

Introduction to Collateralized Debt Obligations

By Janet Tavakoli,
Founder, President
Tavakoli Structured Finance, Inc.



A Collateralized Debt Obligation (CDO) is backed by portfolios of assets that may include a combination of bonds, loans, securitized receivables, asset-backed securities, tranches of other collateralized debt obligations, or credit derivatives referencing any of the former. Some market practitioners define a CDO as being backed by a portfolio including only bonds and/or loans, but most market practitioners use the former definition. I'll use collateralized debt obligation as an umbrella term for asset securitizations.

Up to the end of the 1990's, collateralized debt obligations all used Special Purpose Entities (SPEs), also known as Special Purpose Vehicles (SPVs), that purchased the portfolio of assets and issued tranches of debt and equity. The special purpose entity purchased the assets from a bank's balance sheet and/or trading books. These are known as *true sale* structures.

Special purpose entities are usually bankruptcy remote, meaning they are *delinked* from the credit risk of the bank arranger, also known as the originator. The bank arranger can earn servicing fees, administration fees and hedging fees from the SPV, but otherwise has no claim on the cash flows of the assets in the SPV.

Formerly, banks and investment banks underwrote the collateralized debt obligation tranches to provide the funds – often along with bridge financing - for the purchase of the portfolio assets, which backed the tranches. This is no longer always the case. Synthetic securitizations eliminate the need for a special purpose entity, albeit they may also use a special purpose entity to issue limited recourse notes linked to a collateralized debt obligation's tranching credit risk.

Credit Enhancement

Credit enhancement comes in a variety of forms, and several types of credit enhancement are usually structured into a single transaction. Popular forms of credit enhancement include the following:

- 1) initial overcollateralization,
- 2) subordination in the form of an equity piece,
- 3) junior lenders to the securitization vehicle,
- 4) credit wraps,
- 5) surety bonds,
- 6) government guarantees,
- 7) reserve accounts of excess coupon spread not required for immediate payment of liabilities,
- 8) reserve accounts of excess cash,
- 9) credit derivatives, and
- 10) cash flow diversion once pre-specified conditions or *triggers* are met.

Conduits may employ letters of credit (LOCs) and liquidity lines to ensure cash flow requirements, and may also add a *clawback* LOC to protect against payments being reclassified as preferential in the event of bankruptcy.

Several years ago, LOCs were a common form of credit enhancement for credit card securitizations. Recently, a structurer asked me what happened to all the LOCs, were they too expensive? It isn't that the cost is prohibitive – although it may become prohibitive under BIS II- but rather that an LOC has less value as credit enhancement, because so many banks had been downgraded.

Monoline insurance companies provide *credit wraps*, which are *financial guarantees*. Monoline insurance companies are the only entities allowed to provide financial guarantees under New York law, where most securitizations are closed. Ambac, FSA, and MBIA are all AAA rated, and dominate market share for structured finance wrapping, although other monolines are active in this business. Monoline insurance companies started out providing wraps for U.S. municipal finance, but branched out into structured finance to diversify the risk in their portfolios. Ambac, FSA, and MBIA in particular have made a concerted effort to judiciously diversify into global risks. Non-U.S. risk is less than 10% of each of their portfolios, so they will probably continue to be major factors in the global market in future.

The highest rating possible on a wrapped tranche is the rating of the credit wrap provider. The amount of credit enhancement depends on the deal structure. The amount of enhancement is expressed as a multiple of the expected loss level. For instance, to get an AAA rating, a general rule is that the credit enhancement must equal five times the expected loss level. The amount of enhancement required declines for lower rating requirements.

Investor satisfaction with the performance of wraps under duress is very high. The view of investors and rating agencies is that the wrap providers guarantee uninterrupted cash flows. The credit wrap also serves to preserve the rating of tranches in jeopardy of downgrade. Some Aaa tranches of CDO would have been downgraded by the rating agencies in recent past, but they maintained their Aaa ratings only by virtue of the credit wraps supplied by Aaa rated monolines.

Multiline insurance companies or *sureties* may provide surety bonds or performance bonds. The surety bond guarantees the principal or obligor will perform its obligations under a contract. This is different than a financial guarantee. For instance, a commercial surety bond can be an advance payment bond that indemnifies against default on pre-paid supply transactions involving the delivery of physical commodities.

The difference between a *financial guarantee* and a *credit derivative*, is that the buyer of protection in a credit derivative contract does not have to own the underlying security or actually suffer a loss, as we'll see in the section on credit derivatives. In the recent past, protection bought in the form of credit derivatives has outperformed protection bought as surety bonds in non-CDO structured finance products.

Overcollateralization is achieved through investment in more collateral than is required to meet the CDO's static cash flow requirements. The SPE may invest in more physical assets, or equity investors may inject additional cash into the deal. Cash injections are usually invested in virtually risk-free assets such as short-term government assets.

Tranching creates more than one class of debt within a given structure. Junior investors provide credit enhancement for senior investors. Investors in subordinated classes earn a higher coupon, but have

higher risk to their initial principal investment. The subordinated debt holders agree to absorb losses before the senior debt holders. Several tranches may exist in one deal, and the payments due to each tranche holder are defined in the prospectus according to the tranche payment priority. The more certain the payment, the higher the credit rating and the lower the nominal return. The less certain the payment, the lower the credit rating and the higher the nominal return.

Issuers may deposit cash in a reserve account or a trust account and these funds can be used to meet principal and interest payments as needed. Excess spread may also be trapped in a reserve account. Excess spread is the current cash flow remaining after payment of investor coupons and fees. The excess spread account may be used for the benefit of all of the tranche investors to offset loss in value from non-performing assets with remaining funds reverting to the deal manager or the first loss investor at maturity, but this is not necessarily the case. In many structures, the reserve account is for the benefit of the first loss investor only.

CDO Classifications

Any potential future stream of payments or future value can be securitized. The following summary shows broad classifications one should be on the alert for in evaluating reported collateralized debt obligation data. Statistics on collateralized debt obligation issuance are often reported according to type of collateral classification. Many CDOs securitize assets from more than one asset class, so it is difficult to generalize. Different reports may use different definitions and benchmarks, so it is important to read the classification criteria to understand reported data.

One important class is consumer receivables, which include auto loans, auto leases, home equity loans, auto leases, and credit card receivables. Student loans have unique characteristics and are grouped into their own category.

Mortgage-backed securities are usually categorized as residential mortgage loans (single family, multi family, condominium, cooperatives) or commercial mortgage loans. Manufactured housing loans are often grouped into a separate category due to unique homeowner profiles.

Commercial and industrial loans include investment grade corporate loans and high yield corporate loans. Small business loans in the United States have their own category due to the government guarantee and unique structural features. In Europe, small to medium-sized enterprise loans are grouped into a multi-country category. These loans are smaller in size than usual commercial and industrial loans, and the obligors are often not publicly rated. Investment grade corporate bonds and high yield corporate bonds are often viewed as separate categories.

Receivables are such as computer leases, aircraft leases, marine leases and equipment leases are usually grouped separately. Utility stranded costs have been securitized for years and have their own separate category. Equipment loans and equipment leases are considered a separate small to medium size loan category. Expectations of payments, such as delinquent tax liens have a separate category. Future flows deals have another separate category, and are sometimes included in emerging markets statistics.

Bonds backed by receivables such as the right to televise Formula One sporting events, or cable subscriptions are also sometimes classified as CDOs, although they are usually lumped into the broader category of structured finance.

Private equity and hedge fund of fund securitizations are in separate categories. Non-performing loans also have a separate category. Investment grade sovereign debt may be included in bond obligations, but emerging market debt is usually considered separately, albeit this debt is often found in high yield bond obligations.

I just mentioned assets that can be used in the CDO portfolio, but even the asset definitions are subject to debate. For instance, asset-backed securities are structured securities in which the underlying collateral is itself a pool of loans or receivables.

A collateralized loan obligation (CLO) is a type of collateralized debt obligation. CLOs are backed by a portfolio of loans. The term CLO is reserved for a securitization that is exclusively backed by loans. In 1990, the first rated CLO backed by U.S. bank loans was brought to market.

A collateralized bond obligation (CBO) is another type of collateralized debt obligation. In 1988, the first rated collateralized bond obligation backed by high yield bonds was brought to market. CBOs are backed by a portfolio of secured or unsecured senior or junior bonds issued by a variety of corporate or sovereign obligors. Often a collateralized bond obligation will include loans in the portfolio, but the majority of the collateral usually consists of bonds. Collateralized bond obligation transactions realize the positive spread between a portfolio of higher-return, higher-risk assets, often rated below 'BBB'; and lower-cost, highly rated collateralized bond obligation securities issued to purchase the portfolio of bonds backing the collateralized bond obligation.

A collateralized mortgage obligation (CMO) is backed by mortgage-backed securities (MBSs) also called mortgage pass through securities. CMOs and the individual tranches of CMOs are also called mortgage-backed securities. This terminology is usually reserved for the U.S. market, and we'll briefly look at this later. Ironically, CMOs, the collateralized debt obligation precursors, are usually excluded from collateralized debt obligation reports and are not considered in the definition of collateralized debt obligations by many market professionals.

Structural differences in the European market did not lend themselves to the same type of cash flow tranching as the U.S. market. Often European mortgages do not enjoy government support. A look at the German market illustrates just some of the differences between the U.S. and European mortgage-backed securities market. The German Pfandbriefe market has been in existence for more than 200 years. The underlying mortgage loans must have a loan-to-value ratio of less than 60%, so the overall credit quality is deemed to be AAA. In the U.S. market, mortgage-backed securities are a balance sheet management tool. In the German market, however, Pfandbriefe cannot be prepaid and are kept on the bank's balance sheet, albeit they may be pledged as collateral. Securitization of other types of mortgage-backed securities as a balance sheet management tool has gained momentum only in the past three years after a very slow start.

Collateralized debt obligations are further classified as synthetic (credit derivatives) or cash. Some collateralized debt obligations are backed by combinations of cash and synthetic securities.

Collateralized debt obligations are either arbitrage deals, balance sheet deals, or both. Both can be any combination of cash and synthetic underlyings. Arbitrage CDOs take advantage of greater market prices for the underlying obligations versus the price at which the combined liabilities can be sold. Balance sheet CDOs are normally used for regulatory capital relief, albeit funding may be another motive for a balance sheet deal.

Arbitrage CDOs are either market value CDOs or cash flow CDOs . They can be backed by either cash assets, synthetic assets, or a combination of both. Cash flow CDOs make up 85–90% of the arbitrage market, and are growing at a much faster rate than market value CDOs.

Market Value CDOs

Market value collateralized debt obligations make up approximately 10-15% of the arbitrage CDO market. Market Value deals, like most CDOs, will either 1) pledge assets to a trustee to back debt for the benefit of the investors, or 2) a bankruptcy remote SPV buys the assets and pledges the collateral to back debt or equity (or preferred stock) for the benefit of the investors. Market Value deals may also use a third, less common, structure. Investors have a claim on all of the assets in the fund and the seniority of their claim depends on the class of debt or equity (preference shares or preferred stock) they own.

Market value structures meet principal (if applicable) and interest liabilities by generating cash from trading assets, and from interest on invested assets. If a collateral pool consists of defaulted bonds or loans, the market value structure is usually used, since these assets do not generate predictable cash flow streams, but have significant market value upside potential. Managers who have good track records trading investment grade debt and high yield debt often prefer market value deals.

Market Value deal managers trade actively and aggressively and usually employ leverage. Of course, not every trade results in a gain. Both credit and market considerations are important to market value deal managers. Investors who must market their assets to market might prefer market value structures, since market value CDO managers must mark the CDO's portfolio to market.

The ratio of the market value of assets to the face value of liabilities is the focus of a market value collateralized loan obligation. Market value deals require overcollateralization or a "haircut". The overcollateralization protects investors from asset price volatility due to changes in general interest rate movements, general credit spread movements, or other general market movements. Market value CDOs require maintenance of a minimum overcollateralization level. If this level is breached, the assets must be sold to pay down liabilities or the assets must be sold and exchanged for highly rated liquid instruments. This is known as a *trigger event*. The rating agencies monitor the debt coverage ratios. The performance of a market value collateralized debt obligation depends upon the manager's trading ability.

Cash Flow CDOs

Non-synthetic *cash flow* collateralized debt obligations invest in cash assets as collateral. The structure passes principal and interest payments generated by cash flows of the underlying collateral through to the investors. For a deal to be successful, the cash flow from the collateral pool must meet all deal liabilities including the interest and principal obligations from the notes issued by the CDO. The cash flows are hedged, reinvested, and tranced by time and seniority. The rating of a note depends on the probability of cash flow sufficiency to service that particular note. If the cash flow deal is properly structured, investors only experience a loss if there are defaults in the collateral pool.

Cash flow CDOs backed by a pool of cash obligations require a manager, whereas synthetic cash flow deals may or may not have a manager. For the cash asset-backed CDO, the manager's role is more limited than that of a market value CDO manager. The manager is carefully chosen for credit expertise rather than trading expertise. The cash flow CDO manager of a cash instrument backed deal

chooses the initial diversified portfolio of cash instruments and chooses credits to purchase during the reinvestment period. The manager may also participate in a work out in the event of default to maximize recovery. We'll examine these structural details when we compare cash and synthetic CDOs.

Deals can be managed or unmanaged. Only deals, which reference a static pool of assets, can dispense with a manager. This is most common with arbitrage synthetic CDOs, or cash CDOs where a fixed pool of assets is used in a passthrough-type structure.

Cash CDOs are usually broken into broad categories that represent the bulk of the issuance: high yield loans, multisector, investment grade corporate (which normally includes one quarter to one third high yield collateral), and high yield bonds.

Synthetic CDOs are backed by credit default swaps on a diversified pool of reference obligors. The credit default swaps can reference any type of cash obligation. They can be either balance sheet deals or arbitrage deals and are often classified into three categories: 1) managed CDOs; 2) CDOs with right of substitution; and 3) static CDOs. Managed CDOs will have an actively involved manager and may look similar to a market value CDO in that the underlying pool of assets is actively traded in an attempt to add value. Some managers are more passive, and trade only to avoid losses. CDOs with the right of substitution have managers that may not be "arms-length" managers. The bank arranger's structuring group may handle management activities which allow them to trade out of credits according to pre-set rules. The object is to trade out of deteriorating credit before default and trade into a higher credit quality obligation.

Static pools of credit default swaps back a static CDO. No trading is allowed. By definition, this is a cash flow CDO. Synthetic static arbitrage CDOs differ from cash CDOs that are also cash flow CDOs because the synthetic deal normally has no pre-planned reinvestment period. Since the CDS market allows cash flow maturities to be defined at the deal inception, there is no need for reinvestment, other than possibly to reinvest recovered amounts after a default, if any.

This menu of different products may seem confusing at first. The structural details are important. The place to start evaluating the fundamental value of any securitization is with the pool or portfolio. If the investor likes the composition of the initial portfolio, then the negotiation begins for the best possible structural protections.

Janet Tavakoli is the Founder and President of Tavakoli Structured Finance, Inc., a Chicago based consulting firm for structured financial products. Ms. Tavakoli has over 20 years of experience in senior positions on Wall Street trading, structuring, and marketing structured financial products. She is a former adjunct professor of derivatives at the University of Chicago's Graduate School of Business and author of the global bestsellers in their respective fields: *Credit Derivatives & Synthetic Structures 2nd Edition*, 2001, and *Collateralized Debt Obligations & Structured Finance*, 2003, both published by John Wiley & Sons.

Copyright © 2003 by Janet M. Tavakoli. All Rights Reserved.