds in segregated accounts. The bill also banned commodity options following scandals in the 1920s in which option sellers absconded with premiums paid by counterparties.

The derivatives industry grew rapidly in the 1970s following the collapse of the global fixed exchange rate system known as Bretton Woods. The need to better manage this new risk led to the introduction of futures contracts on financial instruments and to derivatives trading on the Chicago Mercantile Exchange (CME). The first futures on a stock index (the Value Line Stock Index) were introduced by the Kansas City Board of Trade in 1982, although the CME became much more successful trading S&P500 futures.

A second major innovation was the solution to a closed-form equation for options pricing. While options have long been traded, economists had not been able to produce a formula to explain how they were priced. The Black-Scholes options pricing model solved that shortcoming, leading to a rapid growth in options trading. The Chicago Board Options Exchange was established in 1973 and it initially traded only call options on single stocks. Puts were added in 1977, and options trading on stock indices was added in 1983.

These innovations were met with a major overhaul of the regulatory framework for US derivatives markets in the Commodity Futures Trading Commission (CFTC) Act of 1974. This moved regulatory authority to an independent agency, the CFTC, and gave it exclusive jurisdiction over futures and options on futures. While its predecessor, the CEA, had jurisdiction only over certain enumerated agricultural commodities, the CFTC's jurisdiction covered all commodities and assets, including not only futures on metal and energy products, such as those traded at the New York Mercantile Exchange, but also derivatives on financial instruments.

Another milestone market innovation occurred in 1981 when Salomon Brothers brokered a foreign currency swap between the World Bank and IBM. It replaced back-to-back loans as the vehicle for hedging exchange- rate risk and did so without adding to the size of balance sheets and the amount of capital required for balance sheet assets.

OTC trading in foreign exchange and interest rate contracts began to grow rapidly in the 1980s, raising questions about their regulatory treatment under the CEA. The CFTC released a Swap Policy Statement in 1989 in which it offered Safe Harbor to swaps and said it would not regulate swaps as futures or options on commodities:[21] "This statement reflects the Commission's view that at this time most swap transactions, although possessing elements of futures or options contracts, are not appropriately regulated as such under the Act and regulations."

[21] 54 FR 30694, July 21, 1989.

In 1993, weeks before leaving office, the CFTC Chair promulgated a new rule, Part 35 of the CEA, which formalized the exemption for OTC derivatives. It stated that OTC derivatives were exempt from the CEA, except for prohibitions against fraud and manipulation, so long as they met certain conditions. These conditions included that they not be perfectly standardized, that they expose market participants to counterparty credit risk, that they not be multilaterally traded, and that both counterparties are sophisticated investors.

On December 14, 2000, the Commodity Futures Modernization Act was passed as a rider to the Omnibus Appropriations bill for fiscal year 2001. It amended the CEA so as to exclude OTC derivatives, described as "swaps" in the legislation, from all parts of the CEA. The Securities and Exchange Commission did retain anti-fraud authority over securities-based OTC derivatives such as stock options.

B. CAPITAL REQUIREMENTS

Under regulatory capital standards, commercial banks and broker dealers are required to hold capital against different types of assets based upon the risks associated with those assets.

Derivative exposures are subject to two capital charges. First, under the Basel international Capital Accord in 1988, derivatives are subject to a charge that is intended to reflect the credit risk of the derivative counterparty. This charge is calculated using the current replacement cost of the derivative, if positive. The charge is also risk-weighted by the type of counterparty. Secondly, there is a capital charge for the amount of market risk on the derivatives portfolio. Under the Market Risk Amendment to Basel I, introduced in 1996, the capital charge for the market risk of traded exposures such as derivatives is based on a calculation of their Value at Risk (VaR), which is the 99th percentile loss over a 10-day period.

C. ACCOUNTING

The rules in the U.S. that govern the accounting and disclosures for derivatives are contained in Statement of Financial Accounting Standards No. 133, Accounting for Derivative Instruments and Hedging Activities (FAS 133).

Under FAS 133, derivative instruments are measured at fair value, and changes to fair value are recorded through the income statement. Derivatives can be either assets or liabilities. In measuring the fair value of a derivative, how much it would trade for in the market, a holder has to consider whether someone would pay them for the derivative position (an asset position) or whether someone would require to be paid to take or settle the derivative position (a liability).

D. BANKRUPTCY

Derivatives counterparties have certain advantages under the current US Bankruptcy Code. The advantage arises from the obligations from derivatives contracts being exempt from the "automatic stay" provision of the Bankruptcy Code. The stay prohibits creditors from collecting debts or seizing the assets of the debtor firm. So while other creditors are prevented from forcing payments and settlements, derivatives counterparties are allowed to terminate all of their derivatives positions traded under a Master Trading Agreement with the bankrupt entity on a net closeout basis.

In order to accomplish this, a counterparty requests quotes from market dealers for the value of each outstanding contract. These quotes are used to determine the replacement to the counterparty and the net sum of all the contracts – both those with a positive fair value and a negative fair value – determine the net closeout amount. If the counterparty has a positive claim on the bankrupt entity, then it can place an immediate claim in the amount of the net closeout on existing assets of the firm. However any collateral posted to the bankrupt firm becomes an unsecured claim. If the counterparty has a negative net settlement position, then the counterparty is not requirement to accelerate settlement and can wait to be part of the bankruptcy proceeding. However if it has a negative closeout position and has collateral posted with the bankrupt firm, then they can go to immediate settlement in order to immediately claim the amount of that collateral needed to settle. Any extra collateral becomes an unsecured claim on the bankrupt party.