DRAFT: COMMENTS INVITED

Financial Crisis Inquiry Commission

Preliminary Staff Report

CREDIT DERIVATIVES AND MORTGAGE-RELATED CREDIT DERIVATIVES

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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 on credit derivatives, especially mortgage-related credit derivatives, which are the subject of the FCIC's public hearings on June 30 and July 1, 2010. Staff will provide additional information to the commission over the course of the FCIC's tenure.

Deadline for Comment: August 12, 2010

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I. INTRODUCTION

This preliminary staff report provides an overview of credit derivatives, especially the market for mortgage-related credit derivatives. Section II describes corporate credit derivatives products and indices and how they grew. Section III describes credit derivatives related to residential mortgages. Section IV describes some participants in these markets. This report accompanies and follows the FCIC's Preliminary Staff Report, *Overview on Derivatives*.

A. BRIEF HISTORY OF CREDIT DERIVATIVES

A derivative is an asset that derives its value from another asset. A credit derivative is a bilateral agreement that shifts credit risk related to a reference entity or reference obligation from one party (the protection buyer) to another (the protection seller). The reference entity may be a corporation, a country or a specific debt obligation (e.g., a mortgage-backed security or a specific corporate bond). Credit default swaps (CDS)[1] are the most common form of credit derivative. This section will describe single-name CDS, which are CDS that reference a single reference entity or obligation; synthetic CDOs, which are tranched portfolios of CDS; and indices of CDS, which are standardized and relatively more liquid portfolios of CDS. (The development of CDS that relate to CDOs with underlying mortgage credit are reserved for Section III.)

B. SINGLE-NAME CORPORATE CDS

CDS first developed to transfer credit risk from financial institutions that sought to diversify their lending exposures to certain corporations without disturbing existing client relationships. *Single-name* corporate CDS would reference corporations or specific bonds of a corporation. If a bank bought single-name CDS protection, it could keep loans from the borrower on its books but reduce its credit exposure to the same borrower. The bank, as protection buyer, would be transferring credit risk to the protection seller. But the bank would be taking on counterparty risk should the borrower default and the protection seller not be able to pay on the CDS.[2]

Corporate CDS first appeared in 1994.[3] Over the course of the decade, the market for corporate CDS became more actively traded and contracts became more standardized. In 1999, the International Swaps and Derivatives Association (ISDA), a trade organization for over-the-counter (OTC) derivatives market participants, issued standardized credit

[1] FCIC, *Overview on Derivatives*, introduced credit default swaps ("CDS"), their notional amounts over time, their mechanics, their uses, and the market participants.
[2] Collateral requirements discussed in the FCIC report, *Overview on Derivatives*, were designed to mitigate counterparty risk, but may or may not have been effective in doing so.
[3] Lanchester, John, "Outsmarted: High finance vs. human nature," *The New Yorker*, June 1, 2009.

derivatives definitions for use with the ISDA Master Agreement. In 2003 certain ISDA definitions were revised and the market became more liquid.[4]

Public data on credit derivatives, since they are unregulated bilateral private agreements, is limited and depends on surveys of different users. Consequently, estimates vary on the size of the market. The British Bankers Association (BBA) survey shows that the notional amount of credit derivatives was $180 billion in 1997 and had grown to over $20 trillion in 2006. ISDA started doing annual surveys in 2001 and reported notional amounts of $632 billion that year – slightly less than the BBA reported in 2001 – but over $34 trillion in 2006, which was materially more than the BBA reported in that year. According to ISDA, the market peaked at $45 trillion in 2007. The Bank for International Settlements (BIS) began collecting statistics in 2004 and sized the market at $43 trillion in notional amount in June 2007 and $58 trillion in December 2007. Unlike the other data sources, the BBA survey broke the market down by product type: for example, in 2006 it reported that 33% of credit derivatives were single-name CDS, 30% were full index CDS (in contrast to index tranches, as discussed below), and 17% were synthetic CDOs.[5]

During the 2000s, a significant shift occurred not only in the volume of credit derivatives but in their users. Hedge funds, which in 2000 represented only 3% of buyers and 5% of sellers of protection, grew to 28% of buyers and 32% of sellers by 2006. In the same period, the market share of commercial and investment banks fell from 63% of buyers and 81% of sellers to 59% of buyers and 44% of sellers. Commercial banks and investment banks increasingly used credit default swaps to buy protection in their trading activities rather than for their loan activities.[6]

C. SYNTHETIC CDOS

The development of single-name corporate CDS soon allowed for the innovation in the late 1990s of synthetic CDOs,[7] which in turn increased demand for CDS.

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[4] The ISDA Master Agreement, a standardized and generally accepted document that may be used by the various counterparties associated with a derivative, is described in FCIC, *Overview of Derivatives*.

[5] In contrast, in 2002, 45% were single-name CDS and index trades and synthetic CDOs were unmeasured categories, according to Mengle (2007, p. 7-8).

[6] Sourced to British Bankers Association (BBA), *BBA credit derivatives report 2006*, London: BBA Enterprises Ltd. Cited in Mengle (2007, p. 12).

[7] The term "synthetic" is used in finance to describe a combination of payment obligations that mimic the properties of another financial instrument, achieved through the use of derivatives. CDOs are collateralized debt obligations. Their nomenclature varies based on their underlying collateral. CSOs, or collateralized synthetic obligations, have corporate CDS as their collateral. CLOs, or collateralized loan obligations, have loans of various sorts as their collateral. CBOs, or collateralized bond obligations, have either high yield or investment grade bonds as their collateral. CRE CDOs have commercial real estate (CRE), particularly commercial mortgage-backed securities (CMBS), as their collateral. ABS CDOs have asset-backed securities (ABS) as their collateral, often mixing tranches of residential mortgage-backed ABS with tranches of CMBS or of other CDOs.

Synthetic CDOs allow investors to gain "long" exposure to portfolios of CDS without owning the underlying reference obligations. Collateralized synthetic obligations (CSOs) are a type of synthetic CDO in which the underlying collateral is comprised of single-name or multi-name corporate CDS, rather than loans or bonds. The credit default swaps provide income to the CDO in the form of CDS premiums. Like other CDOs, the portfolio of assets is held by a special purpose vehicle (SPV), which then issues its own obligations in the form of rated tranches.

Funded and unfunded tranches

In the case of synthetic CDOs, it is the underlying CDS collateral on the assets side that provides the "synthetic" designation. On the liabilities side, these CDOs may structure and issue liabilities either as cash bonds, in which case the investor receives a security (*funded tranches*), or a CDS (*unfunded tranches*), in which case the investor sells protection through a credit default swap.

Protection buyers pay premiums on the CDS that make up the assets of the CDO. These payments are used by the SPV, i.e., the synthetic CDO issuer, to make periodic payments to investors. In essence, the unfunded investors in the synthetic CDO are credit protection sellers who gain exposure to credit risk in a cashless manner.

Because the underlying assets are credit default swaps rather than cash securities, the synthetic CDO issuer does not need to raise cash to complete the transaction. This allows a portion of the capital structure to be unfunded, i.e., issued as *swaps*. When an unfunded investor enters into a swap, it agrees to receive periodic protection payments (similar to interest payments) in exchange for having the obligation to cover certain credit losses on the portfolio. These swaps can be unfunded because no upfront payment is required if the investor is highly rated.[8]

Alternatively, synthetic CDOs also issue funded notes, typically for the subordinate tranches. If an investor purchases a "funded" tranche, it receives a security known as a *credit-linked note*, which entitles the investor to periodic interest payments and a return of principal. Cash received from these notes are typically invested in AAA-rated assets, the proceeds of which are used to make protection payments on the CDS assets or to repay noteholders.

[8] At the maturity of the synthetic CDO, the unfunded swap investor, therefore, receives no return of principal, since it paid no funds into the synthetic CDO at its inception; instead, its obligation to cover losses simply terminates at maturity.

The BISTRO program

An early example of a synthetic CDO is provided by JP Morgan's "BISTRO" program, which was launched in 1997.[9] Its structure was considered to be quite innovative in the marketplace at the time and may well have included the first unfunded super-senior tranche.[10]

In the BISTRO structure, all of the subordinate tranches were funded notes and only the super-senior exposure was executed in the form of an unfunded CDS.[11] Since no cash was needed to acquire the portfolio of CDS,[12] and many of the underlying loans were undrawn credit facilities, this largely unfunded structure was viewed as materially more efficient from the perspective of the synthetic CDO. The efficiency allowed those who sought to purchase credit protection (the shorts on the asset side) to do so at a lower cost; the efficiency also allowed the mezzanine and subordinate investors (the longs on the liability side) to receive a somewhat higher return for their investment because of the elimination of funding cost[13] at the unfunded super-senior AAA level.

Motivations for issuing synthetic CDOs

BISTRO was known as a *balance sheet* synthetic CDO because it allowed banks to remove credit risk from their balance sheets by buying loss protection on a portion of their portfolios. This allowed them to reduce related regulatory capital requirements. In one example of a BISTRO deal, the originating bank (JP Morgan's customer) would bear the first 1.5% loss on an underlying portfolio; the investors in the SPV would bear losses greater

[9] BISTRO stands for Broad Index Secured Trust Offering. Figure 2 generally illustrates more complex versions of BISTRO as well, except that corporate CDS were the reference assets rather than ABCDS or ABX.
[10] Super-senior refers to a tranche being senior in priority of payments to another tranche that has been publicly rated AAA/Aaa. The super-senior tends to be very large, whereas the AAA class subordinated to it (often called the "mezz AAA") is much smaller in size.
[11] AIG agreed to take on super-senior risk in a BISTRO trade, according to Tett (2009, p. 63). Later BISTRO structures did not cover credit risk above a specified level of losses once regulators did not require risk transfer to achieve regulatory capital relief.
[12] In the BISTRO structure, cash that was raised from the funded tranches was invested in Treasuries or other cash equivalents. If a credit event occurred on CDS assets, this cash collateral would be liquidated and the funds paid over to the counterparties who had purchased protection. Such payment would reduce the total notional amount of the CDS portfolio and would reduce the principal balance of the credit linked notes – the cash collateral was used and could not be returned to the investor. If all of the collateral was paid over to the CDS "shorts" and additional losses were incurred, the unfunded super-senior counterparty would have to pay in cash to the CSO to cover the losses.
[13] The super-senior would receive a modest payment for its assumption of credit risk, which was considered to be extremely low. Had the super-senior been funded, it would have required a higher current coupon as compensation. For example, if 0.10% was "saved" in annual funding cost on 80% of a structure, that amount would translate into 0.40% available to allocate to the other 20%.

than 1.5% and less than 7%; and the super-senior counterparty (JP Morgan, in the earliest deals) would bear losses above 7%.[14]

Other types of CSOs developed after BISTRO included *arbitrage* and *single-tranche* CSOs. Arbitrage[15] CSOs sourced their exposures from the CDS market rather than from a particular balance sheet, therefore, the motivation for arbitrage CSOs was not risk transfer from balance sheets or capital relief. Instead, the motivation was to generate fees for the dealer that arranged the structure and/or create exposure to a certain portfolio for investors and/or enable asset managers to raise assets under management and thereby earn fee income. Additionally, as the market developed, it became possible to customize structures to meet investor interest. CDO liabilities that were not AAA-rated started being offered in CDS form rather than only as credit-linked notes, which allowed investors to gain more leveraged exposure.[16]

By 2002, *single-tranche* trades had developed in which investors could specify the rated tranche of a CSO to which they wanted exposure, but the full capital structure (from AAA down to unrated equity) would not have to be sold for the CSO to be created. Instead, each dealer would assume the risk of the unissued tranches. The dealer would manage that risk by creating various long and short exposures to different tranches, indices or portfolios, focusing more on overall market price variability in their aggregate exposure. Dealers called this approach correlation trading.

During the years 2002 through 2007, Moody's rated approximately $330 billion in CSOs, peaking at about $70 billion in both 2004 and 2007.[17]

D. INDICES OF CDS

Single-name CDS also provided the raw materials for various indices to develop. Indices are groupings of a specified set of single-name CDS; they can attract greater liquidity and become a benchmark for a market. Financial market participants such as derivatives dealers supported the introduction of these indices to hedge their trading inventories and to create more opportunities to trade with customers. Institutional investors also use indices for price discovery or to hedge or speculate in instruments with greater liquidity.

[14] JP Morgan (1999).
[15] The arbitrage allowed the CDO to pay slightly less for the assets than required to pay the liabilities. CDOs of all types may be done either to take advantage of this price differential (and when an asset manager is involved to raise assets under management) or to transfer risks from balance sheets. Arbitrage CDOs became significantly larger in aggregate volume that balance sheet CDOs starting in 2002, according to Asset-Backed Alert.
[16] A credit-linked note is fully funded whereas a CDS may require much less than 100% posting of collateral. An investor, therefore, will have greater leverage through CDS than with a credit-linked note.
[17] Moody's Structured Finance Default Risk Service. The FCIC report, *Credit Rating Agencies and the Financial Crisis*, June 2, 2010, describes the process that Moody's used for rating ABS CDOs and details the downgrades that these securities experienced in 2007 and 2008.

Individual dealers launched the first indices of CDS in 2001. Certain indices subsequently were combined to gain greater liquidity, including CDX in 2004; CDX was later acquired by Markit, a consortium of OTC derivatives dealers, in 2007.[18] The single-name CDS included in this and other Markit indices are determined by polling member dealers.[19] Every six months a new index is created with a different set of underlying names, although many names can repeat. The indices are categorized by geography, rating and sector.[20]

Soon after indices were developed, they were tranched. This allowed a buyer or seller of the index to tailor its risk exposure to specified parameters of losses on the assets underlying the index. For example, a 3%-7% tranche would incur losses only when the underlying assets in the index suffered losses above 3% and up to 7% of the notional amount. The tranches were not rated by the credit rating agencies; the buyers and sellers were primarily OTC derivatives dealers, proprietary trading desks, and hedge funds that did not need ratings.

II. MORTGAGE-RELATED CREDIT DERIVATIVES

Mortgage-related credit derivatives followed a similar arc of development as corporate credit derivatives. Various parties' desire to hedge mortgage exposure led to risk transfer mechanisms through CDS, synthetic CDOs, and indices of CDS.

A. GROWTH OF THE ABS CDO

The development of mortgage-related credit derivatives started with developments in the cash market for *ABS CDOs*.[21] ABS CDOs are CDOs composed of exposures to asset-backed securities; their collateral may encompass various sectors of the ABS market,[22] although, starting around 2003, the collateral was increasingly dominated by subprime and Alt-A

[18] JPMorgan and Morgan Stanley launched the first indices, which they then combined under the Trac-x name in 2003. In 2004 Trac-x and iBoxx merged to form CDX in North America and iTraxx in Europe and Asia. Markit acquired both families of indices in November 2007. Markit (2009, p. 7).
[19] See footnote 32 and related text.
[20] When a credit event occurs on any of the single-name corporate credits within an index, the protection buyer has the right to sell that security at par to the protection seller. That single-name is then removed from the index and the index continues with a reduced notional amount for the remaining term. Goodman, et al. (2008, p. 241).
[21] Cash CDOs are not classified as derivatives, but they are a type of structured product that was the precursor to synthetic CDOs.
[22] In the early 2000s, *multi-sector* ABS CDOs were common, using different types of esoteric ABS tranches, such as manufactured housing, airplane leases, mutual fund fees, structured settlements, tax liens, future flows, and intellectual property rights. These esoteric types of collateral were viewed as largely uncorrelated. When some of these collateral types started to perform poorly in 2002, the CDOs performed poorly. This experience led to less diversity of collateral, with ABS CDOs focusing on those mortgage assets with higher yields. Note that subprime MBS are referred to as an ABS product.

(other than prime) mortgage-backed securities (MBS). The exposures could also be either in the form of cash securities or in synthetic (CDS) form.

ABS CDOs were limited in the early 2000s. Starting in 2004 and 2005, with the sharp increases in subprime originations, the ABS CDO market took off. ABS CDO volume roughly doubled each year starting in 2003. Total issuance jumped from $22 billion in 2003 to $58 billion in 2004, $106 billion in 2005, and $217 billion in 2006. Issuance then dropped in 2007 to $162 billion and virtually disappeared in 2008.[23]

CDS on CDOs, including ABS CDOs

In cash CDOs often the acquirer of the AAA or super-senior tranche transferred the credit risk to another financial institution by purchasing a CDS. These *CDS on cash CDOs* were referred to as "*negative basis trades*."[24] A credit enhancer, usually a monoline bond insurer or a large insurance company like AIG, and a funder, usually a bank, would agree at the origination of a CDO to the following: (a) the funding bank would purchase the super-senior tranche of the CDO from the underwriter; and, (b) the funding bank (the protection buyer) would enter into a credit default swap with the credit enhancer (the protection seller), with the CDO tranche being the reference obligation. This is the mechanism through which monoline financial guarantors took on credit exposure to cash CDOs. These CDS typically were part of the origination of the CDO rather than a secondary market hedge. Note that the CDO tranches were already rated AAA so that these protection sellers were not increasing the rating of the tranches.[25] CDS thus facilitated the placement of large blocks of AAA-rated CDO securities and spurred growth of the market.

In June 2006 an ISDA template for CDS on CDOs was introduced,[26] which provided a standardized framework for parties to hedge or to speculate on CDO tranches (whether the tranches were cash or synthetic). This standardization led to writing CDS on CDOs after their origination and more active trading on these instruments. Hedge funds and others would develop trading strategies to go long certain tranches and short others.

[23] Source: FCIC estimates, based on data provided by Citigroup and Moody's.
[24] The "basis" is the difference between the cash and the synthetic pricing, the CDS premium minus the cash coupon spread above LIBOR. "If this is a negative number, it means that an investor can purchase the bond, buy credit protection via a CDS, and enjoy a LIBOR plus net coupon. This would appeal to any investor with a cost of funds close to LIBOR. The negative basis trade investor is being paid to fund the bond without taking its credit risk." Goodman, et al. (2008, p. 132).
[25] In the earlier multi-sector CDOs, the monolines did insure AA and A tranches thereby increasing their rating to AAA. Generally this was done in the form of insurance rather than CDS.
[26] Goodman, et al. (2008, p. 177).

B. ADDITIONAL TYPES OF MORTGAGE-RELATED CREDIT DERIVATIVES

As demand for cash ABS CDOs, particularly the senior tranches, grew, the market was limited by the availability of subprime collateral. Synthetic instruments were developed both to fill this demand and to allow hedgers and speculators to create "short" positions.

1. Single-name ABCDS or Pay-as-you-go Swaps

Single-name subprime CDS created the market's first mechanism for directly shorting mortgage-backed securities. Various dealers adapted corporate CDS contracts to ABS bonds and then worked to create standardized provisions and terms. The differences between ABS cashflows and corporate bond obligations led to the development of *pay-as-you-go* ("PAUG", also referred to as "PayGo CDS" or more generally as "ABS CDS" or "ABCDS") swaps.[27] ISDA introduced in June 2005 a specific pay-as-you-go template in order to replicate ABS cashflows more closely during the life of the contract.[28]

Once the ISDA standardized forms were introduced for ABCDS, parties looking to short the subprime mortgage market could do so with greater liquidity. While demand from protection buyers who went "short" was limited primarily to hedgers in 2005, by 2006 sentiment in certain parts of the investor community shifted. More investors sought means to bet against the inflated housing market. Buying ABCDS or protection against payment shortfalls on specific subprime securities was one means of hedging against, or speculating on, a housing downturn.

In the derivatives world, each short position requires a long position and vice versa. As dealers started making markets in ABCDS, they needed to find "long" investors to balance the shorts. A significant amount of that long demand came from synthetic and hybrid ABS CDOs, which are described in the next section.

2. Synthetic ABS CDOs

S*ynthetic ABS CDOs* are similar to cash ABS CDOs except that their underlying assets are ABCDS or indices of ABCDS rather than cash bonds. *Hybrid ABS CDOs* are backed by a

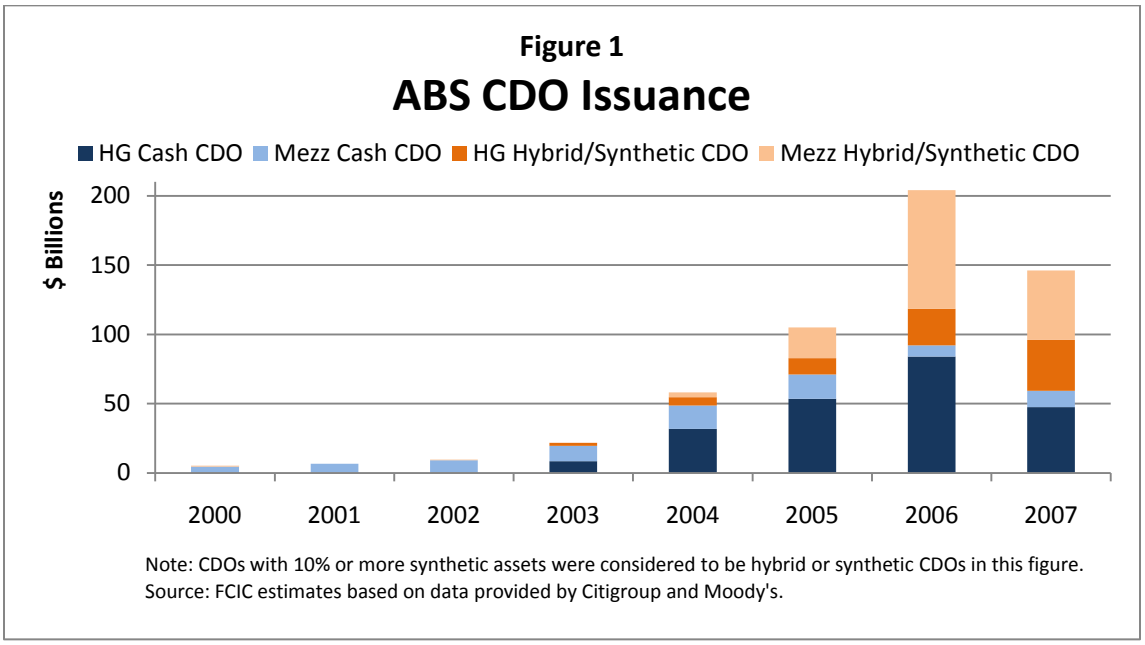
[27] For example interest shortfalls do not result in default. Tranche write-downs may be reversed with subsequent write-ups. Also, ABS typically do not "default" prior to their legal maturity. Goodman, et al. (2008, p. 234). When the reference entity is a corporate bond, credit events include issuer bankruptcy, failure to pay principal and sometimes debt restructuring. For structured finance assets, credit events also include interest shortfalls and principal write-downs or implied write-downs. Ibid., p. 232.

[28] Under PAUG Swaps if the (reference obligation) mortgage backed security does not receive its full interest payment, the protection seller pays the protection buyer the amount of the shortfall. The payment is made even if the interest payment is deferrable according to the terms of the ABS. Also if the ABS later catches up on interest payments, the protection buyer returns the payment to the protection seller. ABS allow for principal write downs and sometimes reversals and write ups; a protection seller would pay the protection buyer the amount of any principal write-down on the ABS.

mixture of cash and synthetic assets. Typically the CDO underwriter would be a protection seller itself and would be the intermediary between the CDO and third-party "shorts" (see left side of figure 2).

As noted, short demand for mortgage-related assets was growing in 2005 and 2006; at the same time, demand for ABS CDO paper remained robust. As a result, synthetic and hybrid ABS CDOs provided a significant outlet for ABCDS and indices of ABCDS. The volume of synthetic and hybrid ABS CDO transactions surged in 2005. Figure 1 shows the dollar amount of cash, synthetic, and hybrid ABS CDOs issued from 2000 to 2007. (Note that, particularly in 2005 and 2006 more cash CDOs were high grade (HG) than mezzanine, while the reverse was true among synthetic and hybrid CDOs.)

Figure 1



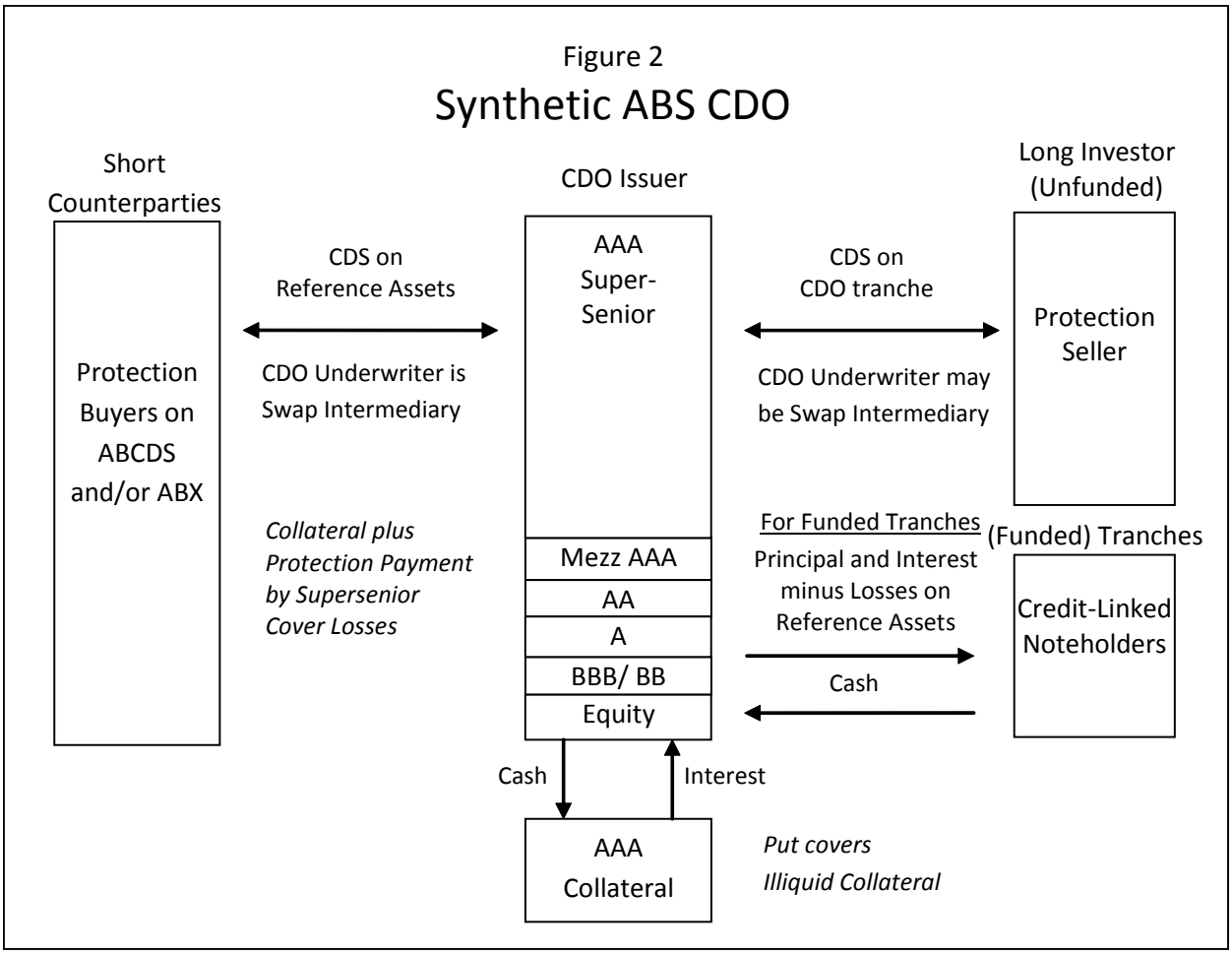
Note: CDOs with 10% or more synthetic assets were considered to be hybrid or synthetic CDOs in this figure.
Source: FCIC estimates based on data provided by Citigroup and Moody's.

Hybrid and synthetic ABS CDO issuance grew from $10 billion in 2004 to $35 billion in 2005 and $117 billion in 2006, and then dropped to $99 billion in 2007. In 2004, hybrid and synthetic CDOs were 17% of the ABS CDO market but 33% in 2005, 54% in 2006 and 61% in 2007. Mezzanine[29] synthetic CDOs represented 15% of total hybrid and synthetic ABS CDO issuance in 2003, and increased to 73% in 2006 before dropping to 51% in 2007.

[29] Mezzanine CDOs are composed generally of BBB-rated assets, in contrast to high grade CDOs that are composed primarily of mezz AAA, AA and some A rated assets.

In a synthetic CDO, as noted earlier, cash is not needed to acquire the referenced portfolio. Nonetheless, lower rated tranches typically are structured in cash form as *credit-linked notes* (see bottom right of figure 2), meaning that investors pay upfront for a fixed-income instrument similar to a bond.[30] In contrast, the AAA or the super-senior part of the AAA typically was structured as a swap with a AAA-rated counterparty rather than as a cash security. Typically, the underwriter would be an intermediary between the CDO issuer and the super-senior protection seller (see top right of figure 2). This unfunded synthetic AAA feature saved the CDO roughly 10 basis points annually on the 70-80% of the capital structure comprising the super-senior tranche. The savings either allowed more CDO revenues to be paid out to lower rated tranches, allowed assets with lower yields to be

Figure 2



[30] Similar to the BISTRO structure, the cash collected typically was invested in Treasuries or other cash equivalents including guaranteed investment contracts (GICs) so that funds would be available for any credit protection payments required by the ABCDS. As the synthetic CDO market evolved, however, the cash was invested in other AAA-rated structured products supported by a liquidity put to the dealer or another party (see bottom-right of figure 2).

referenced, reduced pressure on managers or dealers to limit their fees, or all of these.

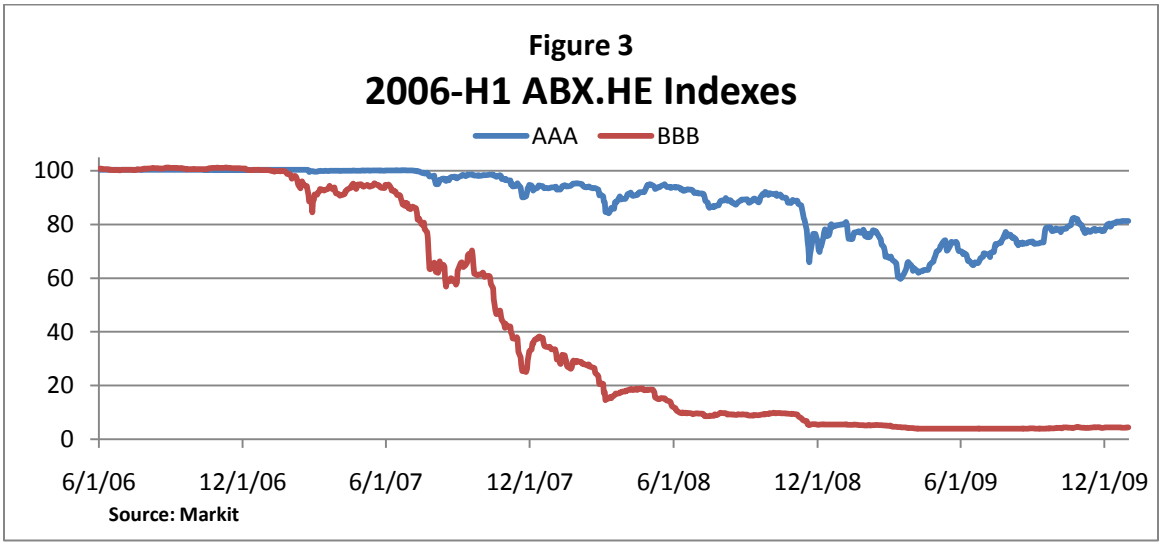
Synthetic ABS CDOs that were partly funded by credit-linked notes had cash available to invest in other securities, which tended to be AAA-rated ("AAA Collateral" at the bottom of figure 2). This provided another potential source of return for the CDO.

3. ABX, Tranches and other indices

In January 2006, trading commenced in ABX.HE, an index of CDS on asset-backed securities collateralized by subprime home equity loans. The index comprises five sub-indexes created by pooling like-rated tranches with ratings of AAA, AA, A, BBB, and BBB-. Sixteen dealers participate in the CDSIndexCo consortium and vote every six months on the 20 single-names that are aggregated into each vintage of the index. These dealers also supply daily pricing to Markit, the administrator for this and other credit indices.[31] The index notional amount adjusts as any of the reference entities amortize, prepay, default or incur write-downs or write-ups. New ABX indices were suspended starting in January 2008 as a consequence of the diminished issuance of subprime starting in late 2007.[32]

The ABX was an important innovation for investors who wanted a direct, relatively liquid way to take a short position in mortgage credit. Prior to the launch of the ABX in early 2006, investors who wanted to go short had to find dealers willing to sell them protection via ABCDS, an illiquid market at that time.[33]

Figure 3



[31] Members in 2007 were Bank of America, Barclays Capital, Bear Stearns, BNP Paribus, Citibank, Credit Suisse, Deutsche Bank, Goldman Sachs, HSBC, JPMorgan, Lehman, Merrill Lynch, Morgan Stanley, RBS Greenwich Capital, UBS and Wachovia.
[32] Goodman, et al. (2008, p. 244)
[33] Michael Lewis, in *The Big Short*, describes the challenges faced by investors who wanted to go short on mortgage credit in 2005.

III. MARKET PARTICIPANTS IN SYNTHETIC ABS CDOS

The first part of this section explains the process of creating and distributing CDOs. The second part discusses some of the ways derivatives changed the CDO market.

A. HOW CDOS ARE CREATED

The idea for creating a CDO traditionally started with an *underwriter* and a *collateral manager*, although a lead investor could also initiate development of a CDO. Some CDOs did not have collateral managers and therefore were *static* rather than *managed* transactions.[34]

The leading underwriters of ABS CDOs in 2004 through 2007 were Merrill Lynch, Citigroup, Goldman Sachs, UBS, and Deutsche Bank. However, for synthetic and hybrid CDOs, Goldman Sachs was the leader in 2004 and 2005, although in 2006 Merrill Lynch became top-ranked. UBS and Citigroup were also leading underwriters of synthetic ABS CDOs in both 2006 and 2007.

Underwriting fees on ABS CDOs typically ranged from 0.50% to 1.25% of the aggregate liabilities. However, underwriters could earn significant additional profits in sourcing, intermediating and/or warehousing the collateral. In synthetic CDOs, underwriters would play a significant role in sourcing the ABCDS.[35] It is not known what proportion of the short positions were proprietary to these dealers – i.e., that some dealers may have used synthetic CDOs to establish their own short positions – versus CDS with third parties.[36]

The CDO manager would be responsible for specifying collateral criteria and selecting the actual portfolio. (To what extent the manager actually performed this responsibility and to

[34] The underwriter and the collateral manager typically would sign an engagement letter specifying each party's fees, responsibilities, potential liability and warehouse arrangements for accumulating the portfolio for the CDO. If no manager was involved, either a lead investor or the underwriter would select the portfolio. The underwriter would "size" the CDO tranches, i.e. create the capital structure based on characteristics of the portfolio,[34] according to the stress runs and criteria established by the rating agencies. (Significant portfolio characteristics would include its weighted average coupon/premium, the weighted average rating of the portfolio and the diversity of the collateral.) The underwriter, along with the manager, would work with attorneys to document the transaction in an Offering Memorandum.[34] (CDOs generally were issued as 144A offerings; 144A is an SEC rule under which no public registration is required.) The parties and rating agencies would also comment on key transaction documents, including the Indenture Collateral Management Agreement and certain swap documents, that would be signed on the closing date of the CDO when ratings were issued. The underwriter would market the manager to potential investors and be responsible for selling the different tranches of the CDO to investors or taking a proprietary position.

[35] The underwriter would either take the short position itself or find other CDS counterparties who would sell protection through CDS. (See Figure 2 on the left side.)

[36] Underwriters would intermediate between the CDO issuer and the writers of credit protection, so that the dealer was the sole counterparty to the CDO on the asset side of the transaction. Dealer would enter back-to-back swaps with the counterparties going short in the ABCDS.

what extent the underwriter or others strongly influenced asset selection has become a matter of controversy in some cases.) Between 2004 and 2007, the top ABS CDO managers by volume of assets of any kind were TCW Asset Management, Strategos Capital Management, Harding Advisory, Bear Stearns Asset Management (BSAM) and Ellington Capital; they managed 21% of aggregate transaction volume during those years while 7% percent had no manager. The top six managers of synthetic and hybrid CDOs would include GSC Group and Vertical Capital in this list in place of BSAM; they managed 26% of such transactions in this time period.[37]

Managers would earn management fees, typically paid quarterly, on the notional amount of assets in the CDO. Typically, fees would be approximately 35 basis points (bps) for a mezzanine CDO and roughly 10 bps for a high grade CDO. Synthetic CDOs tended to have slightly lower management fees than cash CDOs. Part of the fees would be paid senior to the AAA tranche and part subordinate to the BBB tranche. Typically investors expected managers to invest in the equity tranche of the CDOs they managed; however, the amount of the manager's investment per transaction declined over time from 25 to 50% of the equity to 10% or less for well-known managers.

Like other asset managers, CDO managers earned more fees the greater the amount of assets under management. The degree to which managers focused on their long-term reputation for good asset selection and performance as opposed to their interest in current revenue generation (by completing CDOs quickly) is a matter of debate. Some have argued that CDO managers were less discriminating in their purchases of mezzanine ABS collateral than the traditional purchasers of such assets.[38]

It is not publicly known to what extent managers purchased CDS protection on any of their CDOs or otherwise used their CDO investments as part of more complicated trading strategies that could have changed materially their incentives for good performance.

B. HOW DERIVATIVES CHANGED THE ABS CDO MARKET

The introduction of ABCDS and synthetic CDOs profoundly changed the ABS CDO market. Synthetic deals could be executed much more quickly than cash deals and could be much bigger. Derivatives also created possibilities for conflicting incentives.

Prior to development of the PAUG template for ABCDS in 2005, mezzanine cash ABS CDOs typically included $300 to $400 million in collateral and acquiring such a portfolio of diverse subprime cash assets took approximately nine months to "ramp up." Once a liquid single-name CDS market developed, however, the ramp up could be accomplished in three to five weeks; also the size of the CDOs increased to $1 to $2 billion.[39] Liquid ABCDS also

[37] Source: FCIC estimates, based on data provided by Citigroup and Moody's.
[38] Adelson & Jacob Consulting (2008).
[39] Goodman, et al (2008, p. 173).

allowed managers to choose any bond as a reference entity (that another party was willing to short) and not just the latest cash issue.

Two factors contributed to higher expected returns for the equity tranches of synthetic ABS CDOs. First, ABCDS tended to have higher yields than cash bonds. Second, the unfunded super-senior was paid less than a cash AAA, so this amount could instead be distributed to the highly levered equity tranche (that was roughly 1/20th the size or smaller of the super-senior). In certain cases and during certain periods, resulting equity returns were targeted around 21% rather than 13% for cash CDOs.[40]

Complexity also increased. The AAA collateral that originally had been invested in cash equivalents started to be invested in other structured products supported by a put. The "fully banked" structure of issuing all tranches gave way to only certain tranches being issued – similar to the "single tranche" and correlation trading developments that had occurred in the corporate CSO market. Further, some tranches were placed on a levered basis, rather than as fully funded credit-linked notes.

In addition, as synthetic ABS CDO issuance increased, the motivations of CDO sponsors and managers may have shifted as well.[41] Unlike in cash ABS CDOs, where the underlying assets were cash securities, in synthetic CDOs the asset side was provided by a CDS protection buyer who was taking a short position. In some cases, the motivation behind this short position may have been to hedge an existing long position, but in other cases it may have been to speculate on the expected performance of the asset being referenced, or as part of executing a distinct trading strategy involving both longs and shorts, such as a correlation trade.[42]

[40] Goodman, et al (2008, p. 176).

[41] For example, "triggerless" CDOs developed in which standard mechanisms to divert cash flows to support senior bonds were eliminated. This means that cash would continue to be paid to equity investors even when it was likely that mezzanine and senior classes were unlikely to receive their full principal back at later points in the transactions. The incentives of an equity investor in a triggerless CDO could be to have the highest coupon assets, which would result in larger equity distributions for a few years, even though such assets might be the most likely to underperform over a longer time horizon.

[42] Broadly speaking, correlation trading involves taking a position on a financial instrument with the view that the price of that instrument will change in the future, as the market's view of correlation changes. Within the context of ABS CDOs, the price of notes within any CDO tranche reflects, among other factors, the market's estimate of correlation among credits being referenced. By buying and selling CDO tranches, investors can speculate on correlation and pricing. In this capacity, tranches of ABS CDOs can serve as vehicles for correlation trading.

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